Dawn Parkway Renewal Program: Kirkwall to Hamilton: Addendum to the 2019 Environmental Report

Draft Report

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November 6, 2026

Prepared for:
Enbridge Gas Inc.
50 Keil Drive North
Chatham ON N7M 5M1

Prepared by:
Stantec Consulting Ltd.

Project/File:
160901401

Stantec

Limitations and Sign-off

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Prepared by _____
(signature)

Dominique Kelly, BA
Environmental Planner

Reviewed by _____
(signature)

Michael Candido, B.Sc. (Env), CAN-CISEC
Environmental Scientist

Approved by _____
(signature)

Mark Knight, MA, RPP, MCIP
Principal, Environmental Planner

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Executive Summary

Enbridge Gas Inc. (Enbridge Gas) is proposing the Dawn Parkway Renewal Program: Kirkwall to Hamilton (the Project). The Project is driven by the need to restore capacity, due to identified integrity features, and to ensure the continued safe and reliable operation of the existing system. The Project involves the construction of a new 48-inch-diameter natural gas pipeline in the City of Hamilton, extending from the existing Kirkwall Valve Site, northeast of Safari Road and Valens Road, to the existing Hamilton Valve Site, east of Highway 6 and north of Carlisle Road. The proposed pipeline would be installed to generally parallel three existing Enbridge Gas pipelines and will measure approximately 10.2 km in length.

The preferred route was evaluated and selected in the *Dawn-Parkway System Expansion: Kirkwall-Hamilton Pipeline Section Environmental Report*, completed in June 2019. The associated Ontario Energy Board (OEB) application was subsequently withdrawn in October 2020 following a temporary pause related to the COVID-19 pandemic and to allow additional time to reassess the need for the Project. In 2026, Enbridge Gas retained Stantec Consulting Ltd. (Stantec) to reaffirm the findings of the 2019 Environmental Report and prepare this Addendum in accordance with the OEB's *Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Projects and Facilities in Ontario*, 8th Edition. Subject to OEB approval, construction is anticipated to begin in spring 2028.

The Addendum updates the regulatory, environmental, and socio-economic information presented in the 2019 Environmental Report. Key regulatory changes include the OEB's *2023 Environmental Guidelines*, the provincial *Species Conservation Act, 2025,* Ontario Regulation 41/24 under the *Conservation Authorities Act*, and the federal *Fisheries Act.*

Engagement and consultation activities were reinitiated in 2026 and included letters and emails, newspaper notices, social media, a Project webpage, a Virtual and In-Person Information Session, and meetings.

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The potential effects and impacts of the Project on physical, biophysical, and socio-economic features have been reassessed for the Project. In the opinion of Stantec, the recommended program of supplemental studies, mitigation, protective, and contingency measures are considered appropriate to protect the features encountered. Monitoring will assess that mitigation, and protective measures, have been effective in both the short and long term.

Supplemental ecological and archaeological studies were undertaken in fall 2026 and will continue in 2027 due to time elapsed since the original 2019 and 2020 field investigations.

The potential cumulative effects assessment considered a 100-metre boundary around the Project and considered development that may begin during the construction period or sometime in the future. Road work on Safari Road was identified in the Project Study Area, however, increased traffic, noise and dust resulting from road construction and project activities are considered temporary. Reduced crop yield may occur in previously disturbed soils and could be temporarily compounded where soils are disturbed again on existing pipeline easements. However, current soil-handling practices are expected to support crop recovery. With implementation of the recommended mitigation and protective measures, potential cumulative effects are not anticipated to occur or, if they occur, are not anticipated to be significant.

With implementation of the recommendations in the 2019 Environmental Report and this Addendum, continued engagement and consultation, and compliance with applicable permit, regulatory, and legislative requirements, potential adverse residual environmental and socio-economic impacts of the Project are not anticipated to be significant.

This Addendum supplements, rather than replaces, the 2019 Environmental Report. It identifies updates and additional information relating to the Project, while information and studies contained in the 2019 Environmental Report continue to apply where

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relevant. The 2019 Environmental Report and the Addendum should therefore be read together and, collectively, comprise the Environmental Report for the Project. It is recommended to read the 2019 Environmental Report alongside Table 1.1 (Changes to the 2019 Environmental Report) in this Addendum. Reviewing the documents together provides clarity on which sections have been updated and allows for easy reference between the two.

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Appendix F Stage 2 Acceptance Letter and Stage 2 Archaeological Assessment

Appendix G DFO-Enbridge Gas Generic Watercourse Crossing Drawings

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Acronyms / Abbreviations

2019 Environmental Report	Dawn-Parkway System Expansion: Kirkwall-Hamilton Pipeline Section: Environmental Report
AA	Archaeological Assessment
CH	Conservation Halton
CHAR	Cultural Heritage Assessment Report
CHR	Cultural Heritage Resource
COSSARO	Committee on the Status of Species at Risk in Ontario
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
DFO	Fisheries and Oceans Canada
EASR	Environmental Activity and Sector Registry
ECCC	Environment and Climate Change Canada
Enbridge Gas	Enbridge Gas Inc.
END	Endangered
ESA	*Endangered Species Act*
GRCA	Grand River Conservation Authority

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HCA	Hamilton Conservation Authority
HONI	Hydro One Networks Inc.
MBCA	*Migratory Birds Convention Act*
MBR	Migratory Birds Regulation
MCFN	Mississaugas of the Credit First Nation
MCM	Ministry of Citizenship and Multiculturalism
MECP	Ministry of Environment, Conservation and Parks
MEM	Ministry of Energy and Mines
MNR	Ministry of Natural Resources
NHIC	Natural Heritage Information Centre
OBBA	Ontario Breeding Bird Atlas
OEB	Ontario Energy Board
OMA	Ontario Mammal Atlas
OMNR	Ontario Ministry of Natural Resources
OPCC	Ontario Pipeline Coordinating Committee
O. Reg.	Ontario Regulation
ORAA	Ontario Reptile and Amphibian Atlas
PTTW	Permit to Take Water
PSOL	Protected Species in Ontario List

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SAR	Species at Risk
SARA	*Species at Risk Act*
SC	Special Concern
SCA	*Species Conservation Act,* 2025
SCN	Soybean Cyst Nematode
SOCC	Species of Conservation Concern
SNGR	Six Nations of the Grand River
S-Rank	Status rankings
Stantec	Stantec Consulting Ltd.
SWH	Significant Wildlife Habitat
TCPL	TransCanada Pipelines Limited
THR	Threatened

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1 Introduction

1.1 Project Description

Enbridge Gas Inc. (Enbridge Gas) is proposing the Dawn Parkway Renewal Program: Kirkwall to Hamilton (the Project). The Project is driven by the need to restore capacity, due to identified integrity features, and to ensure the continued safe and reliable operation of the existing system. As part of the Dawn Parkway Renewal Program, Enbridge Gas is proposing to install a new 48-inch diameter natural gas pipeline between its existing Kirkwall Valve Site, located northeast of the intersection of Safari Road and Valens Road and the existing Hamilton Valve Site, located east of Highway 6 and north of Carlisle Road. The proposed pipeline location was determined through a route selection process conducted in 2019, is generally parallel to the three existing Enbridge Gas pipelines and will measure approximately 10.2 km in length. New permanent easements and temporary working space during construction will be required.

In 2019, Enbridge Gas retained Stantec Consulting Ltd. (Stantec) to undertake an environmental study of construction and operation of the proposed Project. As part of the environmental study, the Dawn Parkway System Expansion: Kirkwall to Hamilton Pipeline Section: Environmental Report (2019 Environmental Report) was completed. The 2019 Environmental Report (Appendix A) was completed in June 2019 and a Leave to Construct application was submitted to the Ontario Energy Board (OEB) on November 1, 2019 (OEB file EB-2019-0159). On May 15, 2020, Enbridge Gas submitted a request to the OEB to temporarily pause regulatory review of the Project due to the COVID-19 pandemic and requested time to assess the need for the Project. As a result of the ongoing pandemic, Enbridge Gas withdrew their application to the OEB in October 2020.

Enbridge Gas has retained Stantec to reaffirm the findings of the 2019 Environmental Report and prepare an Addendum that will fulfill the requirements of the OEB's

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Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Projects and Facilities in Ontario, 8th Edition (2023). Pending approval from the OEB, construction is anticipated to begin in the spring of 2028.

This Addendum supplements, rather than replaces, the 2019 Environmental Report. It identifies updates and additional information relating to the Project, while information and studies contained in the 2019 Environmental Report continue to apply where relevant. The 2019 Environmental Report and the Addendum should therefore be read together and, collectively, comprise the Environmental Report for the Project. It is recommended to read the 2019 Environmental Report alongside Table 1.1 (Changes to the 2019 Environmental Report) in this Addendum. Reviewing the documents together provides clarity on which sections have been updated and allows for easy reference between the two.

1.2 Changes to the 2019 Environmental Report

The following table outlines changes made to the 2019 Environmental Report and where those changes are detailed in this Addendum. Please note that if no changes have been made, the findings of the 2019 Environmental Report are still relevant.

Table 1.1 Changes to the 2019 Environmental Report

Section in 2019 Environmental Report	Change from 2019 Environmental Report (Yes/No)	Section in 2026 Addendum
Executive Summary	**Yes**	Executive Summary
Acronym List	**Yes**	Acronym List
Section 1.0 Introduction		
• 1.1 Project Description	**Yes**	Section 1.1
	New Section	Section 1.2 Changes to the 2019 Environmental Report

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Section in 2019 Environmental Report	Change from 2019 Environmental Report (Yes/No)	Section in 2026 Addendum
Section 1.2 Environmental Study		
• 1.2.1 Objectives	No	
• 1.2.2 Process	No	
• 1.2.3 The Environmental Report	No	
• 1.2.4 The OEB Regulatory Process	**Yes**	Section 1.3.1
• 1.2.5 Additional Environmental Regulatory Processes	**Yes**	Sections 1.3.2 - 1.3.5 and Section 1.4
Section 2.0 Route Selection		
• 2.1 The Process	No	
• 2.2 Routing Parameters	No	
▪ 2.2.1 Study Area	No	
▪ 2.2.2 Routing Objectives	No	
▪ 2.2.3 Identify Constraints and Opportunities	No	
• 2.3 Identify Alternative Routes	No	
• 2.4 Refining Alternative Routes	No	
• 2.5 Identify Preliminary Preferred Route	**Yes**	Section 2
• 2.6 Confirmation of the Preliminary Preferred Route	No	
Section 3.0 Consultation Program		*See Sections 3.0 - 3.6 for the 2026 Consultation Program
• 3.1 Objectives	No	

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Section in 2019 Environmental Report	Change from 2019 Environmental Report (Yes/No)	Section in 2026 Addendum
	New Section	Section 3 Engagement and Consultation Program
• 3.2 Identifying Interested and Potentially Affected Parties	**Yes**	Section 3.1
• 3.3 Communication Methods		
▪ 3.3.1 Newspaper Notices	**Yes**	Section 3.2.2
▪ 3.3.2 Letters and Emails	**Yes**	Section 3.2.1
• 3.3.2.1 Notice of Commencement and Information Session	**Yes**	Sections 3.2.1.1 and 3.2.1.2
• 3.3.2.2 Notice of Second Information Session	**Yes**	Not Applicable. One Information Session was held.
	New Section	Section 3.2.3 Social Media
▪ 3.3.3 Display Boards, Newsletter and Exit Questionnaire	**Yes**	Sections 3.3.1 and 3.3.2
▪ 3.3.4 Project Webpage	**Yes**	Section 3.2.4
• 3.4 Consultation Events		
▪ 3.4.1 Meetings	**Yes**	Sections 3.3.3.1 – 3.3.3.4
▪ 3.4.2 Information Sessions	**Yes**	Sections 3.3.1 and 3.3.2
• 3.5 Input Received	**Yes**	Section 3.4
▪ 3.5.1 Public Input	**Yes**	Section 3.4.3

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Section in 2019 Environmental Report	Change from 2019 Environmental Report (Yes/No)	Section in 2026 Addendum
▪ 3.5.2 Agency Input	**Yes**	Section 3.4.4
▪ 3.5.3 Municipal Input	**Yes**	Section 3.4.5
▪ 3.5.4 Indigenous Input	**Yes**	Section 3.4.2
▪ 3.5.5 Interest Group Input	**Yes**	Section 3.4.1
• 3.6 Refinements Based on Input	**Yes**	Sections 3.5 and 3.6
Section 4.0 Impact Identification, Assessment and Mitigation		
Section 4.1 Methodology	No	
• 4.1.1 Construction	No	
• 4.1.2 Operation	No	
Section 4.2 Physical Features		
• 4.2.1 Bedrock Geology	No	
• 4.2.2 Physiography and Surficial Geology	No	
• 4.2.3 Hydrogeology	**Yes**	Table 5.1
• 4.2.4 Extractive Resources: Aggregates and Petroleum Resources	No	
• 4.2.5 Soil and Soil Capability	No	
• 4.2.6 Agricultural Tile Drains	No	

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Section in 2019 Environmental Report	Change from 2019 Environmental Report (Yes/No)	Section in 2026 Addendum
• 4.2.7 Natural Hazards	No*	* As noted in Section 1.3.3., Ontario Regulation 41/24 is now in effect.
	New Section	Section 4.1.1 Soybean Cyst Nematode
Section 4.3 Biophysical Features		
• 4.3.1 Aquatic Features	**Yes**	Section 4.2.1
• 4.3.2 Designated Natural Areas and Vegetation	No	
• 4.3.3 Wildlife, Wildlife Habitat and Species at Risk	**Yes**	Section 4.2.2
Section 4.4 Socio-Economic Environment		
	New Section	Section 4.3.1 Demographics
• 4.4.1 Employment and Business	**Yes**	Section 4.3.2
• 4.4.2 Community Services & Infrastructure	No	
• 4.4.3 Perceived Health and Well-Being	No	
• 4.4.4 Infrastructure	No	
• 4.4.5 Air Quality and Noise	No	
• 4.4.6 Contamination	No	
• 4.4.7 Waste Management	No	
• 4.4.8 Land Use	**Yes**	Section 4.3.3

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Section in 2019 Environmental Report	Change from 2019 Environmental Report (Yes/No)	Section in 2026 Addendum
• 4.4.9 Archaeological Resources	**Yes**	Section 4.3.4
• 4.4.10 Cultural Heritage Resources	**Yes**	Section 4.3.5
• 4.4.11 Indigenous Interests	No	
Section 4.5 Summary of Recommendations	**Yes**	Section 5.0
Section 5.0 Cumulative Effects Assessment		
• 5.1 Methodology	No	
• 5.2 Study Boundaries	No	
• 5.3 Project Inclusion List	**Yes**	Section 6
• 5.4 Analysis of Cumulative Effects	**Yes**	Section 6.1
• 5.4.1 Construction Year 2021	**Yes**	Section 6
• 5.4.2 Operation and Maintenance Year 2026	**Yes**	Section 6
Section 5.5 Summary of Cumulative Effects	No	
Section 6.0 Monitoring and Contingency Plans		
Section 6.1 Monitoring	No	
• 6.1.1 Exposed Soils	No	
• 6.1.2 Water Wells	No	
• 6.1.3 Watercourse Crossings	No	
• 6.1.4 Vegetation and Wetlands	No	
• 6.1.5 Species at Risk	No	

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Section in 2019 Environmental Report	Change from 2019 Environmental Report (Yes/No)	Section in 2026 Addendum
• 6.1.6 Cultural Heritage Resources	No	
• 6.1.7 Residents and Businesses	No	
• 6.1.8 Municipal Roads	No	
Section 6.2 Contingency	No	
• 6.2.1 Watercourse Sedimentation	No	
• 6.2.2 Accidental Spills	No	
• 6.2.3 Unexpected Finds: Archaeological or Heritage Resources	No	
• 6.2.4 Unknown Contaminated Soils	No	
Section 7.0 Conclusion	**Yes**	Section 7
Section 8.0 References	**Yes**	Section 8
Appendix A: Route Figures	No	
	New Appendix	Appendix A: Dawn Parkway System Expansion: Kirkwall-Hamilton Pipeline Section: Environmental Report 2019
Appendix B: Consultation	**Yes**	Appendix B: Consultation
Appendix C: Existing Conditions Figures	**Yes**	Appendix C: -Potential Watercourse Crossings -Floodplain and Regulation Limit

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Section in 2019 Environmental Report	Change from 2019 Environmental Report (Yes/No)	Section in 2026 Addendum
Appendix D: Terrestrial Habitat	**Yes**	Appendix D: Terrestrial Habitat
Appendix E: Contamination Overview Study	No	
Appendix F: Stage 1 Archaeological Assessment	No	
Appendix G: Cultural Heritage Assessment Report	**Yes**	Appendix E: Cultural Heritage Memo
	New Appendix	Appendix F: Acceptance Letter and Stage 2 Archaeological Assessment Report
	New Appendix	Appendix G: DFO-Enbridge Gas Generic Watercourse Crossing Drawings

1.3 Regulatory Changes

1.3.1 Ontario Energy Board 2023 Guidelines

In March 2023, the OEB released the 8th edition of the *Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Projects and Facilities in Ontario*. The updates to the 8th edition of the Environmental Guidelines focus on how Ontario Pipeline Coordinating Committee (OPCC) members provide comments on individual hydrocarbon projects. The OPCC members are required to review each project and are to provide further guidance that state the permits and approvals that OPCC member agencies may require for the proposed projects. The key revision requires the Ministry

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of Energy and Mines (MEM) to delegate the procedural aspects of the Duty to Consult to proponents which includes a list of Indigenous communities to engage.

1.3.2 Species Conservation Act, 2025

The provincial *Species Conservation Act, 2025 (SCA)* came into effect on March 30, 2026, which replaced the former *Endangered Species Act, 2007 (ESA)* and represents a shift in how impacts to species at risk (SAR) are regulated in the province. One of the purposes of the SCA is to provide for the protection and conservation of SAR while considering social and economic considerations, including the need for sustainable economic growth in Ontario. The SCA provides a "*registration first approach*" where most activities in Ontario can obtain authorization through an online registry. An associated Conservation Plan must be prepared by a Qualified Professional, outlining mitigation requirements. In circumstances where impacts to SAR or their habitats cannot be avoided through mitigation, and a residual impact remains, Conservation Measures (i.e., offsetting) and monitoring are also required.

The Protected Species in Ontario List (PSOL) outlines those species protected under the SCA and generally aligns with species protected under the ESA, with a few notable exceptions. Migratory birds (protected under the federal *Migratory Birds Convention Act, 1994* [MBCA]) and aquatic species (protected under the federal *Fisheries Act*) are no longer listed provincially, if they are protected under the federal *Species at Risk Act* (SARA) as endangered or threatened species. These species continue to be protected under the SARA, and permits may be required where impacts to species or habitats occur.

Protected habitat under the SCA has been redefined as a "*dwelling place, such as a den, nest or other similar place, that is occupied or habitually occupied*" and the immediately surrounding area – which in most cases is interpreted as the entire habitat feature within which the dwelling place resides.

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1.3.3 Ontario Regulation 41/24, Prohibited Activities, Exemptions, and Permits under the Conservation Authorities Act.

Ontario Regulation 41/24, which came into effect on April 1, 2024, establishes province-wide requirements governing prohibited development activities, exemptions, and permitting under the *Conservation Authorities Act*. The regulation consolidated and replaced the thirty-six individual Conservation Authority regulations previously in effect across Ontario, creating a single, standardized regulatory framework for all Conservation Authorities. While most of the processes have remained, some changes were made to simplify development and support construction.

1.3.4 Environmental Activity and Sector Registry (EASR) (surface and groundwater) under the *Ontario Water Resources Act* (1990)

Since 2019, Ontario's regulatory framework for groundwater takings and construction dewatering has evolved to allow certain defined, lower-risk and temporary water-taking activities to proceed through registration on the Environmental Activity and Sector Registry (EASR). Water-taking activities that do not meet the applicable EASR eligibility requirements remain subject to the Permit to Take Water (PTTW) process.

Effective July 1, 2025, amendments to Ontario Regulation 63/16 introduced significant changes to the regulatory requirements applicable to construction-site dewatering. The amendments removed the former volumetric threshold for qualifying construction dewatering activities registered through the EASR. As a result, eligible construction dewatering activities may be registered through the EASR regardless of the volume of water taken and are no longer required to obtain a PTTW solely because the previous EASR volume threshold is exceeded.

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EASR registration remains subject to applicable eligibility and technical requirements. This includes completion of the required technical assessment by a qualified person and implementation of appropriate measures to address potential effects on other water users, water discharge, erosion and sediment control, contingency measures, and applicable notification requirements. Activities that do not satisfy the prescribed EASR eligibility criteria remain subject to the applicable permitting requirements.

1.3.5 Fisheries Act

The federal *Fisheries Act* (Government of Canada 2025) is the primary legislation governing fish and fish habitat in Canada.

On October 15, 2026, there were substantial changes to several regulations and policies associated with the *Fisheries Act*. A summary has been posted in the Canada Gazette (Canada Gazette, Part 2, Volume 160, Number 13: Regulations Amending the Authorizations Concerning Fish and Fish Habitat Protection Regulations); however, it is anticipated that additional changes will be released concurrently and following the October 15 changes.

The new project submission tool, implemented in October 2026, will be employed to submit the project for review by DFO if it is deemed that the project cannot adhere to the DFO-Enbridge Generic Watercourse Crossing Drawings (see Appendix G).

1.4 Additional Environmental Regulatory Processes

Enbridge Gas will also be required to obtain additional environmental permits, approvals and notifications from federal and provincial agencies as outlined in Table 1.2 below. As previously noted, some regulations have changed since the 2019 Environmental Report, and this Addendum will serve to support these permit and approval applications and notifications.

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Table 1.2 Summary of Potential Environmental Permits/ Regulatory Requirements

Federal Permits and Approvals

Permit/Approval Name	Administering Agency	Description
Clearing of vegetation in accordance with the *Migratory Birds Convention Act, 1994* (MBCA) and *Migratory Birds Regulation, 2022* (MBR)	Environment and Climate Change Canada (ECCC)	ECCC does not require a permit to be issued for vegetation clearing, however, precautions need to be taken so that breeding birds and their nests are not harmed or destroyed during the bird nesting season because of construction of the Project. A registration under the Abandoned Nest Registry and monitoring program or a permit is required to remove nests of MBR Schedule 1 species. This includes Pileated Woodpecker (*Dryocopus pileatus)* and Great Blue Heron (*Ardea herodias)* which could occur in the Project area, with monitoring periods of 36 and 24 months, respectively, under the registration approach.
Review and authorization under the *Fisheries Act* (amended in July 2026)	DFO	At detailed design, proposed work at locations that provide fish habitat will be reviewed to determine the potential for the Project to result in the death of fish or the harmful alteration, disruption, or destruction of fish habitat.
SARA (2002) (amended in February 2026)	DFO (aquatic species) ECCC (terrestrial species)	Permits are required by those persons conducting activities that may affect species listed on Schedule 1 of the *SARA* as extirpated, endangered, or threatened and which contravene the Act's general or critical habitat prohibitions in watercourses (aquatic species), on federal lands (terrestrial species), or are migratory birds on lands throughout Canada.

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Provincial Permits and Approvals

Permit/Approval Name	Administering Agency	Description
Development Permit under Ontario Regulation (O. Reg.) 41/24 of the *Conservation Authorities Act*	Conservation Halton (CH) and Hamilton Conservation Authority (HCA)	Required for works in CH and HCA Regulated Areas (see Appendix C).
EASR (surface and groundwater) under the *Ontario Water Resources Act* (1990) (amended in July 2025)	Ministry of the Environment, Conservation and Parks (MECP)	Under O. Reg. 63/16, all construction dewatering projects regardless of dewatering volume can be completed under an EASR.
Species Conservation Act, 2025 (SCA)	MECP	A registration under the *SCA* is required for activities that could adversely affect species listed on the PSOL.
Wildlife Scientific Collector's Authorization under the *Fish and Wildlife Conservation Act* (1997) (amended in June 2023)	Ministry of Natural Resources (MNR)	Permit required to relocate wildlife encountered during construction activities.
License to Collect Fish for Scientific Purposes under the *Fish and Wildlife Conservation Act* (1997) (amended in June 2023)	MNR	Permit required to relocate fish (and mussels) during construction activities.

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2 Route Selection

To provide additional context on the route selection process conducted in 2019, the following details are provided. The 2019 Environmental Report contains information on the selection of the pipeline route by defining routing parameters and outlining how alternative routes for the pipeline were identified and refined. Following this refinement, a comparative evaluation was completed that identified the routes as environmentally acceptable.

For the comparative evaluation, the alternative routes were first compared quantitatively through a Geographic Information System-based evaluation. The alternative routes were intersected with select environmental and socio-economic base data to determine potential interactions. This base data was acquired from relevant public digital data. Categories of intersected features, listed alphabetically, are:

- **Agricultural:** Prime Agricultural Land
- **Aquatic:** Watercourses, Wetlands
- **Route Characteristics:** Length, Length of Paralleled Infrastructure, Length of Greenfield Area Crossed
- **Socio-Economic:** Municipal Road Crossings, Property Parcels, Residences
- **Terrestrial:** Wooded Areas

Please see Figure 1 below where the alternative routes intersect these features.

The results of the quantitative comparative route evaluation are provided in Table 2.1.

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Table 2.1 Quantitative Comparative Route Evaluation (2019)

Category	Feature	Route A	Route Deviation A1	Route Deviation A2	Route B
Agricultural	Prime Agricultural Land Crossed (metres)	5,210	5,388	4,848	6,682
Aquatic	Watercourse Crossings *	4	4	3	2
	Wetlands Crossed (metres)	359	267	243	272
Route Characteristics	Length (metres)	10,129	10,309	10,635	11,933
	Parallel to Existing Pipelines (metres)	10,129	9,058	8,462	2,762
	Parallel to Power Transmission Line (metres)	0	0	0	5,892
	Greenfield area crossed (metres)	0	1,251	2,174	3,279
Socio-Economic	Municipal Road Crossings	4	4	4	5
	Property Parcels Crossed	31	33	34	37

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Category	Feature	Route A	Route Deviation A1	Route Deviation A2	Route B
	Residences within 50 metres	49	7	3	3
Terrestrial	Wooded Area Crossed (metres)	1,876	2,145	1,878	1,750

* Results based on the relevant published data available at the time. As outlined in Section 4.2.1 of this Environmental Report Addendum, updated base data has outlined that more watercourses will likely be crossed based on information available to date; field studies to be completed in 2027 will confirm watercourse numbers along with aquatic habitat conditions.

Based solely on the quantitative evaluation, the following advantages were noted:

- Route A: The shortest length, the greatest ability to parallel existing infrastructure, tied for the fewest road crossings, and the least number of property parcels crossed
- Route Deviation A1: Tied for the fewest road crossings
- Route Deviation A2: The least amount of prime agricultural land crossed, the least amount of wetlands crossed, tied for the fewest road crossings, and tied for the fewest residences within 50 metres
- Route B: The fewest watercourse crossings, tied for the fewest residences within 50 metres, and the least amount of wooded areas crossed

A further qualitative evaluation of the data generated in Table 2.1, and the alternative routes generally, was then completed. Based on this evaluation, Route A was found to have many advantages.

First, Route A has the shortest length, meaning fewer impacts to all land and their features. Second, Route A has the greatest ability to locate the proposed pipeline parallel and overlapping existing infrastructure. Enbridge Gas has determined that over 40% (12 of the 28 m total) of the required permanent easement for the project could be

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overlapped with the existing, previously disturbed pipeline easement. The ability to overlap the existing easement by 12 m reduces the impact to previously undisturbed land to 16 m. Given the 40% reduction, Route A would have the least impact on previously undisturbed prime agricultural land, wetlands, and wooded areas, and would avoid fragmenting previously undisturbed lands. The overlap also enables Enbridge Gas and Stantec to make use of the knowledge gained from the 1991 construction of the 48-inch diameter pipeline regarding potential to encounter groundwater and archaeological finds.

Route A is tied for the most watercourse crossings. With the use of standard watercourse crossing mitigation measures as outlined in Table 4.11 of the 2019 Environmental Report and Table 5.1 of this Addendum Environmental Report, including adherence to the DFO-Enbridge Generic Watercourse Crossing details provided in Appendix G, it is the experience of Stantec that following construction and restoration there will be little evidence that a pipeline exists. Route A will also disturb the most residences within 50m of the pipeline. A field visit by Enbridge Gas in the fall of 2018 confirmed that from a construction and engineering aspect, it was feasible to construct Route A through the community of Antrim Glen. Impacts to all landowners, including Antrim Glen and the Ponderosa Nature Resort, will be managed through agreement with Enbridge Gas.

Given the above quantitative and qualitative comparative evaluations, it was determined that while all routes are environmentally acceptable, Route A would be carried forward as the preliminary preferred route. Route A was selected because it has the greatest use of an existing disturbed infrastructure corridor (allowing approximately 40% of the permanent easement width to overlap an existing pipeline corridor), reducing impact and fragmentation on undisturbed lands. Route A also has the shortest length. Although Route A has more watercourse crossings than 2 of the alternatives, and more nearby residences than the other alternatives, those impacts are localized and can be effectively mitigated through established construction and restoration measures and

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agreement with Enbridge Gas. The long-term environmental benefit of avoiding creation of a new greenfield corridor was determined to outweigh the incremental impacts associated with watercourse crossings and nearby residences.

Details on the confirmation of the preliminary preferred route as the preferred route are contained in Section 2.6 of the 2019 Environmental Report.

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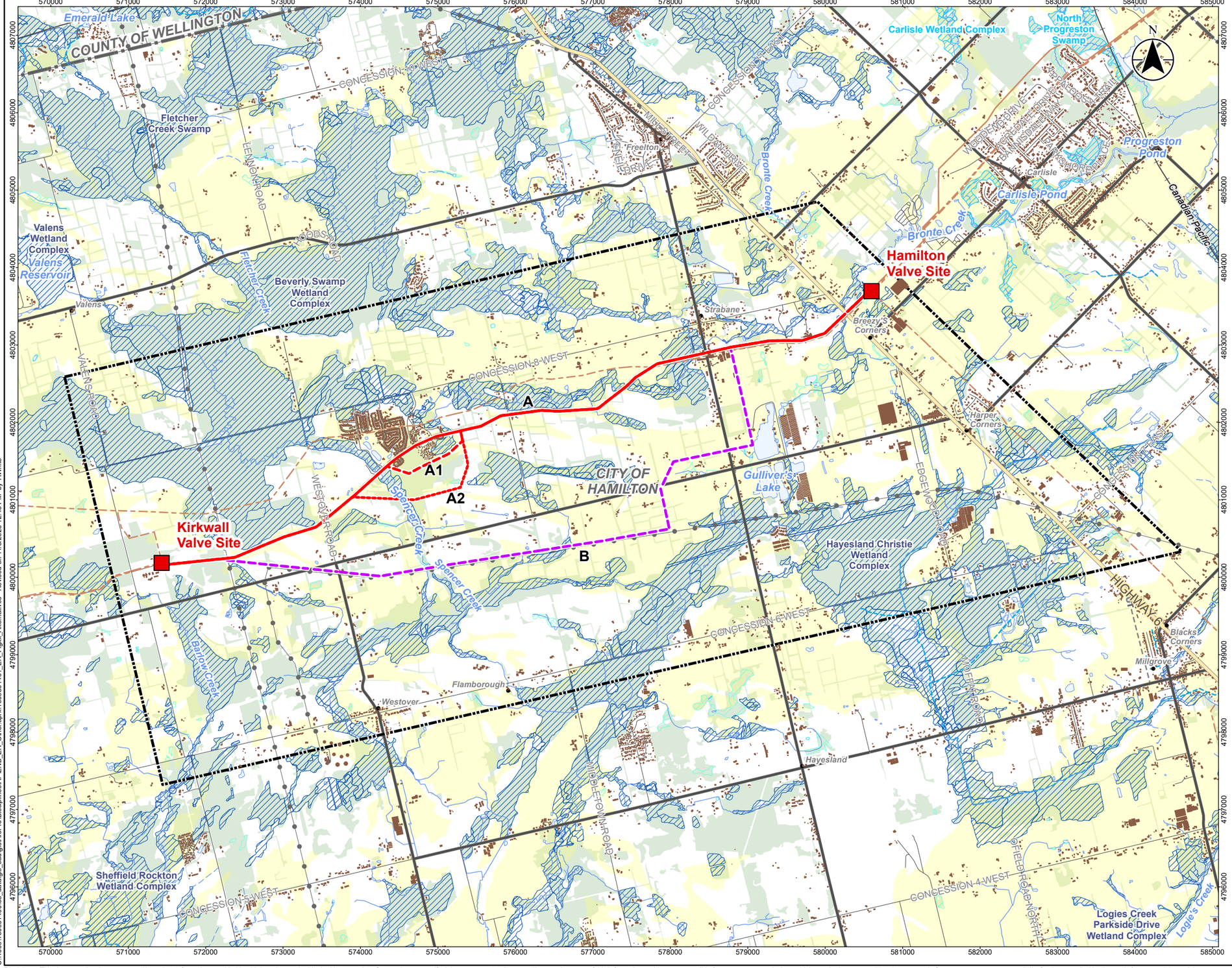


Stantec

Legend

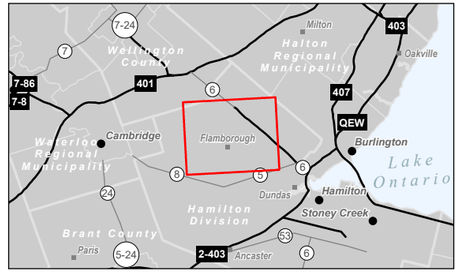
- Study Area
- Enbridge Station/ Valve
- Route Alternative A
- Route Alternative A1
- Route Alternative A2
- Route Alternative B1
- Constructed Drain
- Existing Pipeline
- Hydro Line
- Unknown Transmission Line
- Expressway / Highway
- Major Road
- Minor Road
- Railway
- Watercourse (Intermittent)
- Watercourse (Permanent)
- Municipal Boundary - Upper Tier
- Municipal Boundary - Lower Tier
- Soil (Canada Land Invenotry Class 1-3)
- Structure
- Wetland, Provincially Significant
- Wetland, Other Evaluated
- Wetland, Unevaluated
- Waterbody
- Wooded Area

0 1 2 km

1:50,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Contains information licensed under the Open Government Licence – Ontario, and the Open Government Licence - Canada, accessed 2026.



Project Location
City of Hamilton

REVA
Prepared by AWhite on 2026-11-05
Technical Review by MCandido on 2026-11-05

Client/Project
ENBRIDGE GAS INC.
DAWN PARKWAY RENEWAL PROGRAM:
KIRKWALL TO HAMILTON: ADDENDUM TO THE 2019 ENVIRONMENTAL REPORT

Figure No.
1

Title
Route Alternatives

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3 Engagement and Consultation Program

Consultation is an important component of the OEB *Environmental Guidelines* (2023). As noted by the OEB (2023), consultation is the process of identifying interested and potentially affected parties and informing them about the Project, soliciting information about their values and local environmental and socio-economic circumstances, and receiving input into key Project decisions before those decisions are finalized.

Stantec believes that community involvement and consultation is a critical and fundamental component of this environmental study, and that Indigenous community participation is essential to the Project. We also recognize that each potentially affected Indigenous community has unique conditions and needs and that the process followed may not satisfy the "duty to consult" component from an Indigenous community's perspective. To demonstrate that we respect this view, we will use the term "engagement" throughout the remainder of this Report when we refer to seeking input from Indigenous peoples.

An extensive engagement and consultation program was re-initiated for 2026 and is described in Sections 3.1 – 3.6 below.

3.1 Identifying Interested and Potentially Affected Parties

As part of the engagement and consultation process, Indigenous and stakeholder contact lists (including Agency, Municipal, and Interest Groups, Third-Party Utility Owners/Operators, and directly impacted and surrounding landowners) were developed in 2019. In 2026, the contact lists were revisited and updated to reflect changes in staff and agencies.

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3.1.1 Identifying Indigenous Peoples

Engagement with Indigenous peoples was guided by the OEB *Environmental Guidelines* (2023), as noted above, but also by the Enbridge Inc. Indigenous Peoples Policy.

Indigenous engagement commenced with the submission of a Project Description to the MEM. This submission to the MEM provided details on the Project location and sought to determine the requirements of the duty to consult. In Appendix B.1**,** potentially impacted Indigenous peoples were identified by the MEM in a Letter of Delegation dated August 19, 2026. The list of Indigenous communities remained the same as in 2019.

The Letter of Delegation confirmed that the MEM would be delegating the procedural aspects of consultation in respect to the Project and that, based on the Crown's assessment, the following Indigenous communities should be consulted:

- Mississaugas of the Credit First Nation (MCFN);
- Six Nations of the Grand River (SNGR); and
- Haudenosaunee Development Institute.

3.1.2 Identifying Interested and Potentially Affected Parties

Identification of interested and potentially affected parties was undertaken using a variety of sources, including the OEB OPCC Members List, MECP Environmental Assessment Government Review Team Master Distribution List, and the experience of Enbridge Gas and Stantec. As previously mentioned, the 2019 contact list was revisited and updated to reflect staffing changes and include new stakeholders.

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As the environmental study progressed, the initial stakeholder contact list evolved, and updates were made in response to changes in personnel, correspondence, and feedback gathered from the Notice of Upcoming Environmental Study and the Notice of Environmental Study Commencement and Information Sessions. Updates to the contact list also included adding directly impacted or surrounding landowners who had received the notices, and who had contacted the Project Team. The 2026 contact list is provided in Appendix B.2**.**

Directly affected and adjacent landowners were identified by Enbridge Gas.

3.2 Communication Methods

3.2.1 Letters and Emails

3.2.1.1 Notice of Upcoming Environmental Study

A Notice of Upcoming Environmental Study letter was sent via email to the Indigenous Contact List and the Stakeholder Contact List and mailed to landowners along the pipeline route on July 6, 2026. The Notice contained a description of the Project, a map of the general area where the Project would take place and contact details. A copy of the Notice and generic letters noted above are included in Appendix B.3**.**

Along with the Notice to the Indigenous Contact List, a Preliminary Desktop Environmental and Cultural Heritage Summary Memo was circulated. The Summary Memo outlined the preliminary findings of natural heritage features and cultural heritage information of the environmental study based on initial desktop research and was shared with Indigenous communities to support and facilitate ongoing consultation efforts. The Summary Memo is available in Appendix B.8**.**

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3.2.1.2 Notice of Environmental Study Commencement and Information Sessions

A Notice of Environmental Study Commencement and Information Sessions letter was sent via email to the Stakeholder Contact List on August 4, 2026, and to the Indigenous Contact List on August 6, 2026. The Notice of Environmental Study Commencement and Information Sessions letter was mailed to landowners along the pipeline route on August 4, 2026, and mailed to landowners via Canada Post Admail on August 4, 2026. The Notice provided information on the Project, the pipeline route, and the dates of the Virtual Information Session and In-Person Information Session.

On August 7, 2026, an email was sent to the previously listed parties with a corrected Virtual Information Session web address. On August 10, 2026, a letter was sent to landowners with a corrected Virtual Information Session web address.

A copy of the Notice and generic letters noted above are provided in Appendix B.4.

3.2.2 Newspaper Notice

A Notice of Environmental Study Commencement and Information Sessions was published in the August 8, 2026, edition of the Hamilton Spectator, and posted to their online edition. The notice provided information on the Project, the pipeline route, and the dates of Virtual Information Session and In-Person Information Session. A tear sheet from the newspaper notice, and the notices themselves, are provided in Appendix B.5.

3.2.3 Social Media

The Information Sessions and consultation opportunities were promoted through social media channels managed by Enbridge Gas, including Facebook and X. The social media campaign was used to raise awareness of the Project, provide information on public consultation opportunities, and direct interested parties to additional project information.

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The campaign generated engagement, receiving approximately 12,464 views and reaching 7,585 individual viewers. The social media posts resulted in 702 engagements, including 679 link clicks directing users to project information, 559 landing page views, 18 reactions, 4 shares, and 1 save.

3.2.4 Project Webpage

A Project webpage was developed by Enbridge Gas which contained information about the Project, a map of the Study Area, and the Project timeline. In the Project Information section of the webpage, there were tabs which contained other significant information such as project updates, calendar, consultation, regulatory information, and contact information. The Project webpage was communicated to interested and potentially affected parties in the letters, emails, and notice.

3.3 Engagement and Consultation Events

3.3.1 Virtual Information Session

The Virtual Information Session was accessible from August 17, 2026, to September 16, 2026, on a separate project website developed by Stantec. This period was selected to allow ample opportunity to review the Project information and provide input.

Presentation slides with a voice-over were developed for the Virtual Information Session. The presentation slides included the following general topics:

- Introduction
    - Project Overview and Purpose
    - Consultation & Indigenous Engagement
- Processes
    - Environmental Study Process
    - Regulatory approvals (OEB review and Leave to Construct application process)
    - Access and Land Requirements

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- Technical Processes
    - Open Trenching
    - Maintaining Agricultural Drainage Systems
- Existing Conditions (socio-economic features, cultural heritage resources, aquatic resources, terrestrial resources, agricultural soils)
- Next Steps

A link to a questionnaire and an interactive map were also provided. A downloadable version of the presentation slides, script, and the exit questionnaire were provided. The questionnaire requested feedback on a variety of topics including potential impacts, the pipeline route, and the content of the Virtual Information Session. The interactive map allowed attendees to view the route and Study Area on a web-based map. A search function was made available on the interactive map to locate a specific address, and to review natural environment map layers such as waterways and wooded areas.

For the Virtual Information Session, there were: one hundred and four (104) visits to the Project webpage, and nine (9) visits to the presentation. No questionnaires were submitted for the Virtual Information Session.

3.3.2 In-Person Information Session

An In-Person Information Session took place on August 25, 2026, from 5:00 PM to 8:00 PM at the Millgrove Community Centre in Millgrove, Ontario. Parties attending the In-Person Information Session were offered an opportunity to register their attendance; a total of forty-four (44) individuals attended the Session, and a total of thirty-four (34) individuals registered their attendance.

The In-Person Information Session provided attendees with an opportunity to review display boards and maps describing the Project. The display boards included the same content as described above for the Virtual Information Session.

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Representatives from Enbridge Gas and Stantec were available to answer questions, provide clarification on Project information, and discuss comments or concerns raised by attendees. A questionnaire was made available to attendees to provide feedback on the Project. Light refreshments and snacks were also provided during the event.

Four (4) questionnaires were submitted from the In-Person Information Session.

Copies of the display boards and questionnaire are provided in Appendix B.6**.**

3.3.3 Meetings

3.3.3.1 Six Nations of the Grand River Meeting #1

An In-Person meeting between SNGR, Enbridge Gas, and Stantec was held on September 1, 2026, at the SNGR office located at 2498 Chiefswood Road, Ohsweken, Ontario. The main topics of discussion were:

- Project details and the route selection process that occurred in 2019;
- Previous and future ecological surveys and archaeological assessments (AAs);
- Potential impacts on wildlife, woodlots, wetlands and watercourses, and associated mitigation, restoration and monitoring programs;
- SNGR species of significance;
- Tree removal and replacement; and
- Construction techniques, easement location and requirements, land ownership, and land use requirements during construction.

3.3.3.2 Six Nations of the Grand River Meeting #2

An In-Person meeting between SNGR, Enbridge Gas, and Stantec was held on October 29, 2026, at the SNGR Sports and Cultural Memorial Centre located at 1738 4th Line, Ohsweken, Ontario. The main topics of discussion were:

- The route selection process that occurred in 2019;
- Project schedule;
- Timeline for review of Project documents by SNGR’s consultant;

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- Tree removal and tree replacement ratio; and
- SNGR identifying the cultural importance of all species.

3.3.3.3 City of Hamilton Meeting

An introductory meeting was held with City of Hamilton staff on September 16, 2026, to introduce the Project and discuss key aspects of the proposed work, including the Project need, location, anticipated construction duration, and proposed construction methods. City staff provided information regarding applicable design, permitting, and approval requirements. Key topics discussed included procedures and requirements associated with road crossings, tree inventory requirements for municipal lands, and coordination with the City regarding planned road works along Safari Road. It was agreed that a follow-up meeting would be held to continue discussions and address outstanding items. The follow-up meeting is tentatively scheduled for November 16, 2026.

3.3.3.4 Hamilton Conservation Authority Meeting

A Virtual Meeting between Hamilton Conservation Authority (HCA), Enbridge Gas, and Stantec was held on September 29, 2026. The main topics of discussion included the location of the proposed pipeline on HCA owned lands, additional easement requirements and locations, and request from HCA to reaffirm results from the 2020 Environmental Impact Study completed on HCA owned lands. Following the meeting Enbridge Gas provided updated property figures and HCA noted comments would be provided on the Project following review of the figures.

3.4 Input Received

The engagement and consultation program allowed interested or potentially affected parties to provide input into the Project. Input was evaluated and where applicable, integrated. Comment-response summary tables are provided in Appendix B.7.

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3.4.1 Interest Group Input

As of November 3, 2026, the following comments were received from stakeholders and interest groups:

- Hydro One Networks Inc. (HONI) stated that there is an existing high voltage Transmission facility in Study Area and shared a map. HONI requested to be included in Project updates so they can provide alternative solutions if there are conflicts with their assets. If the Project results in HONI station expansion or transmission line relocation/ replacement an Environmental Assessment is required (minimum 6 months for the process, up to 18 months) and Enbridge Gas must consult HONI.
- TransCanada Pipelines Limited (TCPL) provided a response letter and requested to be added to the contact list for future notifications. The letter included TCPL's general building restrictions, construction requirements, crossing TCPL utilities and protocols regarding accessing the TCPL right-of-way.
- On behalf of Ponderosa Nature Resort, New Country Investors provided a letter to Enbridge Gas which included questions pertaining to project routing, emergency accessibility, seasonal and hourly work timing, fieldwork scope, property restoration and other past commitments made by Enbridge Gas. Enbridge Gas is continuing to consult with representatives of Ponderosa Nature Resort.

3.4.2 Indigenous Input

Enbridge Gas is committed to creating processes that support meaningful engagement with potentially affected Indigenous peoples. Enbridge Gas works to build an understanding of project related interests, ensure regulatory requirements are met, mitigate, or avoid project-related impacts on Aboriginal interests including rights, and provide mutually beneficial opportunities where possible.

The MCFN and the SNGR expressed interest and are participating in the Stage 3 Archaeological Assessment. SNGR participated in ecological surveys, while MCFN did not have staff available to participate. Both MCFN and SNGR expressed interest in participating in the future remaining Stage 2 Archaeological Assessment.

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Enbridge Gas will continue to meaningfully engage with affected Indigenous peoples through phone calls, virtual and in-person meetings, and email communication. Enbridge Gas has committed to monthly meetings with SNGR to discuss Project updates, respond to questions and concerns, and address any interests or concerns expressed, and to appropriately mitigate any Project-related impacts.

Enbridge Gas continues to communicate their willingness to meet with MCFN and the Haudenosaunee Development Institute. Enbridge Gas has completed and submitted the Haudenosaunee Development Institute's project charter form.

Enbridge Gas will continue to work with Indigenous peoples following the distribution of the Addendum.

To accurately document Indigenous engagement activities and ensure follow-up, applicable supporting documents are tracked. Indigenous consultation has been included in the comment-response summary table and corresponding comment records will be submitted to the OEB upon the filing of the Project application. Details of engagement completed up to October 23, 2026, are presented in the Enbridge Gas Indigenous Consultation Record located in Appendix B.9.

3.4.3 Public Input

During the In-Person Information Session, four (4) questionnaires were received. The overall concerns regarding the Project activities included the following themes:

- Impact on the environment including watercourses, wetlands, woodlands, wildlife and wildlife habitat;
- Impact on SAR such as Blanding's Turtle;
- Reliance on fossil fuels;
- Restoration efforts once the Project has been constructed; and
- Impacts from construction activities such as traffic, noise and dust.

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3.4.4 Agency Input

Federal Agencies and Authorities

As of November 3, 2026, no comments have been received from Federal Agencies.

Provincial Agencies and Authorities

Three (3) comments have been received as of November 3, 2026, and were considered in the preparation of this Addendum. A summary of the comments received is provided below:

- CH - Stated that a permit from CH will be required for the proposed activities as portions of the proposed pipeline route are located in regulated lands, tributaries of Bronte Creek, Provincially Significant Wetland and areas containing flooding and erosion hazards (see Appendix C). Areas in the Study Area are also owned by CH. Further consultation with CH is required to discuss any access on CH owned lands.
- Grand River Conservation Authority (GRCA) - Stated that the Project is on the edge of the GRCA watershed and there are no regulated features intersecting the proposed pipeline route. GRCA would like to review draft reports and documentation as the Project progresses.
- HCA - Stated that a permit from HCA may be required for the proposed activities as portions of the proposed pipeline route are in regulated lands as well as areas owned by HCA (see Appendix C). HCA also requested notification when access to their land is required.

Ontario Pipeline Coordinating Committee Members

Three (3) comments were received from the OPCC members:

- MEM provided a Letter of Delegation detailing the Indigenous peoples whose Aboriginal and treaty rights may be impacted by the Project.

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- The Ministry of Citizenship and Multiculturalism (MCM) provided an initial letter regarding the Project providing recommendations to identify cultural heritage resources, archaeological resources and built heritage resources in the Study Area to be summarized or included in the Environmental Report, AA reports, and Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment.
- The Technical Standards and Safety Authority had no comments but requested that Enbridge Gas submits the Application for Review of Pipeline Project.

3.4.5 Municipal Input

As of November 3, 2026, one (1) comment was received from municipal staff. The City of Hamilton requested that Enbridge Gas provide updated Project timelines and confirm that the Mayor's Office had been notified of the Project.

3.5 Issues Resolution

Should feedback occur that cannot immediately be resolved, Enbridge Gas will endeavour to reach a resolution through meetings and discussions as appropriate and will inform the OEB where there are issues that have not been resolved.

3.6 Refinements Based on Input

At each stage of the engagement and consultation program, input received was compiled, reviewed, and incorporated into the environmental study process. Responses were provided, as applicable, to questions and comments received. Responses to comments received can be found in Appendix B.7**.**

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Feedback received from SNGR has resulted in changes to natural heritage field survey and post-construction monitoring programs. During the 2027 field program bat acoustic monitoring will be undertaken. Following construction, where construction activities occur in wetlands, a 5-year monitoring program will be implemented to monitor rehabilitation efforts. Enhanced hydrogeology mitigation measures were added including placing an impervious tarp under equipment/vehicles with the potential for spills when servicing. Enbridge Gas is also reviewing potential enhancements to their 3:1 tree replacement program. Additional pipeline route selection information (see Section 2) has been provided based on comments received. Stantec will also incorporate SNGR culturally significant species into the 2026 and 2027 field surveys.

Enbridge Gas has committed to on-going engagement and consultation with directly affected and interested parties through detailed design and construction and will continue to respond to concerns through the life of the Project.

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4 Existing Conditions

4.1 Physical Features

4.1.1 Soybean Cyst Nematode

Soybean cyst nematode (SCN) (*Heterodera glycines*) is a soil borne parasite that can significantly impact soybean yields. SCN can be spread in many ways such as wind, animals, or in topsoil stuck to machinery as the machinery passes from an impacted field to a non-impacted field. Once a field has been infested, there is significant potential for soybean crop yield reductions (Olechowski 1990).

4.2 Biophysical Features

As discussed in Section 1.3.2, the SCA came into effect in 2026 which replaces the former ESA. The SCA provides a "*registration first approach*" where most activities in Ontario can obtain authorization through an online registry. Based on the field studies that were completed in 2019 it is anticipated that the Project will potentially impact SAR and/or their habitat and will need to be registered under the SCA.

Due to the duration of time that has passed since 2019, ecological surveys that were completed in 2019 will be completed again in the fall of 2026 and into 2027.

4.2.1 Aquatic Features

Land Information Ontario is now Geospatial Ontario. Mapping of watercourses was updated in Geospatial Ontario (MNR 2026). There are now potentially at least 6 mapped watercourses that will be crossed by the proposed pipeline route (see Appendix C). Field studies to be completed in 2027 will confirm aquatic habitat conditions in these watercourses including if they are permanent or intermittent.

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DFO has also updated their aquatic SAR mapping (DFO 2026a). Spencer Creek at the proposed crossing location (identified as SC2 in 2019) is now considered Critical Habitat for Redside Dace (*Clinostomus elongatus*). Critical Habitat includes the watercourse as well as contiguous riparian vegetation within the meander belt and an additional 30 m. It should be noted that the Federal Redside Dace Recovery Strategy and Action Plan (proposed) 2024 lists Redside Dace as may being extirpated in Spencer Creek.

4.2.2 Wildlife, Wildlife Habitat and Species at Risk

Significant Wildlife Habitat (SWH)

Wildlife habitat is defined as an area where plants, animals, and other organisms live, including areas where species concentrate at a vulnerable point in their life cycle, and areas that are important to migratory and non-migratory species (MNR 2000). SWH is grouped into four categories:

1. Seasonal concentration areas
2. Animal movement corridors
3. Rare vegetation communities or specialized habitats
4. Habitats of species of conservation concern (SOCC)

The presence of SWH along the proposed pipeline route was determined in two ways. First, publicly available NHIC data was reviewed for SWH (MNR 2026b). Second, potential SWH was identified using the Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (OMNR 2015) which provide descriptions of wildlife habitats and guidance on criteria for determining the presence of SWH. Details of the significant wildlife assessment are summarized below.

<u>Habitat for SOCC</u>

Habitats of SOCC include wildlife species that are listed as Special Concern or rare, are declining, or are featured species in the province. Habitats of Species of Conservation

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Concern do not include habitats of Endangered or Threatened species as identified in the Ontario SCA.

For the purposes of this report, SOCC are defined as:

- Species designated as Endangered, Threatened, or Special Concern determined by the Committee on the Status of Species at Risk in Ontario (COSSARO) but are not listed in the Protected Species in Ontario List (PSOL) under the SCA.
- Provincially rare species determined by status rankings (S-ranks) for S1-S3 ranked species 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 100 occurrences
- Endangered, Threatened, or Special Concern species listed on Schedule 1 of the federal SARA and/or the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

The NHIC database was searched to obtain recent records (1990 - present) of SOCC (S1-S3 ranked species and provincially designated Special Concern species) in the vicinity of the proposed pipeline route (MNR 2026b). The Ontario Breeding Bird Atlas (OBBA; Cadman et al. 2007), the Ontario Reptile and Amphibian Atlas (ORAA; Ontario Nature 2019) and the Ontario Mammal Atlas (OMA; Dobbyn 1994) were also searched. The exact location of species occurrences is not available from these atlases; instead, occurrences are recorded within 1 x 1 km or 10 x 10 km squares.

Based on a review of background information, 59 SOCC are known to occur in the vicinity of the proposed pipeline route, as shown in Table 4.1: 14 plants, nine insects, six reptiles, two amphibians, and 28 birds. The potential for SOCC to be present along the proposed pipeline route is limited by habitat suitability and availability; therefore, species listed in Table 4.1 may not occur along the proposed pipeline route. An assessment of candidate habitat and/or habitat use for individual SOCC will be completed during the 2026-2027 field investigations.

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Table 4.1 Species of Conservation Concern

Plants

Common Name	Scientific Name	S-Rank	Provincial Status (COSSARO)	Federal Status (SARA)	COSEWIC Status	Source
Algal Pin Lichen	*Chaenothecopsis pusiola*	S1S2	-	-	-	NHIC
Blushing Scale Lichen	*Psora decipiens*	S3	-	-	-	NHIC
Broad Beech Fern	*Phegopteris hexagonoptera*	S3	-	-	SC	NHIC
Eastern Burning Bush	*Euonymus atropurpureus*	S3	-	-	-	NHIC
Eastern Few-fruited Sedge	*Carex oligocarpa*	S3	-	-	-	NHIC
Field Thistle	*Cirsium discolor*	S3	-	-	-	NHIC
Fragrant Macewort	*Mannia fragrans*	S2	-	-	-	NHIC
Lyell's Ribbonwort	*Pallavicinia lyellii*	S3	-	-	-	NHIC
Perfoliate Bellwort	*Uvularia perfoliata*	S1S2	-	-	-	NHIC
Reticulate Shield Lichen	*Crespoa crozalsiana*	S2S3	-	-	-	NHIC
Scarlet Beebalm	*Monarda didyma*	S3	-	-	-	NHIC

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Common Name	Scientific Name	S-Rank	Provincial Status (COSSARO)	Federal Status (SARA)	COSEWIC Status	Source
Slender Mountain-mint	*Pycnanthemum tenuifolium*	S3	-	-	-	NHIC
-	*Anisomeridium biforme*	S3?	-	-	-	NHIC
-	*Acrocordia conoidea*	S3	-	-	-	NHIC

Insects

Common Name	Scientific Name	S-Rank	Provincial Status (COSSARO)	Federal Status (SARA)	COSEWIC Status	Source
American Bumble Bee	*Bombus pensylvanicus*	S3	SC	SC	SC	NHIC
Mocha Emerald	*Somatochlora linearis*	S2	-	-	-	NHIC
Painted Skimmer	*Libellula semifasciata*	S3	-	-	-	NHIC
River Bluet	*Enallagma anna*	S3	-	-	-	NHIC
Sleepy Duskywing	*Erynnis brizo*	S1	-	-	-	NHIC
Spatterdock Darner	*Rhionaeschna mutata*	S3	-	-	-	NHIC
Unicorn Clubtail	*Arigomphus villosipes*	S3	-	-	-	NHIC

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Common Name	Scientific Name	S-Rank	Provincial Status (COSSARO)	Federal Status (SARA)	COSEWIC Status	Source
American Bumble Bee	*Bombus pensylvanicus*	S3	SC	SC	SC	NHIC
Yellow-banded Bumble Bee	*Bombus terricola*	S3S5	SC	SC	SC	NHIC

Reptiles

Common Name	Scientific Name	S-Rank	Provincial Status (COSSARO)	Federal Status (SARA)	COSEWIC Status	Source
Eastern Milksnake	*Lampropeltis triangulum*	S3	NAR	SC	SC	NHIC; ORAA
Eastern Ribbonsnake	*Thamnophis sauritus*	S4	SC	-	SC	NHIC, ORRA
Eastern Musk Turtle	*Sternotherus odoratus*	S3	SC	SC	SC	ORAA
Midland Painted Turtle	*Chrysemys picta marginata*	S4	NAR	SC	SC	NHIC; ORAA
Northern Map Turtle	*Graptemys geographica*	S3	SC	-	SC	ORAA
Snapping Turtle	*Chelydra serpentina*	S4	-	SC	SC	NHIC; ORAA

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Amphibians

Common Name	Scientific Name	S-Rank	Provincial Status (COSSARO)	Federal Status (SARA)	COSEWIC Status	Source
Mudpuppy	*Necturus maculosus*	S4	SC	-	SC	ORAA
Western Chorus Frog - Great Lakes - St. Lawrence - Canadian Shield population	*Pseudacris maculata pop. 1*	S4	-	THR	THR	NHIC

Birds

Common Name	Scientific Name	S-Rank	Provincial Status (COSSARO)	Federal Status (SARA)	COSEWIC Status	Source
Acadian Flycatcher	*Empidonax virescens*	S1B	-	END	END	NHIC
American Coot	*Fulica americana*	S3B, S4N	-	-	NAR	NHIC; OBBA
Bank Swallow	*Riparia riparia*	S4B	THR	THR	THR	OBBA
Barn Swallow	*Hirundo rustica*	S4B	SC	SC	SC	NHIC; OBBA
Blue-winged Teal	*Spatula discors*	S3B, S4M	-	-	-	NHIC; OBBA

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Common Name	Scientific Name	S-Rank	Provincial Status (COSSARO)	Federal Status (SARA)	COSEWIC Status	Source
Bobolink	*Dolichonyx oryzivorus*	S4B	THR	SC	SC	NHIC; OBBA
Canada Warbler	*Cardellina canadensis*	S5B	SC	SC	SC	NHIC; OBBA
Caspian Tern	*Hydroprogne caspia*	S3B, S5M	-	-	NAR	NHIC
Cerulean Warbler	*Setophaga cerulea*	S2B	-	END	END	NHIC
Chimney Swift	*Chaetura pelagica*	S3B	THR	THR	THR	OBBA
Common Gallinule	*Gallinula galeata*	S3B	-	-	-	NHIC; OBBA
Common Nighthawk	*Chordeiles minor*	S4B	SC	SC	SC	OBBA
Eastern Meadowlark	*Sturnella magna*	S4B, S3N	THR	THR	THR	NHIC; OBBA
Eastern Whip-poor-will	*Antrostomus vociferus*	S4B	SC	SC	SC	NHIC; OBBA
Eastern Wood-pewee	*Contopus virens*	S4B	SC	SC	SC	NHIC; OBBA
Golden-winged Warbler	*Vermivora chrysoptera*	S3B	-	THR	THR	NHIC; OBBA

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Common Name	Scientific Name	S-Rank	Provincial Status (COSSARO)	Federal Status (SARA)	COSEWIC Status	Source
Grasshopper Sparrow	*Ammodramus savannarum*	S4B	SC	-	SC	NHIC; OBBA
Least Bittern	*Botaurus exilis*	S4	SC	THR	THR	NHIC; OBBA
Loggerhead Shrike	*Lanius ludovicianus*	S1B	END	-	END	
Louisiana Waterthrush	*Parkesia motacilla*	S2B	THR	THR	THR	OBBA
Purple Martin	*Progne subis*	S3B	-	-	-	OBBA
Prairie Warbler	*Setophaga discolor*	S2B	-	-	NAR	NHIC
Prothonotary Warbler	*Protonotaria citrea*	S1B	END	END	END	OBBA
Red-headed Woodpecker	*Melanerpes erythrocephalus*	S3	END	END	END	NHIC; OBBA
Tufted Titmouse	*Baeolophus bicolor*	S3	-	-	-	OBBA
Upland Sandpiper	*Bartramia longicauda*	S2B	-	-	-	NHIC; OBBA
Wood Thrush	*Hylocichla mustelina*	S4B	SC	THR	THR	NHIC; OBBA
Yellow-breasted Chat	*Icteria virens*	S1B	-	-	END	NHIC

Sources:

MNR 2026b (NHIC), Cadman et. al. 2007 (OBBA), Ontario Nature 2019 (ORAA)

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END – Endangered - a species facing imminent extinction or extirpation

THR – Threatened - a species that is at risk of becoming endangered

SC - Special Concern - a species with characteristics that make it sensitive to human activities or natural events

NAR – Not at Risk

S1: Critically Imperiled—Critically imperiled in the province (often 5 or fewer occurrences)

S2: Imperiled — Imperiled in the province, few populations (often 20 or fewer)

S3: Vulnerable—Vulnerable in the province, relatively few populations (often 100 or fewer)

S4: Apparently Secure—Uncommon but not rare

S5 - Secure, common, widespread and abundant

S? – Rank Uncertain

S#B- Breeding status rank

S#N- Non-breeding status rank

S#M- Migratory status rank

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

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Candidate habitat for SOCC as defined in the SWH Criteria Schedules for Ecoregion 6E (OMNR 2015) may be present in the proposed pipeline route, as detailed in Table D-1, Appendix D. The candidate habitat identified as potentially present includes marsh breeding birds, shrub/early successional breeding bird habitat, terrestrial crayfish, as well as for Special Concern and rare species. The full list of candidate SWH is identified is in Appendix D.

Species at Risk

For the purpose of this report, SAR are those species identified as Endangered or Threatened on the PSOL as published by provincial (SCA) legislation.

The NHIC database (MNR 2026b) was searched to obtain recent records (1990–present) of SAR from the vicinity of the proposed pipeline route. The OBBA (Cadman et al. 2007), the ORAA (Ontario Nature 2019) and the OMA (Dobbyn 1994) were also searched. The exact location of species occurrences is not available from these atlases; instead, occurrences are recorded within 1 x 1 km or 10 x 10 km squares.

Based on a review of background information, 22 SAR are known to occur in the vicinity of the proposed pipeline route, as shown in Table 4.2: Ten plants, one insect, two reptiles, two amphibians, and seven mammals. An assessment of candidate habitat and/or habitat use for SAR will be completed during the 2026-2027 field investigations.

Table 4.2 Potential Terrestrial Species at Risk (Threatened or Endangered) Along the Proposed Route

Plants

Common Name	Scientific Name	PSOL (SCA)	Source
American Chestnut	*Castanea dentata*	END	NHIC
American Columbo	*Frasera caroliniensis*	END	NHIC
Black Ash	*Fraxinus nigra*	END	NHIC
Butternut	*Juglans cinerea*	END	NHIC

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Common Name	Scientific Name	PSOL (SCA)	Source
Downy Yellow False Foxglove	*Aureolaria virginica*	END	NHIC
Eastern Flowering Dogwood	*Cornus florida*	END	NHIC
Fern-leaved Yellow False Foxglove	*Aureolaria pedicularia*	THR	NHIC
Few-flowered Club-rush	*Trichophorum planifolium*	END	NHIC
Red Mulberry	*Morus rubra*	END	NHIC
Spotted Wintergreen	*Chimaphila maculata*	THR	NHIC

Insects

Common Name	Scientific Name	PSOL (SCA)	Source
Gypsy Cuckoo Bumble Bee	*Bombus bohemicus*	END	NHIC

Reptiles

Common Name	Scientific Name	PSOL (SCA)	Source
Blanding's Turtle	*Emydoidea blandingii*	THR	NHIC; ORAA
Spiny Softshell	*Apalone spinifera*	END	NHIC

Amphibians

Common Name	Scientific Name	PSOL (SCA)	Source
Jefferson Salamander	*Ambystoma jeffersonianum*	END	ORAA
Unisexual Ambystoma (Jefferson Salamander dependent population)	*Ambystoma laterale – (2) jeffersonianum*	END	ORAA

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Mammals

Common Name	Scientific Name	PSOL (SCA)	Source
Little Brown Myotis	*Myotis lucifugus*	END	AMO
Eastern Red Bat	*Lasiurus borealis*	END	AMO
Eastern Small-footed Myotis	*Myotis leibii*	END	AMO
Hoary Bat	*Lasiurus cinereus*	END	AMO
Northern Myotis	*Myotis septentrionalis*	END	AMO
Silver-haired Bat	*Lasionycteris noctivagans*	END	AMO
Tri-coloured Bat	*Perimyotis subflavus*	END	AMO

Sources: MNR 2026b (NHIC); Ontario Nature 2019 (ORAA); Dobbyn 1994 (AMO)
END – Endangered - a species facing imminent extinction or extirpation
THR – Threatened - a species that is at risk of becoming endangered

Stantec completed a desktop assessment to evaluate the existing conditions of the proposed pipeline route. The proposed pipeline route crosses a variety of habitats (agricultural fields, woodlands, wetlands, watercourses and hedgerows). A general assessment of potential habitat for SAR along or adjacent to the proposed route is provided in Table D-2, Appendix D.

4.3 Socio-economic Environment

4.3.1 Demographics

The Project is in the City of Hamilton. For the socio-economic elements of the assessment, the most recent economy and employment statistics were extracted from 2021 Census Population for Hamilton as well as the province (Statistics Canada 2023).

The population breakdown of Hamilton, in comparison to the Province of Ontario is presented in Table 4.3 below.

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Table 4.3 Population, 2021

Location	Total Population	Land Area (km^2)	Population Density per (km^2)
Ontario	14,223,942	892,411.8	15.9
Hamilton (City)	569, 353	1,118.31	509.1

Source: Statistics Canada, 2023

Hamilton is a moderately densely populated city that has a mix of urban development, suburban neighbourhoods and rural areas. Table 4.4 below, shows the population growth from 2016 to 2021 in Hamilton, and in the province.

Table 4.4 Population Growth from 2016-2021

Location	Total Population 2016	Total Population 2021	Population percentage change (%)
Ontario	13,448,494	14,223,942	5.8
Hamilton (City)	536,917	569,353	6.0

Source: Statistics Canada, 2023

As shown in Table 4.4, both Hamilton and Ontario experienced population growth from 2016 to 2021 (Statistics Canada 2023). Associated with this increase, is an increase of total occupied dwellings by 5.3% or 11,205 units to 222,805 dwelling units in 2021 from 211,605 dwelling units in 2016 (City of Hamilton 2024).

4.3.2 Economy and Employment

The most recent economic and employment statistics are provided in the 2021 Census of Population (Statistics Canada 2023). Table 4.5 summarizes the unemployment and employment rate, participation rate, and the number of people aged 15 and over in the labour force at the time of census in Ontario and in Hamilton.

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Table 4.5 Labour Characteristics for Persons > 15 years, 2021[1]

Location	Total Population 15 years and Over	Labour Force	Employed	Participation Rate (%)	Employment Rate (%)	Unemployment Rate (%)
Ontario	11,782,820	7,399,200	6,492,895	62.8	55.1	12.2
Hamilton (City)	469,795	290,990	255,075	61.9	54.3	12.3

Source: Statistics Canada (2023)

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[1] Table 3.5 data for Total – Population aged 15 years and over by labour force status was 25% sampled data. The data also refers to whether a person aged 15 years and over was employed, unemployed or not in the labour force during the week of Sunday, May 2 to Saturday, May 8, 2021.
For information on the comparability of the 2021 Census labour force status data with those of the Labour Force Survey, see Appendix 2.11 of the Dictionary, Census of Population, 2021.

As shown in Table 4.5, in 2021, City of Hamilton overall had lower participation and higher employment rates than the wider province of Ontario (Statistics Canada 2023).

Median income for households and individuals is presented in Table 4.6.

Table 4.6 Median Income, 2020

Location	Median Total Income of Households ($)	Median Total Income of Individuals ($)
Ontario	$79,500	$41,200
Hamilton (City)	$75,500	$45,200

Source: Statistics Canada 2023

Median income of households in Hamilton was greater than the provincial median by $4,000 (Statistics Canada 2023). Similarly, the median income of individuals in Hamilton was greater than the provincial median by $4,000 (Statistics Canada 2023).

4.3.3 Land Use

Since the 2019 Environmental Report, the City of Hamilton has updated its Official Plan through its Municipal Comprehensive Review. Amendments adopted in June 2022, and subsequently reinforced through provincial legislation, reinstated the City's no urban boundary expansion growth strategy and reversed earlier changes to Rural Hamilton Official Plan Amendment 34 and Urban Hamilton Official Plan Amendment 167 (City of Hamilton 2026). The updated Official Plans include city-wide policy changes related to employment, infrastructure, climate change, housing, transportation, cultural heritage, and neighbourhoods (City of Hamilton, 2026).

The Project is located in the Rural portion of Hamilton and in Section 7.1 of the Rural Hamilton Official Plan “No new development shall be located within 75 metres of any active gas or petroleum well or an inactive well that has not been decommissioned […]” City of Hamilton 2012). Development on or adjacent to lands formerly used for gas or petroleum operations, may be permitted only if rehabilitation measures have been identified and are underway, or have been completed to address and mitigate any

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known or suspected hazards associated with those former operations" (City of Hamilton 2012).

The Beverely Swamp is in the Study Area and is partially owned by HCA. These lands are open to the public for various activities including hiking and hunting.

4.3.4 Archaeological Resources

Through 2019 to 2021, Stantec undertook Stage 1 and Stage 2 AAs for the proposed Kirkwall-Hamilton Project. The Stage 2 AA was reviewed and entered into the Ontario Public Register of Archaeological Reports on June 7, 2021 (See Appendix F).

During the Stage 2 archaeological work that was completed for the proposed former project, 34 archaeological locations were identified, with seven (7) locations recommended for Stage 3 AA. The Stage 3 AA has begun in Fall 2026 and will continue into 2027.

In addition to the above, a portion of the Study Area (approximately 4.9%) comprises lands that were not surveyed during the Stage 2 assessment and which retain potential for the identification and documentation of archaeological resources. Thus, a Stage 2 AA is required for this portion of the Study Area.

4.3.5 Built Heritage Resources and Cultural Heritage Landscapes

As part of this environmental study, a Cultural Heritage Memo was prepared for the Study Area using the MCM Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes: A Checklist for the Non-Specialist (2022; the Checklist). The Cultural Heritage Memo and Checklist are used to identify known (previously recognized) and potential built heritage resources and cultural heritage landscapes in the Study Area and make recommendations for future work, as appropriate. The Study Area was previously assessed for known and potential Built Heritage Resources (BHRs) and Cultural Heritage Landscapes (CHLs) in a Cultural Heritage Assessment Report (CHAR) prepared by Stantec in 2019 (Stantec 2019). The

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objectives of the 2026 Cultural Heritage Memo were to re-affirm the BHRs and CHLs identified in the 2019 CHAR, identify and screen new potential and known BHRs and CHLs in the Study Area, assess potential impacts resulting from the Project, and recommend future actions. The 2026 Cultural Heritage Memo is included in Appendix E

The 2019 CHAR identified 13 Cultural Heritage Resources (CHRs) in the Study Area; following an assessment of impacts, no direct impacts were identified (Stantec 2026). Properties with potential risk for indirect impacts due to vibration damage were identified for:

- CHR-3 (2019): 1172 Concession 8 West
- CHR-11 (2019): 750 Concession 8 West

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5 Potential Impacts, Mitigation and Protective Measures

5.1 Methods

The 2019 Environmental Report, in Section 4.1, contains information on the methodology used to conduct the effects assessment. Since that time there have been no changes in the methods for conducting the assessment.

Table 5.1 below notes the new potential impacts, mitigation, and protective measures, including recommended supplemental studies, and net impacts for the existing conditions as described in **Section 4** that were not described in the 2019 Environmental Report. Monitoring and Contingency Plans described in Section 6.0 of the 2019 Environmental Report have been reviewed and determined to remain applicable.

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5.2 Summary Table

Table 5.1 New Potential Impacts and Recommended Mitigation and Protective Measures

Physical Features

Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures	Net Impacts
Hydrogeology *Section 4.2.3 of the 2019 Environmental Report*	<u>Hydrostatic Testing and Dewatering/Sandpointing</u> An uncontrolled discharge of water could cause downstream flooding, erosion, sedimentation, or contamination. <u>Private Water Wells</u> Depending on the proximity to wells, the depth of the well installation and the groundwater levels encountered during excavation, trench dewatering may impact water well quality or quantity at some of the overburden supply wells. <u>Municipal Water Supply</u> The proposed pipeline does not extend through any WHPAs or IPZs associated with any municipal groundwater supply system.	The mitigation measures discussed in the 2019 Environmental Report are still appropriate. Additional mitigation measures are included below: <u>Hydrostatic Testing and Dewatering</u> • Under O. Reg. 63/16, all construction dewatering projects regardless of dewatering volume can be completed under an EASR. Should dewatering be required a dewatering and discharge report would be required to support the registration of an EASR for the Project. If surface water is used as the source water for the hydrostatic test, the report will also assess the capacity of the source to provide the required water volume without impacting the ecosystem, and will outline mitigation measures such as screened water intakes. <u>Source Water Protection</u> During construction, the primary concern to groundwater is the potential for a contaminant spill. To address this concern, the following mitigation measures are proposed: • Bulk fuel trucks, service vehicles, and pick-up trucks equipped with box mounted fuel tanks should carry spill prevention, containment, and clean up materials that are suitable for the volume of fuels or oils carried. Spill contingency material carried on bulk fuel and service vehicles should be suitable for use on land and water. • Inspect hydraulic, fuel, and lubrication systems of equipment so that systems are in good working condition and free of leaks. • An impervious tarp should be in place underneath equipment/vehicles when servicing equipment/vehicles with the potential for accidental spills (e.g., oil changes,	With the implementation of the mitigation and protective measures, no significant adverse residual impacts on groundwater are anticipated.

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Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures	Net Impacts
		servicing of hydraulic systems, etc.) in accordance with regulatory conditions. The contractor should prepare a Spill Response Plan prior to construction.	
Soybean Cyst Nematode (SCN) *Section 4.1.1*	The potential exists for SCN to be spread from an impacted field to a non-impacted field by means such as contaminate machinery, wind, contaminated boots, and water erosion.	Enbridge Gas should consult with landowners of agriculture fields to determine if they would like to proceed with soil sampling for SCN. If a field is identified as having SCN, in consultation with potentially impacted landowners, the following mitigation measures should be considered: • All properties impacted with SCN should be identified and communicated to the contractor. A best practice protocol should be developed to mitigate the spread of SCN, with assistance from Stantec. • If an adjacent farm field has SCN, advise the contractor to remove soil from equipment before moving to the area that has not been impacted by SCN. This may involve thorough washing of equipment before moving equipment from an impacted field to non-impacted field. If topsoil is required to be imported, it should be from approved sources to avoid it being contaminated.	With adherence to the best construction practices discussed in this report, no significant adverse residual impacts from SCN are anticipated.
Aquatic Features and Aquatic Species at Risk *Section 4.2.1*	There are now at least 6 mapped watercourses that will be crossed by the proposed pipeline route. Field studies to be completed in 2027 will confirm aquatic habitat conditions in these watercourses including if they are permanent or intermittent. There is the potential to affect fish directly through impacts on water quality (erosion, sedimentation, and accidental spills), disruption and harassment (vibration and noise), and loss of habitat. Indirect impacts include restrictions to habitat use and fish passage. Long-term impacts can include changes to habitat such as substrate, increased erosion potential, and loss of in-stream cover and riparian shading.	The mitigation measures discussed in the 2019 Environmental Report are still appropriate. Additional mitigation measures are included below: • Spencer Creek is Critical Habitat for Redside Dace which are regulated as Endangered under Schedule 1 of SARA. • Consultation should occur with DFO regarding the Spencer Creek crossing and its associated critical riparian habitat. General Mitigation Measures • In-water work for Spencer Creek is typically permitted from July 1 to September 15 (no in-water work from September 16 to June 30). • In-water work for warmwater habitats is typically permitted from July 1 to March 14 (no in-water work from March 15 to June 30 (MNRF 2013).	With the implementation of the mitigation and protective measures, no significant adverse residual impacts to aquatic features and aquatic SAR are anticipated.

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Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures	Net Impacts
		• O.Reg. 41/24 conditions of water crossings from the HCA and CH, if applicable, are to be adhered to. Dam and Pump Mitigation Measures • All watercourse crossings will occur via the dam and pump method and will adhere to the DFO-Enbridge Gas Agreement (see Appendix G). • Fish rescue plans should be developed on a site-specific basis, following established standards (DFO 2026) and implemented by qualified professionals with the appropriate licence in place (i.e., Licence to Collect Fish for Scientific Purposes, SARA handling permit).	
Wildlife, Wildlife Habitat and Species at Risk *Section 4.2.2*	Impacts on wildlife populations from pipeline construction include direct loss of habitat (e.g., removal or alteration of habitat), direct mortality from animal-vehicle collisions from increased construction traffic, vibration, noise, and dust from construction machinery, and temporary avoidance behavior due to the presence of humans and equipment. The proposed pipeline will be installed through wooded areas, agricultural fields, watercourses and wetlands where suitable habitats for SAR and SOCC may be present.	The mitigation measures discussed in the 2019 Environmental Report are still appropriate. Additional mitigation measures are included below: • A Registration under O. Reg. 75/26 of the SCA may be required if the Project impacts SAR and/or SAR habitat. • Where practical, avoid construction in the vicinity of areas that may provide habitat for amphibians during the amphibian breeding season (March 1 – July 31). • Areas of potential bat maternity roosting habitat will be identified during field investigations. Tree removal in identified areas should be limited to the extent possible and will avoid the active season for bats (March 15 - November 30). Mitigation recommendations for SAR bats will be prepared upon project registration under the SCA. • Work (soil excavation) within wetlands is recommended to occur outside of the winter months (i.e., not between November 1 and February 28) to avoid potential impacts to hibernating frogs and turtles. 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.	With the implementation of the mitigation and protective measures, no significant adverse residual impacts on wildlife, wildlife habitat, and SAR are anticipated.

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Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures	Net Impacts
Demographics *Section 4.3.1*	During construction residents and businesses in the Study Area may experience a general nuisance, and temporary disruption in the use and enjoyment of their property and in the use of local roads from associated vehicular traffic, dust, and equipment exhaust. Residents and business owners may experience temporary access disturbance. Construction activities also have the potential to disturb the perceived aesthetic value that residents place on their property and the area in general. Potential safety concerns for residents also exist at locations where properties, residents, and vehicles come in proximity to construction activities.	• The mitigation measures discussed in the 2019 Environmental Report Sections 4.4.2, 4.4.3, 4.4.5, and Table 4-11 are still appropriate.	With the implementation of the mitigation and protective measures, no significant adverse residual impacts on demographics are anticipated.
Economy and Employment *Section 4.3.2*	Project demands for labour and goods and services can result in both beneficial and adverse effects. Positive effects may not be evenly distributed among populations, with some residents in a better position to receive economic benefits than others. Similarly, adverse effects may affect some residents more than others. Residual effects on employment are related to the Project's labour demand compared to the labour supply. Three types of employment are considered: • Direct employment: labour that is hired directly for the Project. • Indirect employment: labour hired by companies to produce and provide goods and services needed for the Project. • Induced employment: labour hired by industries that produce and provide consumer items and services purchased by people who are directly or indirectly employed by the Project. Labour conditions will be affected by direct, indirect, and induced employment during all Project phases. The Project could affect business through purchases of labour, goods, and services from local businesses, including businesses owned by Indigenous peoples, and will result in increased local employment income	• The mitigation measures discussed in the 2019 Environmental Report Section 4.4.1 and Table 4-11 are still appropriate.	With the aforementioned initiatives to encourage local and Indigenous participation on the Project, it is anticipated that the effects from the Project on employment and business will be positive, including creating positive economic activity through new direct, indirect, and induced employment. Project expenditures on local businesses and suppliers also have the potential to positively affect the local economies. Consultation with residents and businesses will address any concerns to their operations. With the implementation of the mitigation and protective measures, no significant adverse residual impacts on economy and employment are anticipated.

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Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures	Net Impacts
	and municipal government revenue. Local businesses will likely benefit from supplying the Project with goods and services.		
Land Use *Section 4.3.3*	Natural gas pipelines are permitted facilities in the various municipal land uses, and thus no impacts to municipal land use designations will occur. The Beverly Swamp is in the Study Area and is open to the public. The Beverly Swamp offers hiking and hunting opportunities to the public. Construction is anticipated to occur during the hunting season, and the safety of the public and construction crews is a concern.	The mitigation measures discussed in the 2019 Environmental Report are still appropriate. Additional mitigation measures are included below: • Enbridge Gas will post a public notice prior to construction which will provide construction-related details and advise that due to safety concerns hunting will be prohibited during construction activities.	With the implementation of the mitigation and protective measures, no significant adverse residual impacts on land use are anticipated.
Archaeological Resources *Section 4.3.4*	The Stage 2 archaeological work that was completed for the proposed former project identified seven (7) locations recommended for Stage 3 AA. In addition to the above, a portion of the Study Area (approximately 4.9%) comprises lands that were not surveyed during the previous Stage 2 assessment and which retain archaeological potential. Construction has the potential to impact areas that retain archaeological potential and unidentified cultural resources.	• If, during the Stage 3 assessment, it becomes evident that Stage 4 mitigation will be required, a change in methodology may be considered. This methodological change of approach is compliant with the requirements of the MCM's 2011 *Standards and Guidelines for Consultant Archaeologists*. • A Stage 2 AA (and further stages of assessment, if recommended) will be carried out on the area that was not previously assessed as early as possible during detailed design and prior to any ground disturbing activities. • The results of the Stage 2 AA will provide recommendations for further assessment, protection, and mitigation of archaeological resources. Where feasible for the Project, archaeological sites that are determined to retain further cultural heritage value and interest should be mitigated in whole or in part by avoidance and preservation. If it should evolve that avoidance and preservation is not feasible, the site or sites should be mitigated by the implementation of Stage 3 and 4 salvage excavations in discussions with the appropriate Indigenous communities.	With the completion of Stage 2 and Stage 3 AAs and implementation of subsequent mitigation and protective measures, if necessary, no significant adverse residual impacts on archaeological resources are anticipated.

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Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures	Net Impacts
Built Heritage Resources and Cultural Heritage Landscapes *Section 4.3.5*	Construction may occur within 50m of two identified built heritage resources that could be impacted by vibration.	The mitigation measures discussed in the 2019 Environmental Report are still appropriate.	With the implementation of the mitigation and protective measures discussed in the 2019 Environmental Report, no significant adverse residual impacts on built heritage resources or cultural heritage landscapes are anticipated.

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6 Cumulative Effects Assessment

The 2019 Environmental Report contains an assessment of cumulative effects. Since that time there have been no changes in the methods for conducting the assessment, or in the study boundaries (other than the change in Project timeline). The construction assessment timeline is 2028. The operation and maintenance assessment timeline is 2032. The Project inclusion list, as outlined below, was reviewed to determine if there are projects that are either currently existing, or those that have been approved and are scheduled (or likely to be scheduled), during the construction period and early operation and maintenance of the Project.

- Canadian Energy Regulator, Major Facilities Applications (Canadian Energy Regulator, 2026)
- Government of Ontario, Environmental Assessment Projects by Category (Government of Ontario, 2026a)
- Government of Ontario, Ontario Builds (Government of Ontario, 2026b)
- Government of Ontario, Renewable Energy Projects Listing (Government of Ontario, 2026c)
- Impact Assessment Agency of Canada, Canadian Impact Assessment Registry (IAAC, 2025)
- Ministry of Transportation (MTO), Ontario's Highways Program Interactive Map (2026-2027) (MTO, 2026)
- OEB Applications Currently Before the Board (facilities applications only) (OEB, 2021)
- City of Hamilton - Construction in Your Area (City of Hamilton 2026)

Based on the review of publicly available resources, road work is scheduled along Safari Road between Valens Road and Kirkwall Road in May 2027 (Flamborough Today 2026). Approximately 1 km of road will undergo construction to raise the road level due to seasonal flooding. It is anticipated that this construction roadwork will overlap with the Project's proposed activities. During this time, it is anticipated that there will be an

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increase in traffic, noise, and dust resulting from construction activities, however these impacts are considered minor and temporary.

As was the case in the 2019 Environmental Report, it is assumed that on-going improvements, upgrades, and maintenance to municipal infrastructure such as bridges, culverts, drains, electrical utilities, municipal developments, or roads may occur in the spatial and temporal study boundaries of the Project.

6.1 Analysis of Cumulative Effects

A review was conducted to determine if additional residual impacts (after mitigation) exist for the Project that were not identified in the 2019 Environmental Report; none were identified. However, it was determined that additional context would be helpful for assessing impacts to crop yield.

Reduced crop yield is a potential residual effect associated with construction of the Project. It is assumed that the previously disturbed soil along the existing pipeline easements may experience reduced crop yield compared to undisturbed soil; this impact is anticipated to remain following construction. The previously disturbed soil will be disturbed again where sections of the existing pipeline easements overlap with the proposed new pipeline easement , resulting in a cumulative residual effect.

This cumulative residual effect will be mitigated through the soil handling techniques outlined in Table 4.11 of the 2019 Environmental Report. A review of previous crop monitoring studies determined that construction and clean-up practices have improved over time and now result in improvements in crop yield performance compared to previous practices. In fact, the most recent crop monitoring study conducted by Enbridge Gas determined that five years following construction the majority of assessed fields had equal to or greater than crop counts and biomass weights compared to undisturbed soil, reflecting the positive benefit of current soil handling techniques. As such, while previously disturbed soil impacts are anticipated to remain, adverse cumulative residual effects on crop yield due to soil disturbance for the current Project

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will be of short duration, will be managed through agreement with Enbridge Gas, and are not anticipated to be significant.

With the exception of the additions above, the assessment of cumulative effects for construction and operation and maintenance as summarized in the 2019 Environmental Report remains valid.

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7 Conclusion

The 2019 and 2026 environmental studies investigated data on the physical, biophysical, and socio-economic environment along the pipeline route and related facilities and assessed any changes that have occurred between 2019 and 2026. In the opinion of Stantec, the recommended program of supplemental studies, mitigation, protective, and contingency measures are considered appropriate to protect the features encountered. Monitoring will assess that mitigation and protective measures have been effective in the short and long term.

With implementation of the recommendations in the 2019 Environmental Report and this Addendum, continued engagement and consultation, and compliance with applicable permit, regulatory, and legislative requirements, potential adverse residual environmental and socio-economic impacts of the Project are not anticipated to be significant.

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Appendices

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Appendix A Dawn-Parkway System Expansion: Kirkwall-Hamilton Pipeline Section: Environmental Report (2019)

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Dawn-Parkway System Expansion: Kirkwall-Hamilton Pipeline Section: Environmental Report

FINAL REPORT

Prepared for:
Enbridge Gas Inc. operating as
Union Gas
50 Keil Drive North
Chatham ON N7M 5M1

Prepared by:
Stantec Consulting Ltd.
1-70 Southgate Drive
Guelph ON N1G 4P5

File: 160961299
June 21, 2019

Sign-off Sheet

This document entitled Dawn-Parkway System Expansion: Kirkwall-Hamilton Pipeline Section: Environmental Report was prepared by ("Stantec") for the account of Enbridge Gas Inc. operating as Union Gas (the "Client"). The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by _____
(signature)

Michael Candido, B.Sc.(Env.)
Environmental Scientist

Reviewed by _____
(signature)

Mark Knight, MA, MCIP, RPP
Team Leader – Assessment and Permitting

Reviewed by _____
(signature)

David Wesenger, BES
Managing Leader – Environmental Management

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Executive Summary

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 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 has retained Stantec Consulting Ltd. (Stantec) to undertake an environmental study of the construction and operation of the proposed pipeline and related facilities. The environmental study included a route evaluation and selection process, a consultation program, an impact assessment, and a cumulative effects impact assessment.

A route evaluation and selection process was undertaken to identify environmentally acceptable alternative routes, determine a preliminary preferred route, and confirm a preferred route. The preferred route is currently illustrated within a general location. Enbridge Gas will undertake detailed design to determine the exact location of the running line, permanent easement, temporary land use requirements and road/watercourse crossing methods. Detailed design will also be influenced by supplemental studies (including environmental studies) and site-specific requests from landowners and agencies. In general, this micrositing exercise will seek to avoid sensitive natural and socio-economic features to the extent practicable. Enbridge Gas has also committed to reviewing the easement through and parallel to natural areas during detailed design to minimize the disturbance area to the extent possible.

A consultation program was conducted for the project to engage with landowners, municipalities, agencies, Indigenous communities, and other interested parties. The consultation program included notices in local newspapers, project mailouts and Information Sessions held on February 27, 2019 and May 9, 2019. Enbridge Gas and Stantec have also been in direct contact with agency and municipal staff. Enbridge Gas has committed to on-going consultation with directly affected and interested parties throughout the detailed design and construction phases and will continue to respond to concerns through the life of the project.

The potential effects and impacts of the project on physical, biophysical and socio-economic features have been assessed. In the opinion of Stantec, the recommended program of supplemental studies, mitigation and protective measures are considered sufficient to protect the features encountered.



Where appropriate, post construction monitoring will be conducted to assess whether mitigation and protective measures were effective in both the short and long term.

The potential cumulative effects of the project were assessed by considering development that has a high probability of proceeding just prior to or concurrent with construction and operation of the project. The cumulative effects assessment determined that, provided the mitigation and protective measures outlined in this report are implemented and that concurrent projects implement similar mitigation and protective measures, potential cumulative effects are not anticipated to be significant.

With the implementation of the recommendations in this report, on-going communication and consultation, and adherence to permit, regulatory and legislative requirements, potential adverse residual environmental and socio-economic impacts of the project are not anticipated to be significant.

Abbreviations

AA	Archaeological Assessment
ANSI	Area of Natural and Scientific Interest
BGS	Below ground surface
CA	Conservation Authority
CH	Conservation Halton
CHR	Cultural Heritage Resource
Class EA	Class Environmental Assessment
CLI	Canada Land Inventory for Agriculture
CRA	Commercial, Recreational, or Aboriginal
DFO	Fisheries and Oceans Canada
EASR	Environmental Activity and Sector Registry
ELC	Ecological Land Classification
Enbridge Gas	Enbridge Gas Inc. operating as Union Gas
END	Endangered
ER	Environmental Report
ERIS	Environmental Risk Information Services
ESA	*Endangered Species Act*
ESC	Erosion and sediment control
GIS	Geographic Information System
GRCA	Grand River Conservation Authority
HCA	Hamilton Conservation Authority
HDD	Horizontal Directional Drill
HONI	Hydro One Networks Inc.



IO	Infrastructure Ontario
IPZ	Intake Protection Zone
LIO	Land Information Ontario
MBCA	*Migratory Birds Convention Act*
MECP	Ministry of Environment, Conservation and Parks
MNR	Ministry of Natural Resources
MNRF	Ministry of Natural Resources and Forestry
MTCS	Ministry of Tourism, Culture and Sport
MTO	Ministry of Transportation
NHIC	Natural Heritage Information Centre
OBBA	Ontario Breeding Bird Atlas
OEB	Ontario Energy Board
OHA	*Ontario Heritage Act*
OMAFRA	Ontario Ministry of Agriculture, Food and Rural Affairs
OPCC	Ontario Pipeline Coordinating Committee
O. Reg.	Ontario Regulation
ORAA	Ontario Reptile and Amphibian Atlas
PTTW	Permit to Take Water
PSOC	Potential Sources of Contamination
PSW	Provincially Significant Wetland
RoW	Right-of-way
SAR	Species at Risk
SARA	*Species at Risk Act*
SC	Special Concern
SC	Stream Crossing
Stantec	Stantec Consulting Ltd.



SWH	Significant Wildlife Habitat
THR	Threatened
WHPA	Wellhead Protection Area
WWR	Water Well Record(s)

1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

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.

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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. The environmental study will 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). The environmental study process included consultation and engagement with landowners, municipalities, agencies, Indigenous communities, and other interested parties through notices, mailouts, a project webpage, meetings, and Information Sessions.

For the remainder of this report, the construction and operation of the proposed pipeline is referred to as 'the project'.

1.2 ENVIRONMENTAL STUDY

1.2.1 Objectives

A multidisciplinary team of environmental planners and scientists from Stantec conducted the environmental study. Enbridge Gas provided environmental support and engineering expertise throughout the study.

The environmental study was completed in accordance with the OEB Environmental Guidelines, as well as relevant federal and provincial environmental guidelines and regulations.

The principal objective of the environmental study was 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 was prepared to:

- Identify a preferred route that minimizes potential environmental impacts
- Complete a detailed review of environmental features along the preferred route and assess the potential environmental impacts of the project on these features
- Establish mitigation and protective measures that may be used to minimize or eliminate potential environmental impacts of the project
- Develop a consultation program to receive input from interested and potentially affected parties
- Identify any necessary supplemental studies, monitoring and contingency plans

1.2.2 Process

The environmental study was divided into three main phases:

Phase I: Identification and Consultation on Preliminary Preferred Route

The environmental study began with the route generation and selection process. The first step was the development of routing parameters, including delineating the study area, generating routing objectives and identifying environmental and socio-economic constraints and opportunities through a detailed review of available literature and a field reconnaissance. A route evaluation was undertaken to identify environmentally acceptable routes within the study area in consideration of the routing objectives, environmental and socio-economic constraints and opportunities, and constructability. A preliminary preferred route was identified as an outcome of the evaluation. Feedback was sought on the preliminary preferred route, which included route deviations, and the alternative route through newspaper notices, letters, and an Information Session held on February 27, 2019.

Phase II: Gather Information and Consultation

Specific information requests were made to several agencies and stakeholders to assist with identifying environmental features, constraints, the potential for presence of Species at Risk (SAR) and their habitat, and eventually with developing mitigation and protective measures based on predicted effects and potential impacts. Following the February 27, 2019 Information Session, based on feedback received, the preliminary preferred route was confirmed as the preferred route and presented at the May 9, 2019 Information Session. The gathering of information continued throughout the project.

Phase III: Environmental Report

Phase III involved determining potential environmental and socio-economic impacts and cumulative effects that would result from the project and developing mitigation and protective measures, supplemental studies, monitoring and contingency plans to avoid or reduce potential impacts. The environmental study concluded with the preparation of this Environmental Report (ER).

1.2.3 The Environmental Report

The environmental study has relied on technically sound and consistently applied procedures that are replicable and transparent. As mentioned above, the study was also undertaken in accordance with the OEB Environmental Guidelines, as well as relevant federal and provincial environmental guidelines and regulations. The ER, which documents the environmental study, will form the foundation for future environmental management activities related to the project.

The ER is organized into the following sections:

1.0 **Introduction:** provides a description of the project and the environmental study

2.0 **Route Selection**: provides an overview of the pipeline route evaluation and selection process

3.0 **Consultation Program:** describes the consultation program

4.0 **Impact Identification, Assessment and Mitigation:** describes the existing conditions, predicts potential effects and impacts, recommends supplemental studies, mitigation and protective measures, and considers net impacts

5.0 **Cumulative Effects Assessment**: provides an analysis of potential cumulative effects associated with the proposed project

6.0 **Monitoring and Contingency Plans**: describes monitoring and contingency plans to address potential environmental impacts of the proposed project

7.0 **Conclusion:** provides a discussion and consideration of the potential environmental impacts associated with the proposed project

The ER also includes references, and appendices for documentation.

1.2.4 The OEB Regulatory Process

Once complete, the ER is circulated to affected municipalities, conservation authorities and to the Ontario Pipeline Coordinating Committee (OPCC) for their review and comment. The OPCC is an inter-ministerial committee that includes provincial government ministries, boards, and authorities with potential interest in the construction and operation of hydrocarbon transmission and storage facilities. The ER is also circulated to landowners, Indigenous communities, and other interested parties. The ER will accompany a future Enbridge Gas ‘Leave-to-Construct’ application to the OEB for the proposed project.

Upon receiving the application, the OEB will hold a public hearing. Communication about the hearing will include notices in local newspapers and letters to directly affected landowners, both of which will outline how the general public and landowners can get involved with the hearing process. If after the public hearing the OEB finds the project is in the public interest it will approve construction of the project. The OEB typically attaches conditions to approved projects. Enbridge Gas must comply with these conditions at all stages of the project, including during construction and site restoration.

1.2.5 Additional Environmental Regulatory Processes

Enbridge Gas will also be required to obtain additional environmental permits, approvals and notifications from federal, provincial and municipal agencies as outlined in Table 1-1 below. This ER will serve to support these permit and approval applications and notifications.

Table 1-1: Summary of Potential Environmental Permits/Regulatory Requirements

Permit/Approval Name	Administering Agency	Description
FEDERAL PERMITS AND APPROVALS		
Clearing of Vegetation under the *Migratory Bird Convention Act* (MBCA) (1994)	Environment Canada	No permit is necessary; however, precautions need to be taken so that no breeding birds or their nests are harmed or destroyed during the bird nesting season. Nest sweeps will be required at a maximum of 7 days prior to vegetation removal during the MBCA bird nesting season (April 1 to August 31).
Review and authorization under the *Fisheries* Act (1985)	Fisheries and Oceans Canada (DFO)	DFO review and possible *Fisheries Act* authorization is required at watercourse crossing containing species protected under the *Species at Risk Act* (SARA) (2002). The DFO may authorize activities that have the potential to affect fish or mussel species protected under the SARA (2002). As per Section 35 (1) of the *Fisheries Act* (1985), "No person shall carry on any work, undertaking or activity that results in serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or to fish that support such a fishery. As per Section 35 (2)(b) of the *Fisheries Act* (1985), there are some exceptions under which a person may carry on a work, undertaking or activity without contravening subsection (1), including an authorization from DFO, which typically includes a number of conditions.
Permitting under the SARA (2002)	DFO	A SARA permit is required to capture, handle and relocate SARA Schedule 1 fish or mussel species during construction. As indicated in Section 32 (1) of the SARA (2002), "No person shall kill, harm, harass, capture or take an individual of a wildlife species that is listed as an extirpated species, an endangered species or a threatened species." As indicated in Section 73 (1) of the SARA (2002), "The competent minister may enter into an agreement with a person, or issue a permit to a person, authorizing the person to engage in an activity affecting a listed wildlife species, any part of its critical habitat or the residences of its individuals."
PROVINCIAL PERMITS AND APPROVALS		
Approval under the Ministry of Infrastructure Public Work Class Environmental Assessment (Class EA)	Infrastructure Ontario (IO)	A Public Works Class EA may be required to obtain easements on lands managed by IO. Requirements will be determined through consultation with IO.
Development Permits under *Ontario Regulations 150/06* (Regulation of Development, Interference with Wetlands and Alterations to Shorelines	Grand River Conservation Authority (GRCA)	Required for works within GRCA Regulated Areas, including shorelines, watercourses, wetlands and hazardous lands (flooding and erosion hazards, and unstable soils and bedrock).

Table 1-1: Summary of Potential Environmental Permits/Regulatory Requirements

Permit/Approval Name	Administering Agency	Description
and Watercourses), as per the *Conservation Authorities Act* (1990)		
Development Permits under *Ontario Regulations 162/06* (Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses), as per the *Conservation Authorities Act* (1990)	Conservation Halton (CH)	Required for works within CH Regulated Areas, including shorelines, watercourses, wetlands and hazardous lands (flooding and erosion hazards, and unstable soils and bedrock).
Development Permits under *Ontario Regulations 161/06* (Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses), as per the *Conservation Authorities Act* (1990)	Hamilton Conservation Authority (HCA)	Required for works within HCA Regulated Areas, including shorelines, watercourses, wetlands and hazardous lands (flooding and erosion hazards, and unstable soils and bedrock).
Permit to Take Water (PTTW) or Environmental Activity and Sector Registry (EASR) (surface and groundwater) under the *Ontario Water Resources Act* (1990)	Ministry of the Environment, Conservation and Parks (MECP)	Under Ontario Regulation (O. Reg.) 64/16 and O. Reg. 63/16, the MECP requires a PTTW for dewatering in excess of 400,000 L/day, and an EASR for dewatering between 50,000 and 400,000 L/day. This can include trench dewatering and taking water for hydrostatic testing from a pond, lake, etc. There are some exceptions for surface water takings where active or passive surface water diversions occur such that all water taken is returned to within another portion of the same surface water feature.
Permitting or registration under the *Endangered Species Act* (ESA) (2007)	MECP	An ESA permit or Registration is required for activities that could impact species protected under the ESA. Consultation will occur with the MECP to determine ESA permitting requirements. As indicated in Section 9 (1) a of the ESA (2007), “No person shall kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species.” As indicated in Section 17 (1), “the Minister may issue a permit to a person that, with respect to a species specified in the permit that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species, authorizes the person to engage in an activity specified in the permit that would otherwise be prohibited by section 9 or 10.”
Archaeological clearance under the *Ontario Heritage Act* (OHA)	Ministry of Tourism, Culture, and Sport (MTCS)	A Stage 1-2 archaeological assessment (AA) is required along the Right-of-Way (RoW) and temporary land use areas to identify areas of archaeological potential prior to any ground disturbances and/or site alterations. Depending on the results of the Stage 1-2 AA, Stage 3

Table 1-1: Summary of Potential Environmental Permits/Regulatory Requirements

Permit/Approval Name	Administering Agency	Description
		and 4 AA's may be required. The completed archaeological assessment reports are forwarded to the MTCS for review and comment.
Review of Built Heritage and Cultural Landscape under the OHA	MTCS	A Heritage Overview Study will be completed to determine the presence of built heritage and cultural landscapes. If identified, a Heritage Impact Assessment is required to determine the effects of the project on heritage resources and recommend mitigation measures, if necessary.
MUNICIPAL PERMITS AND APPROVALS		
Noise Control By-Law 11-285	City of Hamilton	Project activities should adhere to the local noise by-law.
Tree on Public Property By-Law 15-125	City of Hamilton	Project activities that may require tree removal should meet the intent of the tree cutting by-law.
Trees on Private Property in Rural Area Regional By-Law R00-054	Regional Municipality of Hamilton-Wentworth	Project activities that may require tree removal should meet the intent of the tree cutting by-law.

2.0 ROUTE SELECTION

2.1 THE PROCESS

The route evaluation and selection process was undertaken in accordance with the OEB Environmental Guidelines which identify the environmental and socio-economic features, and the routing principles, to be considered.

2.2 ROUTING PARAMETERS

2.2.1 Study Area

The study area is the area within which direct interactions with the socio-economic and natural environment could occur and allows for a reasonable number of alternative routes to be considered. It is within this area that desktop information on socio-economic and environmental features has been collected. The terminal points of the proposed pipeline defined the western and eastern study area boundaries. The location of the western tie-in is Enbridge Gas' existing Kirkwall valve site. The eastern terminal point tie-in is the existing Enbridge Gas Hamilton valve site. The northern study area boundary was defined as approximately 1000 m north of and parallel to Concession 8 West. A pipeline north of this location would require routing through large portions of the Beverly Swamp Wetland Complex and other provincially significant wetlands. The southern study area boundary was defined as approximately 250 m south of and parallel to Concession 6 West. A pipeline south of this location would significantly increase length and would have limited opportunities to parallel existing infrastructure.

The study area is shown on Figure 1, Appendix A.

2.2.2 Routing Objectives

The overarching objective in the route evaluation and selection process is that the selected route presents the least potential for adverse environmental and socio-economic impacts. The following principles support that objective:

1. Routes should follow a reasonably direct path between end-points to reduce length; in general, a shorter route will help eliminate or minimize the extent of most potential environmental and socio-economic impacts.
2. Routes should avoid sensitive environmental and socio-economic features wherever practicable; where such features cannot be avoided, routes should be located to minimize potential impacts.
3. Existing linear infrastructure should be used or paralleled to the greatest extent feasible to minimize impacts on previously undisturbed environmental and socio-economic features and to limit constraints on future land development.

4. Where new easements are required, existing lot and property lines should be followed to the extent feasible to avoid deviations into previously undisturbed environmental and socio-economic features.

2.2.3 Identify Constraints and Opportunities

Chapter 4 of the OEB Environmental Guidelines (2016), 'Route or Site Selection', outlines environmental and socio-economic features that should be considered during the route evaluation and selection process. Features in the study area were considered as either pipeline routing opportunities or constraints.

Pipeline routing opportunities are existing features which provide a potential location for the alignment of a pipeline so as to avoid or minimize unnecessary environmental or socio-economic impact. Pipeline routing constraints are existing features that meet the following criteria:

- Site-specific mitigation measures would be required to reduce potential effects
- The feature has been selected or designated for protection
- The feature has been recognized through local, regional, provincial, or federal policy, plan, or statute, or is otherwise valued as an environmental or socio-economic resource

Constraints and opportunities were mapped in a Geographic Information System (GIS) database from existing government databases, including base data and environmental data provided through the Ministry of Natural Resources and Forestry (MNRF's) Land Information Ontario (LIO) data warehouse. LIO is the province's central repository for authoritative digital data, from the MNRF itself as well as other governmental departments and agencies.

After creating a GIS database of pipeline corridor opportunities and constraints, a field reconnaissance was undertaken by personnel of Stantec Consulting Ltd. (Stantec) on August 10, 2016. This field reconnaissance both verified the features that had been mapped and considered whether there were any additional features that were not identified in the records review but that nonetheless required mapping.

In the study area, three pipeline routing opportunities (as defined above) are present: two existing Enbridge Gas pipeline easements (referred to as the northern and southern easements) and a hydroelectric corridor operated by Hydro One Networks Inc. (HONI). In the study area, a variety of pipeline routing constraints (as defined above) are present: developed areas (campgrounds, communities and homes), topography (i.e. slope, drumlins), roads and environmental features such as waterbodies, watercourses, wetlands and wooded areas.

2.3 IDENTIFY ALTERNATIVE ROUTES

To review whether any of the existing Enbridge Gas pipeline easements could be paralleled by an additional pipeline, a field reconnaissance was undertaken by personnel of Stantec and Enbridge Gas on June 1, 2016. The field reconnaissance determined that the existing northern pipeline easement was constrained by wetlands and wooded areas, and by encroaching development within the communities of Beverly Hills Estates, Antrim Glen and the Ponderosa Nature Resort and would not be a feasible

alternative. Based on this, two alternative routes were identified. The routes follow existing linear infrastructure where available and avoid, to the extent possible, existing environmental and socio-economic features. The field reconnaissance also determined that the existing southern pipeline easement (Route A) travelled through the Antrim Glen and Ponderosa Nature Resort communities. To avoid these communities two route deviations were identified (Route A1 and Route A2) which would be further evaluated based on landowner input and engineering and construction considerations.

Route B parallels a combination of an existing HONI corridor and lot lines. Part of the route does not follow the HONI corridor and lots lines so as to avoid sensitive environmental features.

2.4 REFINING ALTERNATIVE ROUTES

Given the rolling topography in the study area, abundance of vegetation and relative lack of roads from which to observe the alternative routes, it was difficult to determine whether they were environmentally acceptable or constructible. As such, an aerial reconnaissance of the alternative routes was undertaken by personnel of Enbridge Gas, Stantec and Banister Pipelines (a contractor experienced in large diameter pipeline construction) on December 5, 2016.

The following observations were made of the alternative routes during the aerial reconnaissance:

- Route A: The challenges of constructing through the communities of Antrim Glen and the Ponderosa Nature Resort were confirmed. It was also noted that the area of Brock Road (particularly a house to the west and Verbinnen's Nursery to the east) would present construction challenges. A subsequent review of the Brock Road crossing could not identify an acceptable alternative crossing location to avoid the house and nursery.
- Route Deviation A1: The proximity to the communities of Antrim Glen and the Ponderosa Nature Resort, and the amount of vegetation clearing required, were noted.
- Route Deviation A2: Constructability refinements were suggested for the crossing location of Spencer Creek.
- Route B: It was noted that the route faced few constructability challenges, other than the crossing of Brock Road.

Based on the above observations, one refinement was made to the alternative routes:

- Route Deviation A2 was refined to enable a different crossing location of Spencer Creek.

The alternate routes and corresponding route deviations are shown on Figure 2, Appendix A

2.5 IDENTIFY PRELIMINARY PREFERRED ROUTE

A comparative evaluation identified that Routes A and B were both environmentally acceptable, however Route A was preferred for operational efficiencies due to the ability to locate the proposed pipeline parallel and overlapping an existing Enbridge Gas pipeline easement, taking into account the experience of the project team in routing linear infrastructure. Enbridge Gas has determined that over 40% (12 of the



28 m total) of the required permanent easement for the project could be overlapped with the existing, previously disturbed pipeline easement. The ability to overlap the existing easement by 12 m reduces the impact to previously undisturbed land to 16 m, including the agricultural fields, residential properties and natural heritage communities they contain. A field visit by Enbridge Gas in the fall of 2018 confirmed that from a construction and engineering aspect, it was feasible to construct Route A through the community of Antrim Glen. Additionally, the overlap enables Enbridge and Stantec to make use of the knowledge gained from the 1991 construction of the 48-inch diameter pipeline regarding potential to encounter groundwater and archaeological finds.

The preliminary preferred route is shown on Figure 3, Appendix A.

2.6 CONFIRMATION OF THE PRELIMINARY PREFERRED ROUTE

Input on the preliminary preferred route, route deviations and alternative route was sought through consultation (see Section 3). Landowners along Route deviations A1 and A2 expressed concerns regarding loss of income due to proximity of the route to a Christmas Tree farm and the amount of tree removal required for a new easement. Landowners along Route deviation A2 expressed concerns due to slope/topography, the crossing location of Spencer Creek and tree removal. Feedback on the preliminary preferred route from the community of Antrim Glen included access to residences during construction, access/use of trails during construction and tree removal. Feedback received from Verbinnen's Nursery included features on the property that may be impacted by construction (irrigation pond, location of container stock during the growing season, water well used for irrigation). The majority of feedback received favoured the preliminary preferred route. As such the preliminary preferred route was confirmed as the preferred route (Figure 4, Appendix A).

The preferred route is currently illustrated within a general location. Enbridge Gas will undertake detailed design to determine the exact location of the running line, permanent easement, temporary land use requirements and road/watercourse crossing methods. Detailed design will also be influenced by supplemental studies (including environmental studies) and site-specific requests from landowners and agencies. In general, this micrositing exercise will seek to avoid socio-economic features and sensitive natural features to the extent practicable.

3.0 CONSULTATION PROGRAM

3.1 OBJECTIVES

Consultation and engagement is an essential requirement of the OEB Environmental Guidelines. Consultation and engagement is the process of identifying interested and potentially affected parties and informing them about the project, soliciting information about their values and local environmental and socio-economic circumstances, and receiving advice about key project decisions before those decisions are finalized.

The consultation program for this project included the following objectives:

- Identify interested and potentially affected parties early in the process
- Inform and educate interested parties about the nature of the project, potential impacts, proposed mitigation measures and how to participate in the consultation program in a clear, concise, relevant and timely manner
- Provide a forum for the identification of issues
- Identify how input will be used in the planning stages of the project
- Summarize issues for resolution, and resolve as many issues as feasible
- Revise the program to meet the needs of those being consulted, as feasible
- Develop a framework for ongoing communication during the construction and operation phase of the project

3.2 IDENTIFYING INTERESTED AND POTENTIALLY AFFECTED PARTIES

The identification of interested and potentially affected parties was undertaken using a variety of sources, including the OEB's OPCC Members List, the MECP's Environmental Assessment Government Review Team Master Distribution List, and the experience of Enbridge Gas and Stantec. Indigenous communities were identified through provision of a Project Summary to the Ministry of Energy, Northern Development and Mines in November 2018 (see Appendix B1).

In addition, the parties listed below were among those considered when developing the initial stakeholder contact lists:

- Federal and provincial agencies and authorities, including the GRCA, CH, HCA and members of the OPCC
- Municipal personnel
- Special interest groups
- Indigenous communities



- Directly affected and adjacent landowners

The initial contact list was updated as the environmental study progressed because of changes in personnel, correspondence received and attendees at meetings and Information Sessions. The final Agency and Indigenous Contact List is located in Appendix B1.

Directly affected and adjacent landowners were identified through a search of municipal tax rolls and were tracked in a Landowner Contact List. Enbridge Gas also undertook direct consultation with landowners and elected officials. Members of the public who provided feedback or who attended an Information Session were documented in a Public Contact List.

3.3 COMMUNICATION METHODS

3.3.1 Newspaper Notices

A Notice of Commencement and Information Session was published on February 13, 2019 in the Hamilton Spectator and on February 14, 2019 in the Flamborough Review, respectively. The Notice introduced and described the project, provided a map, noted the format, time and location of the Information Session, and listed project contact information.

A Notice of Second Information Session was published on April 23, 2019 in the Hamilton Spectator and on April 25, 2019 in the Flamborough Review, respectively. The Notice described the project, provided a map, noted the format, time and location of the Information Session, and listed project contact information.

Copies of tear sheets from the newspaper notices are located in Appendix B2.

3.3.2 Letters and Emails

3.3.2.1 Notice of Commencement and Information Session

Letters and emails were sent to all parties identified on the OPCC, Agency and Indigenous Contact List on February 12, 2019 to provide information on the project, the preliminary preferred route, and on the Information Session. A second email was sent to the OPCC chair on February 19, 2019, as the first email sent on February 12, 2019 failed to send. Letters were mailed to landowners located along the preliminary preferred route, the route deviations, and the alternative route via Canada Post regular mail on February 11, 2019. Letters were hand delivered to residents in Beverly Hills Estates, Antrim Glen and Ponderosa Nature Resort on February 13, 2019. Appended to the letters and emails was a map of the preliminary preferred route, route deviations and the alternative route.

Generic copies of the letters noted above are located in Appendix B3.

3.3.2.2 Notice of Second Information Session

Letters and emails were sent to all parties identified on the OPCC, Agency and Indigenous Contact List on April 18, 2019 to provide information on the project, the preferred route, and the second Information Session. Letters were mailed to landowners whose property was located on or adjacent to the preferred route, and to the landowners whose property was located on the previously identified alternative route and/or the route deviations via Canada Post regular mail on April 17, 2019. Letters were hand delivered to residents of Beverly Hills Estates and Antrim Glen on April 22, 2019. Letters were dropped off to management of Ponderosa Nature Resort for distribution to residents on April 22, 2019. Appended to the letters and emails was a map of the preferred route.

Generic copies of the letters noted above are located in Appendix B3.

3.3.3 Display Boards, Newsletter and Exit Questionnaire

Display boards were developed for both the first and second Information Session. The display boards at the first Information Session provided information on the project, the regulatory process, the preliminary preferred route, route deviations, and alternative route, anticipated environmental and socio-economic impacts and mitigation, and next steps. A newsletter was prepared for distribution at the first Information Session to summarize the content provided on the display boards. An exit questionnaire was provided to the Information Session attendees. The exit questionnaire requested feedback on potential impacts, the presented routes, and the content of the first Information Session.

The display boards at the second Information Session provided information on the project, the regulatory process, route evaluation methodology, the preferred route, anticipated environmental and socio-economic impacts and mitigation, and next steps. A newsletter was prepared for distribution at the second Information Session to summarize the content provided on the display boards. An exit questionnaire was provided to Information Session attendees. The exit questionnaire requested feedback on potential impacts, the preferred route, and the content of the second Information Session.

Copies of the display boards, newsletters and exit questionnaires are in Appendix B4.

3.3.4 Project Webpage

A project webpage was developed on the Enbridge Gas website (uniongas.com/projects/kirkwall-hamilton). The webpage contains information on the project, the regulatory process and Enbridge Gas' commitment to the environment. Communication materials were regularly updated on the webpage as the environmental study progressed. The project webpage was communicated to interested and potentially affected parties on the newspaper notices, display boards and newsletters.

3.4 CONSULTATION EVENTS

3.4.1 Meetings

Meetings about the project have occurred between Enbridge Gas and agency staff, key stakeholders, Indigenous communities and between Enbridge Gas and Stantec with directly impacted landowners, and will continue as the project progresses towards detailed design and construction.

3.4.2 Information Sessions

Two Information Sessions were held for the Project. The first occurred on February 27, 2019 from 5:00 p.m. to 8:00 p.m. at the Carlisle Arena in the Town of Carlisle. The second Information Session occurred on May 9, 2019 from 5:00 p.m. to 8:00 p.m. at the Valens Community Centre in the community of Valens.

The purpose of the Information Sessions were to:

- Inform the community about the project
- Outline the preliminary preferred route, route deviations and alternative route (at the first Information Session); and outline the preferred route (at the second Information Session)
- Outline proposed mitigation for likely project impacts
- Provide attendees the opportunities to ask questions and comment on the project
- Respond to questions and comments

At each Information Session, Enbridge Gas and Stantec representatives were present to provide details on the project, answer questions and receive comments. Display boards and newsletters were provided to inform attendees about the project, and exit questionnaires were provided to encourage feedback (see Section 3.3.3). Twelve completed exit questionnaires were received following the first Information Session, and three completed exit questionnaires were received following the second Information Session.

The first Information Session registered 33 attendees and the second Information Session registered 36 attendees. Attendees who registered their attendance were added to the appropriate contact list to receive future project notices. Attendees at the first Information Session were mainly landowners in the area of the preliminary preferred route who had questions about the project (compensation, traffic impacts, location of facilities, access etc.). Attendees at the second Information Session were mainly landowners along the preferred route who had similar questions about the project.

3.5 INPUT RECEIVED

The consultation and engagement program allowed interested and potentially affected parties to provide input into the project. Input was evaluated and integrated into the project. The following sections summarize key input received.

A comment-response summary table and a copy of all written comments and responses are located in Appendix B5.

3.5.1 Public Input

Seventeen (17) completed questionnaires were received from the public at the time of writing this ER. The main areas of input included:

- Traffic, noise, vibration and dust impacts and mitigation measures
- Property access during construction
- Monetary compensation for landscaping and/or enjoyment of property
- Tree removal
- Impacts to business operations/loss of income due to construction
- Unique features along the route, such as Spencer Creek and slope/topography of the area
- Timing of Information Session material being available on the project website

3.5.2 Agency Input

Two (2) comments were received from agencies at the time of writing this ER.

- The GRCA noted the study area contains natural hazard and natural heritage features, including wetland, watercourses, floodplain, and slope valley hazards. The GRCA also noted that only a portion of the study area falls within the GRCA watershed, and recommended contacting HCA and HC.
- HONI noted that the proposed pipeline will affect HONI distribution line facilities, as well as two separate transmission line ROWs (HONI easement ROW, and a provincially owned HONI ROW)

3.5.3 Municipal Input

The City of Hamilton Clerk's office recommended that the second Information Session not be held on a day that conflicted with Council meetings so that Councilors could attend if they wished to. This request was accommodated, and the date was scheduled based upon City Council's online meeting calendar.

3.5.4 Indigenous Input

No comments were received from Indigenous communities at the time of writing this ER.

3.5.5 Interest Group Input

No comments were received from interest groups at the time of writing this ER.

3.6 REFINEMENTS BASED ON INPUT

At each stage of the consultation program input received was compiled, reviewed, and incorporated into the environmental study process. Responses were provided, as applicable, to questions and comments received.

Based on input received from the public the following occurred:

- A meeting between Stantec, Enbridge and a landowner along Route deviation A2 resulted in the identification of unique features, including a drumlin and the crossing location of Spencer Creek, which informed the project team and assisted in the preferred route selection process
- A meeting between Stantec and a landowner along route deviation A1 and A2 resulted in the identification of unique features, including a Christmas tree farm, which informed the project team and assisted in the preferred route selection process
- More detailed maps were included with letters and emails for the notice of second Information Session
- Material related to the second Information Session (display boards and project questionnaire) was made available on the project website the day of the second Information Session
- Identification of site-specific features that will aid the project team during detail design

The Enbridge Gas lands department will work with landowners and businesses to address specific concerns they may have regarding monetary compensation, land access during construction, enjoyment and use of property, field crew access, and safety.

Based on input received from agencies:

- It was acknowledged that permits may be required from GRCA and correspondence will continue
- Enbridge will work with HONI regarding construction and use of easements

Based on municipal input the second Information Session was scheduled on a Thursday to avoid conflicting with Hamilton City Council meetings.

Enbridge Gas has committed to on-going consultation with directly affected and interested parties during detailed design and construction and will continue to respond to concerns through the life of the project. The proposed pipeline will be designed to meet or exceed all safety regulations and codes. In addition, Enbridge Gas has a rigorous safety and integrity program so that the pipeline is constructed and maintained to operate safely.

4.0 IMPACT IDENTIFICATION, ASSESSMENT AND MITIGATION

4.1 METHODOLOGY

The potential effects and impacts of the project on physical, biophysical and socio-economic features have been assessed along the proposed pipeline route. With an understanding of pipeline construction and operation activities (see Sections 4.1.1 and 4.1.2), the assessment:

- Describes the environmental and socio-economic setting along the proposed pipeline route and related facilities
- Predicts the effects and associated impacts of project construction and operation activities
- Recommends supplemental studies, mitigation and protective measures (including construction methods and timing, site-specific mitigation, environmental protection measures, and compensation measures)
- Outlines the net impacts that are likely to remain

The inventory of existing environmental conditions, determination of effects and impacts, and mitigation and protective measures are a reflection of:

- Input received from the consultation program
- Information available from published and unpublished literature
- Maps and digital data
- Mitigation guidance documents
- Desktop assessments of environmental features conducted by Stantec technical staff
- Field assessments conducted by Stantec technical staff
- The pipeline development experience of Enbridge Gas and Stantec

By necessity, the analysis, integration, and synthesis of the data is an iterative process since information becomes available at various stages of the study and at different mapping scales. The level of detail of data and mapping increases as the study moves from analysis of the study area, to analysis of alternative corridors, to a site-specific survey of features along the proposed pipeline route. The data available at the current stage of the environmental study is appropriate for predicting effects and potential impacts and recommending mitigation and protective measures.

Specific information requests were made to several agencies throughout the project. The information collected assisted in identifying environmental features and constraints located on and adjacent to the proposed pipeline route, the potential presence of SAR and their habitat, predicting effects and potential impacts, and developing mitigation and protective measures. Where agencies requested that information be kept confidential, such as the precise location of rare, threatened, vulnerable or endangered species



and archaeological sites, such information has been withheld from the report or mapped in such a way that specific site locations cannot be determined.

Site-specific field surveys will be completed prior to construction.

The existing conditions maps (Appendix C) have been generated from data obtained from LIO. Conservation Authority (CA) regulated area data was obtained from GRCA, CH and HCA. Scales have been adjusted from the original source to better represent the features mapped. Stantec has digitally reproduced features added to the base maps. Additional mapping sources are identified on the respective map, and in the references.

There are instances where field investigations are recommended along the proposed pipeline route before construction. Given the location of the project components and experience of Stantec in providing environmental services for natural gas pipelines, these supplemental studies are not expected to change the conclusions regarding potential adverse residual impacts. The environmental and socio-economic information presented in the ER is based on sources cited throughout.

4.1.1 Construction

Constructing the Proposed Pipeline

The pipeline construction process includes various activities as described below:

1. Site Preparation and Clearing: The first activity is typically the survey and staking, which delineate the boundaries of the RoW and temporary work areas. Next, the RoW and temporary work areas are cleared of brush and trees (typically during winter, under frozen ground conditions). In the spring the fences that break up the linear RoW are braced and cut to permit an uninterrupted work area. Safety fence is installed at the edge of the construction RoW where public safety considerations are required, and aspects of the traffic management plan are implemented (i.e., signs, vehicle access). Silt fence is installed at required locations. Pre-tiling work is completed to accommodate agricultural drainage.
2. Grading and Stripping: The RoW is graded to allow for access by construction equipment. At this stage, the topsoil (on agricultural lands) or the duff layer (on natural lands) is stripped by bulldozers and graders then segregated so it will not be mixed with the subsoil later removed from the trench. Existing landscaping is also removed, and dewatering undertaken, where necessary.
3. Stringing: Stringing is the process where pipe sections are delivered to the full length of the RoW, placed on wooded skids and generally parallel to where the trench will be excavated.
4. Pipe Fabrication: The pipe is bent as required and the welding crew welds the pipe into continuous lengths. The pipe welds are non-destructively tested (e.g. x-ray) and coated.
5. Trenching and Lowering: After the pipe is fabricated, a trenching machine or hydraulic hoe can begin excavating a new trench. In areas of shallow bedrock, hoe-ramming and/or blasting may be required. In agricultural areas, tiles that are cut during the trench excavation are flagged and repaired as quickly as practical. In some areas the pipeline cannot be installed by trenching due to obstacles such

as roads or watercourses. In these locations the pipeline is installed using a trenchless approach through a variety of different means. Laneways and driveways are left over the trench as long as feasible where requested by the landowner.

6. Backfilling: During backfilling the originally excavated subsoil is placed over the pipe in the trench. In stony areas, the pipe may be sand-padded to protect the coating. In shallow water table areas, the pipeline may be weighted to provide negative buoyancy. In agricultural areas, after the trench is backfilled, tiling is repaired that was disturbed or broken by construction. Landowners with tile drainage are given the opportunity to inspect tile repairs. Typically, a tile consultant is retained to oversee tile repairs and the design of a header tile system if required.
7. Hydrostatic Testing: The pipeline is pressure tested by filling the pipe with water and holding it at a high pressure for a set period of time, typically 24 hours. Water is typically drawn by permit from nearby water sources such as watercourses or lakes, if available. Municipal water may also be used for hydrostatic testing. Upon completion of the hydrostatic testing, the pipeline is drained and dried then put into service with natural gas.
8. Clean-Up and Restoration: Clean-up is the restoration of the RoW and other work areas. On agricultural land, this may require decompaction of the subsoil and stone picking to maintain productivity. In natural areas, clean-up restores the environment including re-seeding of the RoW, returning the topography after grading, restoring ditch banks and watercourse crossings. Any erosion and sediment controls installed during construction are also removed. Clean-up will also restore landscaping, laneways and driveways.

4.1.2 Operation

Pipeline operation consists of pressurized natural gas flowing through the pipeline. Mainline valves located at the valve sites will serve to shut off and isolate the pipeline for maintenance and security purposes. Additional above-ground facilities along the pipeline include post-mounted signs identifying the pipeline, aerial patrol signs for fixed wing patrols, fence stiles, foot bridges for ditch crossings (if applicable), and "test boxes" located along fence lines at roads that are used to assess the adequacy of the corrosion protection system.

Once the pipeline is operational, the following activities are undertaken to patrol and maintain the pipeline:

- Completing a ‘line walk’ of the entire pipeline by Enbridge Gas personnel once a year to check for exposed pipelines, evidence of damage to aboveground equipment and piping, evidence of damage to underground piping and gas leaks, and identify any unassociated construction activity near the pipeline RoW
- Conducting fixed wing aerial patrols weekly from April 1 to December 31 and monthly from January 1 to March 31 to detect the presence of soil erosion and third-party structures or activities that could damage the pipeline
- Checking cathodic corrosion protection – a low voltage electric circuit that runs along the length of the pipeline to prevent the development of external corrosion



- Completing regular checks and maintenance at pipeline facilities such as valve sites
- Completing depth of cover surveys, so that the amount of soil cover over the pipeline is maintained
- Performing periodic inspection by running electronic tools through the interior of the pipeline to assess for the presence of corrosion or dents and the need for repairs
- completing class location surveys, adding all new buildings and structures to the Enbridge Gas mapping system.

4.2 PHYSICAL FEATURES

4.2.1 Bedrock Geology

Existing Conditions

The bedrock geology along the proposed pipeline route is comprised of sandstone, dolostone and shale of the Guelph Formation and Armabel Formation (OGS, 1991) (Figure 1, Appendix C).

To determine the general depth from the soil surface to the bedrock, drift thickness was reviewed, and results indicate a drift thickness along the proposed pipeline route ranging from 0 – 20 m (Gao,et al, 2006)(Figure 2, Appendix C).

Potential Impacts

The planned excavation depth of the project is approximately 2.5 m below grade, with the potential to exceed this depth for watercourse crossings, road crossings and at the undercrossing location where the proposed pipeline shifts from the south side of the easement to the north side of the easement (approximately 750 m west of Brock Road) undercrossing three existing Enbridge Gas pipelines. Based on the shallow drift thickness over bedrock and knowledge from previous pipeline installation, bedrock will be encountered.

Bedrock encountered during trench excavation will be excavated by means of a hoe-ram and/or blasting. Noise, vibration, fly rock damage and dust may impact wildlife, residences, water wells and businesses.

Mitigation and Protective Measures

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. In locations where hoe-ramming is required in close proximity to residential homes or buildings the construction contractor should inspect foundations and other structures for integrity prior to and after hoe-ramming. 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. If a significant quantity of bedrock has been removed, the material should be

temporarily stockpiled and later transported to a local aggregate producer for reduction to crushed stone. Additionally the material will be offered to interested landowners and businesses in the vicinity of the project.

In locations where blasting is required in close proximity to residential homes or buildings, a blasting consultant should be retained to monitor potential blasting impacts. The monitoring program should include the inspection of foundations and other structures for integrity prior to and after blasting activity. The identification of homes and buildings to be monitored, in proximity to the blast, should be determined by the blasting consultant. Notices of blasting/hoe-ramming should be circulated to residents in the area of blasting/hoe-ramming locations. Monitoring of adjacent wells is recommended.

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.

Net Impacts

With the implementation of the above mitigation and protective measures, no significant adverse residual impacts to bedrock geology are anticipated.

4.2.2 Physiography and Surficial Geology

Existing Conditions

The majority of the proposed pipeline route is located within the Flamborough Plain, with a small section located within the Norfolk Sand Plain physiographic region of southern Ontario (Chapman and Putnam, 1984). The physiography along the proposed pipeline route between the Kirkwall valve site and Westover Road is characterized by limestone plains and till plains (drumlinized). Between Westover Road and Middletown Road the physiography of proposed pipeline route consists of till plains (drumlinized) and areas of drumlins. Between Westover Road and Brock Road the physiography consists of till plains (drumlinized) and limestone plains. Between Brock Road and the Hamilton valve site the area is again characterized by limestone plains with an area between Highway 6 and the Hamilton valve site on the boundary of limestone plains and sand plains. (Figure 3, Appendix C). The topography along the proposed pipeline route is varied. Approximately 83% of the route crosses slopes 0-5%, approximately 14% of the route crosses slopes between 6-10% and approximately 3% of the route crosses slopes greater than 10% (Figure 16, Appendix C).

Surficial geology mapping indicates that a portion of the pipeline from the Kirkwall valve site to Westover Road, and an area east of Spencer Creek crosses Paleozoic bedrock. The majority of the pipeline between Westover Road and approximately 1 km west of Brock Road crosses stone-poor, carbonate derived silty to sandy till. The area approximately 1 km west of Brock Road to approximately 400 m west of Highway 6 is characterized as ice contact stratified deposits. The area approximately 400 m west of Highway 6 to the Hamilton valve site crosses coarse textured glaciolacustrine deposits. There is an isolated area of organic deposits east of Middletown Road. (Figure 4, Appendix C).



Potential Impacts

Disturbance to the overburden along the proposed pipeline may cause surface soil erosion and/or watercourse sedimentation during construction and post-construction, particularly in areas of steep slopes. Trench slumping may occur during construction.

Mitigation and Protective Measures

Surface soil erosion can occur in the absence of vegetative cover. Where there is potential for soil erosion, the need for and location of erosion and sediment control (ESC) measures should be determined by an inspector with appropriate qualifications and installed prior to the commencement of work in the area.

When land is exposed, the exposure should be kept to the shortest practical period. Natural features should be preserved to the extent practical. Temporary vegetation and mulching should be used to protect areas as appropriate. Where required, natural vegetation should be re-established as soon as practical.

The contractor must obtain adequate quantities of materials to control erosion. Additional supplies should be maintained in a readily accessible location for maintenance and contingency purposes. ESC structures should be monitored to maintain their effectiveness through the life of construction and post-construction rehabilitation.

Extreme precipitation events could result in damage to ESC measures which could lead to erosion. When site conditions permit, ESC measures should be repaired and re-installed on erosion susceptible surfaces. If the erosion is resulting from a construction-related activity, the activity should be halted immediately until the situation is rectified.

To avoid the trench from slumping, trench walls should be sloped and should be monitored during wet conditions. Trench boxes may be required depending on site specific conditions.

At areas of the landscape with steep slopes site-specific mitigation and protective measures should be considered at the discretion of Enbridge Gas’s on-site inspection team, including:

- placing erosion control measures at intervals along the slopes
- restricting the movement of heavy machinery and construction personnel during construction on the slope
- re-establishing existing contours and drainage upon completion of construction
- re-establishing slopes as soon as practical, including at the conclusion of each stage of construction from the top of slope down, through hydromulching and hydroseeding with quick germinating seed mixture appropriate to surrounding vegetation
- monitoring of vegetation until established

Slope stability should be reviewed at watercourse crossing locations. Watercourse banks should be seeded and stabilized immediately following crossing. ESC and stabilization measures should be maintained during construction, restoration and rehabilitation until vegetative cover is established. Where evidence of erosion exists, corrective control measures should be implemented as soon as conditions permit. Permits obtained under O.Reg. 150/06 from GRCA, O.Reg. 161/06 from HCA or O.Reg. 162/06 from CH may contain conditions pertaining to ESC.

Net Impacts

With the implementation of the above mitigation and protective measures, no significant adverse residual impacts on or from physiography and surficial geology are anticipated.

4.2.3 Hydrogeology

Existing Conditions

Based on physiographic (Chapman and Putnam, 1984) and surficial geology mapping (OGS, 2010), the proposed pipeline route will cross limestone plains and till plains. It will cross Spencer Creek and tributaries of Bronte Creek. Aquifer vulnerability mapping by the Halton Region Source Protection Region indicates portions of the route are within a highly vulnerability aquifer with minimal significant groundwater recharge. There are areas of significant groundwater recharge which are present at the eastern portion of the route, in the vicinity of Brock Road, which primarily correspond to areas with coarser textured material.

The MECP Water Well Records (WWR) within 500 m of the proposed pipeline indicate approximately 163 water supply wells, 111 of which are domestic (Figure 5, Appendix C). A review of 105 MECP WWR for which water level data was available indicated that wells are installed within the overburden at depths ranging from 1 m below ground surface (BGS) to 59 m BGS. The groundwater level measured in these wells ranged from 0.6 m BGS to 24.4 m BGS. There are seven water supply wells within 50 m of the pipeline, two of which are domestic. These wells are installed in the overburden at depths ranging from 0 m to 6.7 m BGS. The groundwater in these wells ranged from 1.5 m to 10.6 m BGS.

Regional groundwater flow near the proposed pipeline route in the overburden aquifer is generally to the south towards Lake Ontario and Hamilton Harbour (City of Hamilton, 2009). Local groundwater flow conditions are impacted by surface water features.

Within the Halton Region Source Protection Area, municipal drinking water intakes use surface water from various sources to supply drinking water to the residents and other water users in the region. The proposed pipeline does not cross through any wellhead protection areas (WHPA). The closest WHPA is approximately 2.1 km northwest of the proposed pipeline. A review of nearby surface water system intake protection zones (IPZs) indicates that the proposed pipeline does not cross any IPZ-1 or IPZ-2 for a surface water system (HHSPA 2017).

Figure 5, Appendix C shows groundwater conditions.



Potential Impacts

Hydrostatic Testing and Dewatering/Sand-pointing

A hydrostatic test will be undertaken for the proposed pipeline.

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.

Private Water Wells

There are approximately 163 water supply wells within 500 m of the proposed pipeline route, 111 of which are domestic. The majority of these private domestic supply wells are bedrock wells. There are seven water supply wells within 50 m of the proposed pipeline, two of which are domestic. Depending on the proximity to wells, the depth of the well installation and the groundwater levels encountered during excavation, trench dewatering has the potential to impact water well quality or quantity at some of the overburden supply wells.

Municipal Water Supply

The proposed pipeline does not extend through any WHPAs or IPZ associated with any municipal groundwater supply system.

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.

Mitigation and Protective Measures

Hydrostatic Testing and Dewatering/Sand-pointing

For groundwater dewatering, the MECP allows registration under the EASR for construction dewatering projects where groundwater takings will be greater than 50,000 L/day and less than 400,000 L/day; however, should groundwater takings exceed 400,000 L/day, a PTTW may be required from the MECP.

If surface water is used as the source water for the hydrostatic test, a PTTW application would be required and would include an assessment of the capacity of the source to provide the required water without impacting the ecosystem, and recommendations for mitigation measures such as screened water intakes to limit intake of debris and organisms and 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/sand-pointing and/or hydrostatic testing, energy dissipation techniques should be used. Discharge piping should be free of leaks and should be properly anchored to prevent bouncing or snaking

during surging. Protective measures may include dewatering at low velocities, dissipating water energy by discharging into a filter bag or diffuser, and utilizing protective riprap or equivalent. If energy dissipation measures are found to be inadequate, the rate of dewatering should be reduced or dewatering discontinued until satisfactory mitigation measures are in place. Discharge should be monitored to make sure that no erosion or flooding occurs.

To assess the potential for introduction of contaminated water to soils or bodies of water, testing of hydrostatic and trench dewatering discharge water should be considered. 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. An environmental consultant should be consulted to determine what testing is necessary for the discharge water.

Private Water Wells

A private well survey will take place to assess domestic groundwater use near the proposed pipeline and a private well monitoring program may be recommended for residents who rely on overburden groundwater supply for domestic use.

Municipal Water Supply

There are no nearby municipal supply wells, and therefore additional mitigation measures are not required to protect groundwater drinking supply sources.

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.

Net Impacts

With the implementation of the above mitigation and protective measures, no significant adverse residual impacts on groundwater are anticipated.

4.2.4 Extractive Resources: Aggregates and Petroleum Resources

Existing Conditions

No active or abandoned petroleum wells or aggregate resources are located along or in close proximity to the proposed pipeline route. The proposed pipeline route is located more than approximately 1.4 km from the nearest abandoned petroleum well and more than 5.5 km from the nearest active aggregate site.

A map of aggregate and petroleum resources is located in Figure 6, Appendix C.

Potential Impacts

Since the proposed pipeline route is located more than approximately 1.4 km from the nearest abandoned petroleum well and more than 5.5 km from the nearest active aggregate site, no impacts to these resources are anticipated. The pipeline is also not anticipated to constrain development of any aggregate site.

Mitigation and Protective Measures

As no potential impacts are anticipated, no mitigation or protective measures are required.

Net Impacts

No significant adverse residual impacts on aggregate and petroleum resources are anticipated.

4.2.5 Soil and Soil Capability

Existing Conditions

The soils along the proposed pipeline route range from loam to muck. In the Soils of Wentworth County Report (Presant et al, 1965) there are 11 soil types identified; Farmington Loam, Guelph Loam, Guelph Loam - Shallow Phase, Grimsby Sandy Loam - Shallow Phase, London Loam, London Loam - Shallow Phase, Flamborough Sandy Loam, Parkhill Loam, Burford Loam, Muck, and Stream Course. A description of each, from the soil survey report, is included in this section.

Farmington Loam is a well-drained, shallow soil with a depth of soil over bedrock that does not exceed 12 inches (30 cm). Most of the Farmington soils occur on level or very gently sloping areas of the Flamborough Plain. These soils have limited agricultural potential due to the shallow rooting depth.

Guelph Loam is a well-drained loam soil commonly found in local drumlin areas where the slopes range between 6 and 15 percent. These soils are principally used for forage crops, spring grains and winter wheat. There is also a Guelph Loam - Shallow Phase of this soil mapped along the proposed pipeline route. The shallow phase has developed on material that has a thickness of 12-36 inches (30-90 cm) over the bedrock.

Grimsby Sandy Loam - Shallow Phase soils have developed on well-drained medium and fine sandy loams. The topography is gently to moderately sloping. Droughtiness is a problem on the shallow phase soils of the Flamborough Plain.

London Loam is the imperfectly drained soils found in association with the Guelph Loam. The London soils are often sandier than the Guelph soils. They occur mainly on the level areas within the drumlin field and along the Flamborough plain. London Loam - Shallow Phase is identified along the proposed pipeline route. The shallow phase has developed on material that has a thickness of 12-36 inches (30-90 cm) over the bedrock.

Flamborough Sandy Loam is a poorly drained soil that has developed from calcareous sand deposits. Most of these soils are found on level or depressional areas. Much of these lands are cleared for pasture and some is used for market gardening.

Parkhill Loam is a poorly drained soil associated with the landscape of the Guelph soils. It occurs mainly on the flat or depressional areas between drumlins. These soils have a high organic matter content. The most common agricultural use is for unimproved pasture.

Burford Loam is a well-drained soil developed on deposits of loam over gravel. The soils are most prevalent on the gently rolling outwash plain that fringes the southern part of the drumlins found in the area. Forage crops, spring grains, winter wheat, and corn are the major crops grown on the Burford soils.

Muck soils include poorly drained soils consisting of deposits in which 12 inches (30 cm) or more of organic materials have accumulated. The surface material in the muck deposits consists of black, friable, well decomposed organic debris.

In Wentworth County, stream courses are defined as boulder beds or bedrock over which streams are actively flowing for most of the year. Stream erosion has removed most of the fine soil materials, leaving gravel, boulders, and bedrock of the main constituents of the stream beds.

Soil capability for agriculture is mapped by Agriculture and Agri-Food Canada in the Canada Land Inventory (CLI). Lands classified as Class 1 are the most agriculturally productive, while those classified as Class 7 have the lowest capability for agriculture. Class 1 to 5 agricultural lands are generally arable, while classes 1 through 3 are defined by the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) to be prime agricultural soils for common field crop production.

Table 4-1 shows the soil types mapped along the proposed pipeline route, the percentage of the proposed pipeline route that the soil covers and the CLI for Agriculture rating of each soil type. The CLI rating of the majority of the agricultural lands, approximately 60%, along the proposed pipeline route are considered to be prime agricultural lands. Soils in the prime classes, 1-3, have moderate to no significant limitations that restrict the range of crops or require moderate conservation practices (AAFC, 2005). Approximately 40% of the proposed pipeline route is considered to be less than prime agricultural land. These soils are the very shallow Farmington Loam, the coarse sandy soils and the Muck.



Table 4-1: Soil and Soil Capability along Preferred Route

Soil Type	% of Route	CLI Class
Burford Loam	3	2
Farmington Loam	8	6, 7
Flamborough Sandy Loam	4	3
Grimsby Sandy Loam – Shallow Phase	>1	4
Guelph Loam	25	1, 2, 4, 5
Guelph Loam – Shallow Phase	6	3
London Loam	18	1
London Loam – Shallow Phase	8	3
Parkhill Loam	7	2
Muck	17	O
Stream Course	4	5

Maps of soil type and soil capability are on Figures 7 and 8 respectively, Appendix C.

Potential Impacts

The potential exists for surface stoniness following pipeline construction due to soils in the area along the proposed pipeline route developing on stony till parent materials.

The proposed pipeline crosses agricultural land with a range of agricultural capability. Where there is interaction with agricultural land, there are potential impacts to topsoil as a result of construction including compaction, loss of organic matter and degraded soil structure. No topsoil will be removed from the site. Excess subsoil may be removed from the site.

Trenching and construction activities across agricultural land have the potential to affect soil quality and agricultural capability. The movement of heavy machinery on wet soil may cause rutting, compaction, and mixing of topsoil with subsoil. When exposed, soils are more prone to erosion due to the loss of vegetative cover. Improperly salvaged topsoil can result in topsoil and subsoil mixing, compaction, rutting, and erosion, which can potentially decrease crop yields.

Where equipment is moving from one agricultural field to another there is the potential for the spread of soil pests/diseases to previously unimpacted fields.

Mitigation and Protective Measures

To prevent recurring soil surface stoniness on agricultural fields picking of stones 10 cm and larger should be employed following soil replacement activities and subsoiling with an agricultural subsoiler. Repeated stone picking following sub-soiling, discing, chisel ploughing and cultivating should be undertaken.

Excess Soil

It is noted that the MECP has proposed regulating the movement of excess soils in the province of Ontario. It is recommended that Enbridge Gas retain a qualified person for environmental site assessment who is knowledgeable in the current excess soils guidelines, as well as the proposed regulation, in order to make recommendations for the management of excess soils for this project.

Wet Soil Shutdown

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. Enbridge Gas' 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.

High Winds

During construction activities, weather should be monitored to identify the potential onset of high wind conditions and to preserve topsoil. In the event that high winds occur, the contractor should implement protective measures such as:

- Suspend earth moving operations
- Apply dust suppressants or vegetate soil stockpiles
- Protect soil stockpiles with a barrier or windscreen

In conjunction with the above measures, all required materials and equipment should be readily accessible and available for use as required.

Soil Stripping

Topsoil depths should be measured prior to stripping so that the proper depth of topsoil is removed and replaced. Where stripping is undertaken on agricultural lands, topsoil and subsoil should be stripped and stockpiled separately to avoid mixing. Where the pipeline crosses woodlands or wetlands the organic and duff layer should be stripped where feasible, given local substrate conditions. Where stripping is undertaken in woodlands or wetlands, organic material and subsoil should be stripped and stockpiled separately to avoid mixing.

If clean-up is not practical during the construction year, it should be undertaken in the year following construction, starting once the soils have sufficiently dried. Interim soil protection measures should be implemented in sensitive areas to stabilize the RoW for over-wintering.



Soil Compaction

Within agricultural lands where soil has been compacted by the construction process, an agrologist should determine where decompaction may be necessary. Compaction can be alleviated by using farm equipment such as an agricultural subsoiler prior to replacing the topsoil. Sub-soiling with an agricultural subsoiler, followed by discing, chisel ploughing and cultivating, to smooth the surface, should be considered on agricultural lands. In high traffic areas of the RoW where deep compaction persists, additional deep tillage or subsoiling may be required on a site-specific basis. Soil density and/or penetrometer measurements on and off the easement may be used as a means of assessing the relative degree of soil compaction caused by construction along the RoW as well as determining that the RoW has been sufficiently decompacted.

Soil Pests/Diseases

In consultation with the landowner and an agrologist, Enbridge Gas will develop and implement a soil sampling plan on agricultural lands for potential pests and/or diseases that are known to the area. If the results indicate an issue or concern, in consultation with the landowner, Enbridge Gas will work with the agrologist to develop a best practice protocol.

Any imported topsoil used for rehabilitation will also have a composite sample analyzed for identified concerns before it is placed on the easement.

Net Impacts

With the implementation of the above mitigation and protective measures, no significant adverse residual impacts on soil or soil capability are anticipated.

4.2.6 Agricultural Tile Drains

Existing Conditions

Along the proposed pipeline route there are two properties mapped as containing systematic agricultural tile drains. No properties are mapped as having random agricultural tile drains. A map of agricultural tile drains is located on Figure 9, Appendix C.

Potential Impacts

Construction activities, including trenching and the movement of heavy machinery, have the potential to crush and/or sever agricultural tile drains.

Mitigation and Protective Measures

Enbridge Gas should undertake consultation with landowners of agricultural fields to confirm where systematic tile drainage is present. If tile drainage is present, Enbridge Gas should undertake standard mitigation during trenching, including:

- Develop site specific tile plans with an independent tile contractor
- Conduct pre-tiling, and install header tile to maintain tile system function
- Excavate the pipeline trench to a depth that allows clearance between the top of the proposed pipeline and the bottom of existing drainage systems
- Record and flag severed or crushed tile drains
- If a main drain, header drain, or large diameter drain is severed, maintain field drainage and prevent flooding of the work area and adjacent lands through temporary repairs
- Cap the downstream side of severed drains that cross the trench to prevent the entry of soil, debris and rodents, as required
- Repair damaged and severed drains following construction
- After repair and before backfilling, invite the landowner to inspect and approve the repair

Net Impacts

With the implementation of the above mitigation and protective measures, no significant adverse residual impacts on agricultural tile drains are anticipated.

4.2.7 Natural Hazards

Existing Conditions

Natural hazards are elements of the physical environment that have the potential to affect a project in an adverse manner. Potential natural hazards along the proposed pipeline route are limited. Natural hazards that may occur are seismic activity and flooding.

The proposed pipeline route lies within the southern Great Lakes Seismic Zone (Natural Resources Canada, 2016). This zone has a low to moderate level of seismicity when compared to the more active seismic zones to the east, along the Ottawa River and in Quebec. Over the past 30 years, on average, 2 to 3 magnitude 2.5 or larger earthquakes have been recorded in the southern Great Lakes region. By comparison, over the same time period, the smaller region of Western Quebec experienced 15 magnitude 2.5 or greater earthquakes per year.

Three moderately sized (magnitude 5) events have occurred in the 250 years of European settlement of this region, all of them in the United States - 1929, Attica, New York, 1986, near Cleveland, Ohio, and 1998, near the Pennsylvania/Ohio border. All three of these earthquakes were widely felt but caused no damage in Ontario.

A map of the floodplain and regulation limits of GRCA, HCA and CH is located on Figure 10, Appendix C,



Potential Impacts

The probability of significant seismic activity in the area traversed by the proposed pipeline is low; therefore, no potential impacts are anticipated.

The likelihood of a flooding event interfering with pipeline construction is reduced by construction occurring outside of the spring freshet. A flooding event during construction could result in construction delays, soil erosion, sedimentation of a watercourse, trench slumping, and damage or loss of construction equipment and contamination of a watercourse as a result of equipment entering a watercourse. The nature of these impacts would depend on the spatial extent, duration, and magnitude of the flooding event.

Mitigation and Protective Measures

If flooding necessitates a change in the construction schedule, affected landowners and regulatory agencies should be notified and construction should continue at non-affected locations. Temporary workspaces should be located above the floodplain to the extent practical, unless necessary for watercourse crossings. All work in the floodplains will be subject to a permit under O.Reg. 150/06 from GRCA, O.Reg. 161/06 from HCA or O.Reg. 162/06 from CH.

Net Impacts

With the implementation of the above mitigation and protective measures, no significant adverse residual impacts from natural hazards are anticipated.

4.3 BIOPHYSICAL FEATURES

4.3.1 Aquatic Features

Existing Conditions

The proposed pipeline route passes through three upper tier watersheds (Grand River, Spencer Creek and Bronte Creek). These watersheds lie within the jurisdiction of three CAs: the GRCA, the HCA (Spencer Creek) and CH (Bronte Creek).

The proposed pipeline route crosses four watercourses, identified as stream crossings SC1, SC2, SC3 and SC4 (Figure 11, Appendix C)

Background data was used to provide a preliminary identification of potential that a watercourse supports fish that are part of or support a Commercial, Recreational, or Aboriginal (CRA) fishery. Additional field investigations will be conducted in summer 2020 to further refine the fish habitat designation at each crossing. A watercourse supports a CRA fishery if it meets one or more of the following criteria:

1. Mapping from LIO database suggests that watercourse is directly connected to fish habitat downstream.

2. Absence of visible barriers to fish passage (i.e., steep slopes, waterfalls).
3. Presence of aquatic species at risk indicated by DFO aquatic species at risk mapping (DFO 2017).

Additional criteria for determining presence of fish habitat will be added following the 2020 summer field investigations.

The following is a summary of the watercourses in proximity to the proposed pipeline route organized by subwatershed. Fish species documented in available background data are provided in Table 4-2.

Barlow Creek Subwatershed (Not crossed)

The Kirkwall valve site is located in an area that is connected to the headwaters of Barlow Creek; a subwatershed of the Lower Grand River that is classified as warmwater habitat. The tributaries of the Lower Grand tend to be highly meandering, with narrow and deep channels and substrates consisting of silt and sand. Fish habitat impacts within the subwatershed are primarily associated with agricultural land use (GRCA 2005). No crossing of Barlow Creek is required.

Spencer Creek Watershed (Stream Crossings: SC1 and SC2)

Stream crossings SC1 and SC2 cross an unnamed tributary to Spencer Creek (SC1) and the main branch of Spencer Creek (SC2). The unnamed tributary to Spencer Creek is classified as Small Riverine Warmwater habitat. This habitat type within the Spencer Creek watershed includes small watercourses that may have similar characteristics to coldwater habitat on the Niagara Escarpment (steep gradient, large substrate materials), however they have variable flow regimes and may dry up during the summer months (Bowlby et al 2009). The main branch of Spencer Creek (SC2) is classified as Intermediate Riverine Coldwater habitat which is typically defined as medium to high-gradient streams with medium to large substrate materials. This area of Spencer Creek contains some of the most significant areas of this habitat type within the Hamilton Harbour Watershed (Bowlby et al 2009).

Bronte Creek Watershed (Stream Crossings: SC3 and SC4)

The two crossings within the Bronte Creek watershed (SC3 and SC4) cross the same unnamed tributary to Bronte Creek. Habitat within this tributary is considered moderate to high due to good water quality, a moderately diverse fish community, marginally coldwater thermal regime, moderately natural in-stream habitat, and riparian habitat that provides good to patchy buffering to the watercourse (CH 2002).



Table 4-2: Fish Species Along the Proposed Route

Fish Species		Grand River Watershed (GRCA 2005)	Spencer Creek Watershed (Bowlby et al 2009)		Bronte Creek Watershed (CH 2013)
Common Name	**Latin Name**	**Barlow Creek Warmwater Habitat (No crossings)**	**Small Riverine Warmwater Habitat (SC1)**	**Intermediate Riverine Coldwater Habitat (SC2)**	**SC3 and SC4**
Black Crappie	*Pomoxis nigromaculatus*		X		
Blacknose Dace	*Rhinichthys atratulus*			X	X
Blacknose Shiner	*Notropis heterolepis*		X	X	
Blackside Darter	*Percina maculata*				X
Bluntnose Minnow	*Pimephales notatus*			X	X
Brook Stickleback	*Culaea inconstans*	X			X
Brown Bullhead	*Ameiurus nebulosus*		X		X
Brown Trout	*Salmo trutta*				X
Central Mudminnow	*Umbra limi*	X	X	X	X
Common Carp	*Cyprinus carpio*				X
Common Shiner	*Luxilus cornutus*		X	X	X
Creek Chub	*Semotilus atromaculatus*	X	X	X	X
Fathead Minnow	*Pimephales promelas*			X	X
Green Sunfish	*Lepomis cyanellus*				X
Hornyhead Chub	*Nocomis biguttatus*			X	
Johnny Darter	*Etheostoma nigrum*			X	X
Largemouth Bass	*Micropterus salmoides*		X		
Mottled Sculpin	*Cottus bairdii*			X	
Northern Hog Sucker	*Hypentelium nigricans*				X

Table 4-2: Fish Species Along the Proposed Route

Fish Species		Grand River Watershed (GRCA 2005)	Spencer Creek Watershed (Bowlby et al 2009)		Bronte Creek Watershed (CH 2013)
Common Name	**Latin Name**	**Barlow Creek Warmwater Habitat (No crossings)**	**Small Riverine Warmwater Habitat (SC1)**	**Intermediate Riverine Coldwater Habitat (SC2)**	**SC3 and SC4**
Northern Pearl Dace	*Margariscus nachtriebi*				X
Northern Pike	*Esox lucius*	X			X
Pumpkinseed	*Lepomis gibbosus*	X	X		X
Redside Dace	*Clinostomus elongatus*			X	
River Chub	*Nocomis micropogon*			X	
Rosyface Shiner	*Notropis rubellus*			X	
White Sucker	*Catostomus commersonii*				X

Aquatic Species at Risk

The main branch of Spencer Creek (SC2) contains records for Redside Dace (DFO 2019). Redside Dace is Endangered under the provincial ESA and Schedule 1 of the federal SARA and therefore receives protection under these Acts. Critical habitat is not found in this watercourse (DFO 2019). As Spencer Creek is provincially regulated as Occupied habitat, Enbridge should assume that Redside Dace are present within the RoW.

Potential Impacts

The proposed pipeline route crosses four watercourses. Summer habitat assessments will be conducted in 2020 to confirm aquatic habitat conditions. During construction contamination of surface water features can occur due to accidental spills. The results of the surveys will be used to confirm mitigation and protection measures.

Industry standard watercourse crossing methods that meet the requirements of DFO for fish and fish habitat protection will be used during construction. These plans include “isolated” watercourse crossing methods such as the Dam and Pump crossing method.

Dam and Pump Crossing

The Dam and Pump Crossing method isolates water flow from the construction area and avoids the majority of the technical risks inherent in other crossing techniques, such as damage to pipe integrity, achieving good cathodic protection, being accessible for maintenance, and increased cost and schedule.



Construction of an open cut crossing has the potential to affect fish directly through impacts on water quality (erosion, sedimentation, and accidental spills), disruption/harassment (vibration and noise) and loss of habitat. Indirect impacts include restrictions to habitat use and fish passage. Long term impacts can include changes to habitat such as substrate, increased erosion potential, loss of in-stream cover and riparian shading.

Mitigation and Protective Measures

Mitigation and protective measures for erosion and sediment control are outlined in Section 4.2.2.

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.

Temporary vehicle crossings and dam and pump pipeline crossings should be completed following the measures outlined in industry standards and the Enbridge Environmental Guidelines for Construction (Enbridge 2012).

The following general mitigation measures, or equivalent, are recommended at watercourse crossings along the preferred pipeline route. Additional, activity-specific measures related to the crossing methods are provided following the general mitigation measures. All measures presented are intended to be consistent with DFO's measures to avoid serious harm (DFO 2016), but DFO's website (http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/measures-mesures-eng.html) should be consulted immediately prior to construction to confirm that the construction plan is consistent with the most up-to-date list of DFO avoidance measures.

General Mitigation Measures

- In-water work for warmwater habitats is typically permitted from July 1 to March 15 (no work from March 16 to June 30).
- In-water work for Redside Dace habitat is typically permitted from July 1 to September 15 (no work from September 16 to June 30).
- Watercourses should not be obstructed in a way that impedes the free movement of water and fish.

- Prior to removal of the vegetation cover, effective mitigation techniques for erosion and sedimentation should be in place to protect water quality. Disturbance to the area during construction should be limited and grubbing activities should be delayed until immediately prior to grading operations.
- Soil exposure should be reduced prior to commencing construction, and the period that soil remains exposed for grading should be limited. Exposed soils surrounding watercourses should be seeded immediately following construction.
- Temporary erosion and sediment control measures should be maintained and kept in place until work within or near a watercourse has been completed and stabilized. Temporary sediment control measures should be removed at the completion of the work but not until permanent erosion control measures have been established.
- Construction material, excess material, construction debris and empty containers should be stored a minimum of 30 m from watercourses and watercourse banks, where possible.
- Equipment maintenance and refueling should be controlled to prevent entry of petroleum products or other deleterious substances, including any debris, waste, rubble or concrete material, into a watercourse, unless otherwise specified in the contract.
- Deleterious substances (fuel, oil, spoil) should be stored >30 m from the watercourse, where possible. Any such material that inadvertently enters a watercourse should be removed in a manner satisfactory to the environmental inspector.
- 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.
- Conditions of water crossing permit(s), if applicable, will be adhered to.
- Additional supplies should be maintained in a readily accessible location for maintenance and contingency purposes:
  - Sediment control fencing
  - Sediment control logs (i.e., SiltSoxx™)
  - Straw bales
  - Wooden stakes
  - Sand bags
  - Water energy dissipater
  - Filter cloth
  - Water pumps (including stand-by pumps and sufficient lengths of hose)
  - Culvert

Additional Measures

The following measures are applicable to trenched crossings:

Flow Diversion/Dewatering

If in-water works are required, the work area should be isolated from the remainder of the surface water feature. Downstream flows should be maintained using dam and pump techniques. When dewatering the work area, dewatering operations should be managed to prevent erosion and/or release of sediment laden or contaminated water to the waterbody (e.g. settling basin, filter bag, energy dispersion measures). An isolation/contamination plan should be designed and implemented to isolate temporary in-water work zones and maintain flow around the work zone. Maintenance of downstream flow should avoid potential upstream flooding and desiccation of downstream aquatic habitat and organisms.

Fish Rescue Plan

Prior to dewatering the work zone, fish trapped in the construction area shall be collected and moved using capture, handling, and release techniques to reduce harm and stress. The intakes of pumping hoses should be equipped with an appropriate device to avoid entraining and impinging fish (see *Measures to Avoid Causing Harm to Fish and Fish Habitat* (2013) at the following DFO website http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/measures-mesures-eng.html). Fish rescue plans should be developed on a site-specific basis and implemented by qualified professionals with the appropriate permitting in place (i.e. MNRF Licence to Collect Fish for Scientific Purposes).

Site Restoration and Riparian Planting

Following construction, the bed and banks of the crossing locations should be restored to pre-construction conditions to the extent possible in accordance with environmental permits. Bank slopes should be restored to match existing grades; however, alterations may be made to maintain slope stability and limit future erosion. Exposed banks should be re-vegetated with native plants to provide riparian cover and aid in erosion and sediment control. Stream beds should be restored to maintain slopes and tie in with existing grades. Bed material should be replaced to match pre-construction conditions.

Permitting

The *Fisheries Act* prohibits causing serious harm to fish unless authorized by the DFO. This applies to work being conducted in or near water bodies that support fish that are part of or that support a CRA fishery. Since November 25, 2013, proponents must take the responsibility to determine whether or not their projects meet the DFO requirements under the Self-Assessment process. If serious harm cannot be avoided, proponents should contact DFO for a formal review and/or approval under the *Fisheries Act*. Following finalization of plans, a Self-Assessment should be completed for all project activities that have the potential to cause serious harm to fish. If it is determined that serious harm is likely to occur as a result of project-related activities, a Request for Review should be completed and submitted to DFO to determine approvals requirements under the *Fisheries Act*. Revision to the *Fisheries Act* were proposed on February 16, 2018 that may come into force in 2019. Should the proposed revisions come into force

prior to construction, the proposed mitigation measures should be reviewed to ensure that they are consistent with the revised *Fisheries Act*.

The pipeline route will be located within the regulated boundary of the GRCA, HCA and CH. Permits under Ontario Regulation 150/06, 161/06 and 162/06, respectively, will be required prior to construction activities in the regulated boundaries. If activities are required below the high-water line, then the DFO and MECP must be contacted to determine if a SARA and ESA Permits are required.

Net Impacts

With the implementation of standard construction methods and the above mitigation and protective measures, no adverse residual impacts on aquatic species or habitat are anticipated.

4.3.2 Designated Natural Areas and Vegetation

Existing Conditions

The proposed pipeline route falls within the Niagara section of the Deciduous Forest Region (Rowe, 1972). The vegetation communities in the area have been significantly altered by anthropogenic activities (predominantly clearing and draining of land for agricultural purposes). Forest cover for the watersheds that the proposed pipeline crosses range from 19% (GRCA no date, HCA 2013) to 26.4% (CH 2013). The proposed pipeline is located adjacent to an existing RoW, crossing approximately 1.9 km of woodlands, 0.4 km of wetlands, as well as various hedgerows, located primarily at property boundaries, roads, and watercourses. Hayfields, pastures or fallow fields, which may provide habitat for grassland birds, occur along the route, interspersed with row crops (e.g., corn, soy). A map of designated natural areas is provided on Figure 12, Appendix C.

Wetlands

The Ontario Wetland Evaluation System is used to identify Provincially Significant Wetlands (PSW). An evaluated wetland may be one contiguous unit or may be a series of smaller wetlands functioning as a whole. Evaluated wetlands that do not qualify as provincially significant may be designated as locally significant and may be protected through local planning and policy measures. There may also be unevaluated wetlands in an area.

A review of MNRF LIO mapping (MNRF, 2019a) and the Natural Heritage Information Centre (NHIC) database (MNRF, 2019b) indicates that the proposed pipeline route is within 120 m of three PSWs, including Beverley Swamp Wetland Complex, Hayesland Christie Wetland Complex, and Sheffield Rockton Wetland Complex. One small pocket of unevaluated wetland was also identified along the proposed pipeline route based on MNRF mapping, located west of the Hamilton valve site. Vegetation and Ecological Land Classification (ELC) surveys will be completed in 2019-2020 to assess presence or absence of wetlands within 120 m of the proposed pipeline route.



Significant Woodlands

A woodland is defined as a treed area, woodlot or forested area. The Natural Heritage Reference Manual notes that the local planning authority has the responsibility for designating significant woodlands (MNR, 2010).

The criteria for designating significant woodlands at a provincial level includes: woodland size; ecological function (shape, proximity to other woodlands or natural features, linkages); species diversity; uncommon characteristics; and, economic and social values (MNR, 2010). It is the local planning authority's responsibility to designate significant woodlands. The proposed pipeline is located in the City of Hamilton rural planning area. The Official Plan was reviewed for the criteria and identification of significant woodlands that occur within the construction footprint.

The City of Hamilton's Rural Official Plan (2012) states that significant woodlands are defined as "*an area which is ecologically important in terms of: a) Features such as species composition, age of trees, stand history; b) 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; and c) Economically important due to site quality, species composition or past management history*."

Specifically, to be identified as significant, a woodland in the City of Hamilton must meet two or more of the following criteria:

Table 4-3: City of Hamilton Significant Woodland Criteria

Criterion	Description	
Size	**Forest Cover (by planning unit)**	**Minimum patch size for significance**
	< 5 %	1 ha
	5-10 %	2 ha
	11-15 %	4 ha
	16-20 %	10 ha
	21-30 %	15 ha
Interior Forest	Woodlands that contain interior forest habitat. Interior forest habitat is defined as 100 metres from edge.	
Proximity/Connectivity	Woodlands that are located within 50 metres of a significant natural area (defined as wetlands 0.5 hectares or greater in size, ESAs, PSWs, and Life Science ANSIs).	
Proximity to Water	Woodlands where any portion is within 30 metres of any hydrological feature, including all streams, headwater areas, wetlands, and lakes.	
Age	Woodlands with trees of 100 years or more in age. Age will be determined initially using FRI mapping and can be verified during the EIS.	
Rare Species	Any woodland containing threatened, endangered, special concern, provincially or locally rare plant or wildlife species.	

The City of Hamilton identifies significant woodlands on Schedule B-2 of their Official Plan, which includes the application of a 30 m vegetation protection zone to the woodlot edge. Significant woodlands are identified within 120 m of the proposed pipeline route.

Areas of Natural and Scientific Interest (ANSI)

Life science ANSIs are significant representative segments of Ontario's biodiversity and natural landscapes, including specific types of forests, valleys, prairies, savannahs, alvars and wetlands, their native plants and animals, and their supporting environments. They contain relatively undisturbed vegetation and landforms, and their associated species and communities. Provincially significant life science ANSIs include the most significant and best examples of the natural heritage features in the province, and many will correspond to other significant features and areas such as wetlands, valleylands and woodlands (MNR, 2010).

A review of MNRF LIO mapping (MNRF, 2019a) and the NHIC (MNRF, 2019b) identified one life science ANSI, the Beverly Swamp, within 120m of the proposed pipeline route.

Potential Impacts

The proposed pipeline route occurs along an existing RoW, however it crosses approximately 1.9 km of woodlands and 0.4 km of wetlands. Field surveys will be conducted prior to construction to confirm the presence or absence of wetlands. ELC and botanical surveys will be conducted prior to construction to assess the significance and boundaries of vegetation communities and to identify vascular plant species,



including plant species of concern. The results of the surveys will be used to confirm mitigation and protection measures.

Where there is natural vegetation within or adjacent to the proposed pipeline route, potential impacts include the removal of native vegetation, introduction or spread of invasive species, and indirect effects such as dust, erosion, and accidental spills.

Mitigation and Protective Measures

Environmental mitigation and protective measures during construction include the following:

- Where the RoW abuts a woodland on one side, detailed design should avoid the feature where possible.
- Determine municipal requirements or permits for tree removal prior to construction.
- Clearing should be minimized to the extent possible in sensitive areas such as woodlots, along watercourses, adjacent to the ANSI and in areas of significant groundwater recharge.
- 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 (ex. 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 work areas. Enbridge Gas should consult with landowners, GRCA, HCA, and CH to confirm replanting plans.
- A tree replacement program will be completed, which involves the replanting of twice the area of woodlot removed during construction. The replacement/compensation for the removal of individual landscape trees will be completed outside of the tree replacement program and will be discussed between the landowner and an Enbridge Gas Land Agent. 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. If a landowner is not interested in planting trees on their property, Enbridge Gas will offer the trees to a CA or to a local community group. 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 work areas and permanent easement should be done with a native seed mix reviewed by GRCA, HCA, or HC. 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.

Mitigation and protective measures are outlined in Section 4.4.5 for dust, Section 4.2.2 for erosion and Section 4.3.1 for accidental spills.

Net Impacts

With the implementation of the above mitigation and protective measures, no significant adverse residual impacts on designated natural areas and vegetation are anticipated.

4.3.3 Wildlife, Wildlife Habitat and Species at Risk

Significant Wildlife Habitat

Wildlife habitat is defined as an area where plants, animals and other organisms live, including areas where species concentrate at a vulnerable point in their life cycle, and areas that are important to migratory and non-migratory species (MNR, 2000). Significant wildlife habitats (SWHs) are grouped into four categories:

1. Seasonal concentration areas
2. Animal movement corridors
3. Rare vegetation communities or specialized habitats
4. Habitats of species of conservation concern

The presence of SWH along the proposed pipeline route was determined in two ways. First, publicly available NHIC data was reviewed for SWH (MNRF 2019b). Second, potential SWH was identified using the Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (MNRF, 2015) which provide descriptions of wildlife habitats and guidance on criteria for determining the presence of SWH. Details of the significant wildlife assessment are summarized below.

Seasonal Concentration Areas

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 (MNRF, 2019b) identified deer wintering areas in proximity to the proposed pipeline route. The potential for seasonal concentration areas to occur within 120 m of the proposed pipeline is assessed in Table D-1, Appendix D. Candidate habitat for the following seasonal concentration areas may be present along the proposed pipeline route:

- Waterfowl stopover and staging areas (terrestrial and aquatic)
- Raptor wintering area
- Bat maternity roost colonies



- Turtle wintering areas
- Reptile (snake) hibernaculum
- Colonially-nesting breeding bird habitat (bank, tree/shrub and ground)
- Deer Winter Congregation Areas.

Field investigations in 2019-2020 will assess the presence and quality of candidate seasonal concentration areas.

Rare vegetation communities or specialized habitats

Rare vegetation communities or specialized habitats are defined as separate components of SWH. Rare vegetation communities are habitats that are considered rare or uncommon in the ecoregion, as defined in the SWH Criteria Schedules (MNRF, 2019b). These habitats may support wildlife species that are considered significant. Specialized habitats are microhabitats that are critical to some wildlife species. Review of the NHIC (MNRF, 2019b) database did not identify any rare vegetation communities or specialized habitats within the proposed pipeline route. Potential rare vegetation communities or specialized habitats based on the SWH Criteria Schedule for Ecoregion 6E (MNRF, 2015) are discussed in Table D-1, Appendix D. Candidate habitat for the following specialized habitats may be present in the proposed pipeline route:

- Waterfowl nesting area
- Bald Eagle and Osprey nesting, foraging and perching habitat
- Woodland Raptor Nesting Areas
- Turtle nesting areas
- Seeps and springs
- Amphibian breeding habitat (woodland and wetland)
- Woodland area-sensitive bird breeding habitat.

Field investigations in 2019-2020 will assess the presence and quality of rare vegetation communities or candidate specialized habitats.

Animal Movement Corridors

Animal movement corridors are elongated, naturally vegetated parts of the landscape used by animals to move from one habitat to another (MNR, 2000). Rivers and creeks may be used as amphibian movement corridors; these features were present within 120 m of the proposed pipeline route. Deer movement into/out of the identified wintering area is anticipated along riparian areas and hedgerows, as hedgerows may also serve as small linkages (MNR, 2000).



Habitat for Species of Conservation Concern

Habitats of Species of Conservation Concern include wildlife species that are listed as Special Concern or rare, that are declining, or are featured species in the province. This includes marsh breeding birds, shrub/early successional breeding bird habitat, terrestrial crayfish, as well as rare species, as defined in the SWH Criteria Schedules (MNRF, 2019b).

Candidate habitat for species of conservation concern may be present in the proposed pipeline route, as detailed in Table D-1, Appendix D.

Provincially rare (S1-S3 ranked species) are determined by status rankings (S-ranks) for 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

Designation of Special Concern is determined by the Committee on the Status of Species at Risk in Ontario (COSSARO).

The NHIC database was searched to obtain recent records (1990 - present) of species of conservation concern (S1-S3 ranked species and provincially designated Special Concern species) in the vicinity of the proposed pipeline route. The Ontario Breeding Bird Atlas (Cadman et al., 2007), the Ontario Reptile and Amphibian Atlas (Ontario Nature, 2017) and the Ontario Mammal Atlas (Dobbyn, 1994) were also searched. The exact location of species occurrences is not available from these atlases; instead, occurrences are recorded within 1 x 1 km or 10 x 10 km squares.

Based on a review of background information, 24 species of conservation concern are known to occur in the vicinity of the proposed pipeline route, as shown in Table 4-4: 9 plants, 3 insects, 5 reptiles, 1 amphibian, and 6 birds. The potential for species of conservation concern to be present along the proposed pipeline route is limited by habitat suitability and availability; therefore, species listed in Table 4-5 may not occur along the proposed pipeline route. An assessment of candidate habitat and/or habitat use for individual species of conservation concern will be completed during 2019-2020 field investigations.



Table 4-4: Potential Terrestrial Species of Conservation Concern Along the Proposed Route

Common Name	Scientific Name	Srank	Provincial Status (COSSARO)	Source
Plants				
Broad Beech Fern	*Phegopteris hexagonoptera*	S3	SC	NHIC
Downy Yellow False Foxglove	*Aureolaria virginica*	S1		NHIC
Eastern Burning Bush	*Euonymus atropurpureus*	S3		NHIC
Eastern Few-fruited Sedge	*Carex oligocarpa*	S3		NHIC
Fern-leaved Yellow False Foxglove	*Aureolaria pedicularia*	S2?		NHIC
Green Arrow Arum	*Peltandra virginica*	S3		NHIC
Perfoliate Bellwort	*Uvularia perfoliata*	S1S2		NHIC
Scarlet Beebalm	*Monarda didyma*	S3		NHIC
Slender Mountain-mint	*Pycnanthemum tenuifolium*	S3		NHIC
Insects				
Gypsy Cuckoo Bumble Bee	*Bombus bohemicus*	S1S2		NHIC
River Bluet	*Enallagma anna*	S2		NHIC
Sleepy Duskywing	*Erynnis brizo*	S1		NHIC
Reptiles				
Eastern Musk Turtle	*Sternotherus odoratus*	S3	SC	NHIC
Eastern Ribbonsnake	*Thamnophis sauritus*	S4	SC	NHIC, ORRA
Northern Map Turtle	*Graptemys geographica*	S3	SC	NHIC
Eastern Milksnake	*Lampropeltis triangulum*	S3	SC	ORAA
Snapping Turtle	*Chelydra serpentina*	S3	SC	ORAA
Amphibians				
Jefferson X Blue-spotted Salamander, Jefferson genome dominates	Ambystoma hybrid pop. 1	S2		NHIC

Table 4-4: Potential Terrestrial Species of Conservation Concern Along the Proposed Route

Common Name	Scientific Name	Srank	Provincial Status (COSSARO)	Source
Birds				
Canada Warbler	*Cardellina canadensis*	S4B	SC	OBBA
Caspian Tern	Hydroprogne caspia	S3B	NAR	NHIC
Eastern Wood-pewee	*Contopus virens*	S4B	SC	NHIC, OBBA
Grasshopper Sparrow	*Ammodramus savannarum*	S4B	SC	OBBA
Prairie Warbler	Setophaga discolor	S3B	NAR	NHIC
Wood Thrush	*Hylocichla mustelina*	S4B	SC	NHIC, OBBA

Notes:
Sources: MNRF 2019 (NHIC), Cadman et. al. 2007 (OBBA), Ontario Nature 2013 (ORAA), Dobbyn 1994 (AMO)
END – Endangered - a species facing imminent extinction or extirpation
THR – Threatened - a species that is at risk of becoming endangered
SC - Special Concern - a species with characteristics that make it sensitive to human activities or natural events
S1: Critically Imperiled—Critically imperiled in the province (often 5 or fewer occurrences)
S2: Imperiled—Imperiled in the province, 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
S? – Rank Uncertain
SH: Possibly Extirpated (Historical)
S#B- Breeding status rank
S#N- Non Breeding status rank

Species at Risk

For the purpose of this report, Species at Risk (SAR) are those species identified as endangered or threatened by provincial (ESA) legislation. As federal SARA protections do not apply to the area along the proposed pipeline route, species protected as endangered or threatened under SARA, but not protected under the ESA, are included in Table 4-4, above.

The NHIC database was searched to obtain recent records (1990– present) of SAR from the vicinity of the proposed pipeline route. The Ontario Breeding Bird Atlas (Cadman et al., 2007), the Ontario Reptile and Amphibian Atlas (Ontario Nature, 2017) and the Ontario Mammal Atlas (Dobbyn, 1994) were also searched. The exact location of species occurrences is not available from these atlases; instead, occurrences are recorded within 1 x 1 km or 10 x 10 km squares.



Based on a review of background information, 25 SAR are known to occur in the vicinity of the proposed pipeline route, as shown in Table 4-5: 7 plants, 2 reptiles, 1 amphibian, 11 birds and 4 mammals. An assessment of candidate habitat and/or habitat use for SAR will be completed during 2019-2020 field investigations.

Table 4-5: Potential Terrestrial Species at Risk (Threatened or Endangered) Along the Proposed Route

Common Name	Scientific Name	Provincial Status (COSSARO)	Source
Plant			
American Chestnut	Castanea dentata	END	NHIC
American Columbo	Frasera caroliniensis	END	NHIC
Bashful Clubrush	Trichophorum planifolium	END	NHIC
Butternut	Juglans cinerea	END	NHIC
Eastern Flowering Dogwood	Cornus florida	END	NHIC
Red Mulberry	Morus rubra	END	NHIC
Spotted Wintergreen	Chimaphila maculata	END	NHIC
Reptiles			
Blanding's Turtle	Emydoidea blandingii	THR	NHIC, ORAA
Spiny Softshell	Apalone spinifera	END	NHIC
Amphibians			
Jefferson Salamander	Ambystoma jeffersonianum	END	NHIC
Birds			
Barn Swallow	Hirundo rustica	THR	NHIC, OBBA
Bank Swallow	*Riparia riparia*	THR	OBBA
Bobolink	Dolichonyx oryzivorus	THR	NHIC, OBBA
Cerulean Warbler	Setophaga cerulea	THR	NHIC
Chimney Swift	*Chaetura pelagica*	THR	OBBA
Eastern Meadowlark	Sturnella magna	THR	NHIC, OBBA
Eastern Whip-poor-will	*Antrostomus vociferus*	THR	NHIC
Least Bittern	Ixobrychus exilis	THR	NHIC, OBBA
Loggerhead Shrike	Lanius ludovicianus	END	NHIC
Louisiana Waterthrush	Parkesia motacilla	THR	NHIC
Yellow-breasted Chat	Icteria virens	END	NHIC

Table 4-5: Potential Terrestrial Species at Risk (Threatened or Endangered) Along the Proposed Route

Common Name	Scientific Name	Provincial Status (COSSARO)	Source
Mammals			
Little Brown Myotis	*Myotis lucifugus*	END	AMO
Northern Myotis	*Myotis septentrionalis*	END	AMO
Eastern Small-footed Myotis	*Myotis leibii*	END	AMO
Tri-coloured Bat	*Perimyotis subflavus*	END	AMO

Notes:
Sources: MNRF, 2019 (NHIC); Cadman et. al., 2007 (OBBA); Ontario Nature, 2013 (ORAA); Dobbyn 1994 (AMO)
END – Endangered - a species facing imminent extinction or extirpation
THR – Threatened - a species that is at risk of becoming endangered
SC - Special Concern - a species with characteristics that make it sensitive to human activities or natural events
S1: Critically Imperiled—Critically imperiled in the province (often 5 or fewer occurrences)
S2: Imperiled—Imperiled in the province, 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
S? – Rank Uncertain
SH: Possibly Extirpated (Historical)
S#B- Breeding status rank
S#N- Non-Breeding status rank

Stantec completed a desktop assessment to evaluate the existing conditions of the proposed pipeline route. The proposed pipeline route crosses a variety of habitats (agricultural fields, woodlands, wetlands, watercourses and hedgerows). A general assessment of potential habitat for SAR along or adjacent to the proposed route is provided in Table D-2, Appendix D.

Potential Impacts

Due to the presence of woodlots, wetlands, hedgerows, watercourses and open fields in proximity to the proposed pipeline route, field surveys will be undertaken before construction to assess the presence or absence of wildlife and wildlife habitat. Planned surveys include those for amphibians, reptiles (turtle and snake habitat assessment), mammals (bat habitat assessment), breeding birds, nesting raptors, Bald Eagle and Osprey perching, assessment for species at risk, and a search for seeps and springs. If required, species surveys to evaluate candidate significant wildlife habitat identified during habitat assessments may be undertaken, which could include surveys for colonial nesting birds, wintering raptors, waterfowl and turtle nesting. The results of all surveys, including any additional appropriate mitigation or protection measures, will be summarized in a report and shared with the MECP to determine any regulatory requirements.

Potential impacts on wildlife and wildlife habitat from construction include direct mortality from construction vehicles, habitat destruction through vegetation removal, habitat degradation through spills and sensory disturbance of wildlife during construction.

Mitigation and Protective Measures

Environmental mitigation and protective measures during construction include the following:

- Detailed design of the proposed pipeline should be reviewed to avoid and reduce the likelihood of impact upon wildlife habitat to the extent possible, and in particular habitats of endangered, threatened, special concern and rare species.
- Equipment and vehicles should yield the RoW to wildlife.
- 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.
- Fencing should be erected around deep excavations to prevent wildlife entrapment.
- The contractor should inform their personnel to not threaten, harass or injure 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.
- Where practical, avoid construction in the vicinity of areas that may provide habitat for amphibians during the amphibian breeding season (March 1 – June 30).
- Areas of potential bat maternity roosting habitat will be identified during field investigations. 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). Mitigation recommendations for SAR bats will be prepared upon consultation with MECP.
- Work (soil excavation) within wetlands is recommended to occur outside of the winter months (i.e., not between November 1 and March 30) to avoid potential impacts to hibernating frogs and turtles. 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.
- Habitat assessments and species occurrence surveys will be conducted for SAR. A report will be prepared to document results and recommend mitigation measures.



- If SAR are found along the proposed pipeline route Enbridge Gas will undertake consultation with the MECP regarding the potential need for a permit under the ESA and/or species-specific mitigation.

Mitigation and protective measures are outlined in Section 4.3.2 for vegetation removal and Section 4.3.1 for accidental spills.

Net Impacts

With the implementation of the above mitigation and protective measures, no significant adverse residual impacts on wildlife, wildlife habitat and SAR are anticipated.

4.4 SOCIO-ECONOMIC ENVIRONMENT

4.4.1 Employment and Business

Existing Conditions

In the City of Hamilton, the number of people employed increased from 243,075 in 2011, to 259,065 in 2016, while the unemployment rate decreased from 8.7% to 7.0% over the same period. The unemployment rate in the City of Hamilton was below the provincial and national average rates of 7.4% and 7.8%, respectively, for 2016. Refer to Table 4-6 for labour characteristics.

Table 4-6: Labour Characteristics, Ontario and Hamilton, 2016

Location	Total Population 15 years and Over	Labour Force	Employed	Participation Rate (percent)	Employment Rate (percent)	Unemployment Rate (percent)
Ontario	11,038,440	7,141,675	6,612,150	64.7	59.9	7.4
Hamilton (City)	441,055	278,640	259,065	63.2	58.7	7.0

Source: Statistics Canada, 2011; 2017

The median income for all census households in Hamilton in 2015 was $69,024; the median income for individuals aged 15 years and over was $32,917 (Table 4-7).

Table 4-7: Median Income, Ontario and Hamilton, 2015

Location	Median Family Income	Median Income of individuals - 15 Years and Over		
		All individuals	Male	Female
Ontario	$74,287	$33,539	$39,889	$28,676
Hamilton (City)	$69,024	$32,917	$39,174	$28,056

Source: Statistics Canada, 2017

In 2016, the main sources of employment by industry for Hamilton were health care and social assistance (13.0%), manufacturing (11.9%), and retail trade (11.6%) (Statistics Canada, 2017).

Hamilton's labour force is concentrated in three main occupations: sales and services occupations (23.9%), transport and equipment operators and related occupations (14.6%) and business, finance and administration occupations (13.9%) (Statistics Canada, 2017).

Potential Impacts

During construction, the labour force will peak at approximately 370 workers. Approximately 99% of the labour force is expected to come from Ontario and other areas of Canada, while 65% will likely be local residents. Project construction is expected to take place in the Spring/Summer/Fall of 2021 and take an estimated 6 months to complete. Enbridge Gas will schedule shifts so that employees are working six days per week for 10 to 12 hours each day. Workers will be at the work site for as long as is required to complete specific construction tasks. Operation will require only 32 person-hours a year to manage and maintain the proposed pipeline. Project demands for labour and goods and services can result in both beneficial and adverse effects. Positive effects may not be evenly distributed among populations, with some residents in a better position to receive economic benefits than others. Similarly, adverse effects may affect some residents more than others.

Residual effects on employment are related to the project's labour demand compared to the labour supply. Three types of employment are considered:

- Direct employment: labour that is hired directly for the project
- Indirect employment: labour hired by companies in order to produce and provide goods and services needed for the project
- Induced employment: labour hired by industries that produce and provide consumer items and services purchased by people who are directly or indirectly employed by the project

Labour conditions will be affected by direct, indirect and induced employment during all project phases.

The project could affect business through purchases of labour, goods and services from local businesses, including businesses owned by Indigenous peoples, and will result in increased local employment income and municipal government revenue. Local businesses will likely benefit from supplying the project with goods and services.

Land clearing and other construction-related project activities could adversely affect agricultural productivity and operations, and businesses along the proposed pipeline route that include Verbinnen's Nursery, Taylor Hills Equine Centre and Green Relief. Other potential adverse effects include impairment to the use and enjoyment of property and conflicts with farm machinery and other vehicular movement.

Mitigation and Protective Measures

It is expected that the project will generally result in positive effects on employment by employing local and Indigenous people, and by reducing the unemployment rate in the region. These positive effects do

not require mitigation, but Enbridge Gas will identify and implement various mechanisms to enhance project benefits.

The potential effects of the project as a result of purchasing labour, goods and services is expected to be positive during construction and operation, so no mitigation will be required. However, Enbridge Gas has and will continue to work with local and Indigenous businesses to enhance their potential for successfully bidding on project contracts regarding the supply of goods and services, particularly for the operation phase. One initiative to help encourage further local and Indigenous content on the project is to post project purchasing requirements in advance, so that businesses can position themselves to effectively bid to supply goods and services needed for construction and operation. Increased participation of local and Indigenous businesses will enhance positive local economic effects.

With respect to potential adverse effects on agricultural and non-agricultural businesses (commercial and industrial), Enbridge Gas will engage with land owners, business operators, and the City of Hamilton to address access to the project area, the portion of land that will be altered as part of site preparation, long-term changes to agricultural and non-agricultural land and the development of appropriate and feasible mitigation measures.

Net Impacts

With the above initiatives to encourage local and Indigenous participation on the project, it is anticipated that the effects from the project on employment and business will be positive, including creating positive economic activity through new direct, indirect, and induced employment. Project expenditures on local businesses and suppliers also have the potential to positively affect the local economies. Additionally, those who have worked on the project will gain transferrable skills and experience that could help them gain employment in other industries. Consultation with businesses and landowners will address any concerns to their operations.

With the implementation of the above mitigation and protective measures, no significant adverse residual impacts on employment and business are anticipated.

4.4.2 Community Services & Infrastructure

Existing Conditions

Demographics

In 2016, the City of Hamilton had a population of 536,917 (Statistics Canada, 2017). Hamilton experienced a modest population increase between 2011 and 2016, slightly below the population growth in Ontario (Table 4-8).

Table 4-8: Population Ontario and Hamilton 2016

Location	Total Population	Percent Change from 2011
Ontario	13,448,494	4.6
Hamilton	536,917	3.3

*Numbers are rounded by Statistics Canada and are reported herein exactly as they are reported by Statistics Canada. Totals may not necessarily add up as a result of rounding.

Source: Statistics Canada, 2017

In 2016, the median age of the population of Hamilton was 41.5 years (Statistics Canada, 2017); Ontario's median age was 41.3 (Statistics Canada, 2017).

In 2016, 17,665 residents of Hamilton identified themselves as Aboriginal (Statistics Canada, 2017). Together this represents approximately 3.4% of the provincial Aboriginal population (Statistics Canada, 2017).

Permanent and Temporary Accommodations

In 2016, there were 211,600 private dwellings in the City of Hamilton. The majority (57%) of homes were single-detached dwellings and 68,545 rental homes (Statistics Canada, 2017).

Within the City of Hamilton, there are nine bed-and-breakfasts and 60 hotels/motels, as well as two CA regulated campgrounds, and nine private campgrounds (Tourism Hamilton, n.d.).

Municipal Services and Infrastructure

The City of Hamilton operates one landfill, the Glanbrook Landfill, and three Community Recycling Centres (City of Hamilton, 2019). The City of Hamilton water supply is taken from Lake Ontario and distributed to residences and businesses in Hamilton, Stoney Creek, Dundas, Ancaster, Waterdown, and parts of Flamborough and Glanbrook. Four areas within the City of Hamilton rely on groundwater as their drinking water source; Carlisle, Freelton, Greensville and Lynden (City of Hamilton, 2016b).

Health and Education Services and Infrastructure

The City of Hamilton is serviced by Hamilton Public Health Services, located within the Hamilton-Niagara-Haldimand-Brant Local Health Integration Network (Ontario Ministry of Health and Long-Term Care, 2018). There are currently 10 facilities in the City of Hamilton providing health care services: Chedoke Hospital, Hamilton General Hospital, Juravinski Cancer Centre, Juravinski Hospital, St. Joseph's Healthcare Hamilton, McMaster Children's Hospital, McMaster University Medical Centre, St. Peter's Hospital and Main Street West Urgent Care Centre. (City of Hamilton, 2016c).

Roads and Highways

The proposed pipeline route crosses Westover Road, Middletown Road and Brock Road. These are two lane roads that do not carry high volumes of traffic and are rural in nature. The route crosses Bushmill Circle which is a private road in the community of Antrim Glen. The proposed pipeline route also crosses Highway 6 which is a four-lane highway that carries high volumes of traffic.

The Streets and Transportation department of the City of Hamilton is responsible for managing the City of Hamilton Road system, including pothole repairs, street lighting and sign maintenance, entrance culverts and rural roadside mowing. Within the City of Hamilton, there are various classifications of roads and highways, from high volume urban arterials to rural collector roads.

Policing, Fire and Emergency Response Services

The Hamilton Police Service serves the entire City of Hamilton. Patrol Division 3 provides policing services to five communities within the City of Hamilton; Flamborough, Dundas, Ancaster, Binbrook/Glanbrook and Hamilton Mountain. There are no Ontario Provincial Police detachments within in City of Hamilton; the closest OPP detachment to the study area is located in the City of Cambridge (Ontario Provincial Police, 2019).

The City of Hamilton's Fire Department provides fire prevention/public education, fire communications/dispatch, firefighting and rescue operations, medical response with the Hamilton Paramedic Service, emergency planning/preparedness, and mechanical and fleet services for both Fire and Hamilton Paramedic Service. There are 30 fire stations within the City of Hamilton, with the closest fire station to the study area being Fire Station 28 located at 1801 Brock Road in Freelton (City of Hamilton, 2018).

Potential Impacts

The presence of temporary workers in the local communities during the six-month long construction period has the potential to increase the demand for housing and local community services and infrastructure. Non-local project workers are expected to stay in temporary accommodations, including hotels, motels, and campgrounds. They may also choose to rent houses or apartments. The vacancy rate for temporary rentals will likely be able to accommodate the temporary increase. The short duration that the workers will reside near any one community, as well as the structure of the work shifts, will limit the need for workers to use the services and infrastructure in local communities.

The transportation of project goods, services and workers has the potential to lead to increased use of existing transportation infrastructure. Also, increased traffic volumes along local road networks could increase travel times and reduce road safety, which might lead to increased use of local emergency services due to potential vehicle accidents and workplace accidents. In addition, the production of project-related waste could place additional stress on the capacity of local landfills.

During operation, the workforce will be relatively small (likely requiring only 100 hours per year, or an average of approximately 2 hours per week) and localized, and will put minimal additional demands on



local services and infrastructure. Some operation workers might already reside in the local area; however, some might need to come from outside communities and may use local community and emergency services.

Potential impacts to roads are outlined in Sections 4.4.3 and 4.4.4

Mitigation and Protective Measures

Project employees might require medical attention while staying in the area. The construction contractor and Enbridge Gas will have emergency response equipment and trained personnel on-site during construction. In addition, an Emergency Response Plan will be developed and implemented, which will address field health services, emergency call-out procedures and fire response plans. Safety fencing will be used where necessary to separate the work area.

Environmental mitigation and contingency and management plans will be in place to reduce the likelihood of emergency events and to prepare for the management of emergency events on site. If an emergency incident were to occur, it is anticipated that the comprehensive mitigation, contingency plans, and safety strategies will result in a localized and low-intensity response.

A Traffic Management Plan should be in place for all roads affected by construction, which at a minimum outlines measures to:

- Control the movement of materials and personnel to and from the construction site
- Post signs to warn oncoming motorists of construction activity
- Control traffic at road crossings
- Reduce on-road disturbance and land closures
- Store equipment as far from the edge of the road as practical
- Install construction barricades at road crossings

Traffic disruptions during construction will be reduced by adherence to the Traffic Management Plan. Guidelines will be developed for vehicular use on the RoW and associated access roads to avoid traffic congestion and accidents. Access to existing transportation infrastructure will be addressed through standard mitigation and will be reversible once the construction phase ends. Additional mitigation and protective measures for roads are outlined in Section 4.4.3 and 4.4.4.

The capacity of waste disposal sites will be considered and if project needs are not easily accommodated, alternative disposal locations will be considered.

Enbridge Gas will provide project information to local communities and service providers so that they are prepared for any possible demand on community services and infrastructure related to a temporary population increase. Additional consultation with residents and businesses adjacent to the proposed pipeline route will be held in advance of construction commencement. Contact information for a

designated Enbridge Gas representative will be available to address questions and concerns during construction. Consultation has been initiated and will continue with municipal personnel.

Net Impacts

Community services and infrastructure appear to have additional capacity to absorb potential increased temporary demands that may result from the project. Adverse effects on traffic will be minimal because the proposed pipeline route intersects mainly rural communities where roads currently have low levels of traffic and alternative routes are readily accessible.

Given the available capacity of the local community services and infrastructure, along with the implementation of the mitigation and protective measures outlined above, no significant adverse residual impacts on community services and infrastructure are anticipated.

4.4.3 Perceived Health and Well-Being

Existing Conditions

Health Indicators

Health indicators are measures that are regularly reported and provide relevant information about a population's health or the performance of the health system. This allows for comparable information between regions and can be used to track changes over time (CIHI, n.d.).

Statistics Canada and the Canadian Institute for Health Information completed a survey of health indicators to determine the perceived health and well-being of residents aged 12 years and older within the City of Hamilton Health Unit. This health unit is a geographical region created by Statistics Canada. The results represent qualitative perceptions of health and well-being from individuals living within these municipalities (Table 4-9).

Table 4-9: Health Indicators, City of Hamilton Health Unit and Ontario, 2015/2016

Indicators	City of Hamilton Health Unit (%)	Ontario (%)
Perceived health, very good or excellent	57.6	61.0
Perceived mental health, very good or excellent	70.0	71.1
Perceived life stress, most days quite a bit or extremely stressful	22.1	22.0

Source: Statistics Canada, 2019.

In 2015/2016 the population in the project area had perceptions of their health, mental health and life stress which were generally consistent with Ontario as a whole.

Traffic and Congestion

Existing conditions for traffic and congestion are outlined in Section 4.4.2.

Recreation

There are 4 community centres and 20 recreational facilities in Hamilton providing many activities such as ice arenas, aquatic centres and various sports for all ages. There are over 100 parks, 11 conservation areas within HC regulated boundaries, eight parks within CH regulated boundaries and seven conservation areas and 12 parks within the GRCA regulated boundaries. The City of Hamilton owns and manages three 18-hole golf courses; Chedoke Golf Club – The Beddoe Course, Chedoke-Martin Golf Course and King's Forest Golf Course (City of Hamilton, n.d.).

Potential Impacts

Perceived health and well-being is influenced by a number of factors such as individual lifestyles, social and community networks, living conditions, general socio-economic and environmental conditions. The project has the potential to affect a number of these factors, which could change the way that local residents perceive their health and well-being. During public consultation for the project, comments were raised regarding noise, dust, monetary compensation for loss of crops and trees, disruption to business, as well as enjoyment of property.

Since perceived health and well-being is influenced by improved economic conditions, the project is expected to have positive effects by creating direct, indirect, and induced employment, and through project spending within the City of Hamilton (see Section 4.4.1). There is also the potential to enhance these benefits further by selecting local and Indigenous businesses to provide services to the project, thus increasing economic activity and the associated benefits (see Section 4.4.1). This economic stimulus could increase local spending and increase income for some residents and their families. Higher income from project employment could increase the real and perceived quality of life of some local residents.

Construction activity will temporarily affect the landscape of the construction area and could impede property access. Construction activities also have the potential to disturb the perceived aesthetic value that residents place on their property and the area in general. The potential for project activities to interfere with aesthetic value, property enjoyment, access to business, and with the production of agricultural products, could have an adverse effect on perceived health and well-being of some residents. Potential safety concerns also exist at locations where properties, residents and vehicles come in proximity to construction activities.

Potential increases in noise, dust, exhaust (see Section 4.4.5) and traffic congestion on roads could also cause stress and affect how people perceive their quality of life. Increased traffic could also impede customer access to businesses and access by landowners and farmers to their land.

The temporary workforce may increase demands on existing recreation facilities and conservation areas, including arenas and swimming pools. Since project construction is scheduled to occur during spring, summer and fall months, winter recreation activities will not be affected.

Mitigation and Protective Measures

Mitigation and protective measures for air quality and noise are outlined in Section 4.4.5.

If laneways or driveways are affected as a result of pipeline construction, they will be left in place over the trench where requested by the landowner, for as long as possible and practical. Access to residential properties and businesses should be maintained at all times to reduce stress on local residents and safety fences should be installed at the edge of the construction RoW, where public safety considerations are required.

A Traffic Management Plan should be implemented to reduce effects of project-related traffic on traffic volumes, which could reduce access to businesses and farmland (see Section 4.4.2). In addition, Enbridge Gas will work with landowners to address specific concerns they may have regarding monetary compensation and their property, such as access, disruption to business and tile drainage repairs.

While pipeline construction activities have the potential to temporarily affect the local landscape, restoration of the construction area will leave little evidence that a pipeline exists in the area. Vegetative buffers at watercourses and road crossings will be implemented and be compliant with applicable permits and regulations.

Additional consultation with residents and businesses along and adjacent to the proposed pipeline route will take place in advance of construction activity. Enbridge Gas will develop an issues resolution framework to help resolve stakeholder issues that may arise during project construction and operation, and to select the appropriate mitigation measures to resolve these issues.

Net Impacts

With planned restoration of the construction site after the proposed pipeline has been built, changes to landscapes are anticipated to be short-term. Additionally, Enbridge Gas will undertake their standard tree replacement program. This will reduce any adverse impact that construction may have on the aesthetic value placed on the land by residents.

In terms of economic contributions to perceived health and well-being, the effect from local economic activity is anticipated to have a positive effect on residents' perceived health and well-being.

With the implementation of the above mitigation and protective measures, the project is not anticipated to alter the lifestyles of residents. Nor will it adversely affect social and community networks or living and environmental conditions. Therefore, no significant adverse residual impacts on perceived health and well-being are anticipated.



4.4.4 Infrastructure

Existing Conditions

Infrastructure crossed by the proposed pipeline route includes roads/highways, access roads/driveways, hydroelectric lines, and utilities. Existing conditions for roads and highways are outlined in Section 4.4.2.

The proposed pipeline route is located adjacent to residences in Antrim Glen Residential Community, Ponderosa Nature Resort and other residential properties on Westover Road, Middletown Road and Brock Road. There are 49 buildings within 50 m of the proposed route.

The proposed pipeline route intersects and runs parallel to existing overhead hydro and telecommunications utilities. The proposed pipeline route also traverses an overhead high-voltage hydroelectric transmission lines at two locations:

- On Highway 6, approximately 400 m north of Carlisle Road in Freelton, Ontario; and
- Near the existing Enbridge Kirkwall valve site and Trans Canada Compressor Station 1301, located on Valens Road in Cambridge, Ontario

The proposed pipeline route also parallels, and at one-point traverses, existing Enbridge Gas pipelines. The proposed pipeline traverses the existing Enbridge Gas pipelines approximately 400 m south of Concession 8 West and approximately 750 m west of Brock Road.

A variety of buried utilities such as telecommunication cables, low-voltage hydroelectric lines and watermains are located in road RoWs.

Mapped infrastructure crossed by the proposed pipeline route is shown on Figure 13, Appendix C.

Potential Impacts

Construction activity has the potential to temporarily affect access roads and driveways and landscaping features to residences, businesses and agricultural fields.

The proposed project will be constructed parallel and overlapping an existing Enbridge Gas easement, with some temporary lands required for construction purposes. Impacts to a community garden in the Antrim Glen Residential Community and to tennis courts within the Ponderosa Nature Resort will occur. Where temporary lands are required limited impacts to agricultural lands, residences and businesses may occur. The proposed pipeline has the potential to interact with buildings, roads/highways, hydroelectric lines, and buried and overhead utilities. Potential impacts include damage to the infrastructure and harm to personnel.

Due to high traffic volumes the crossing of Highway 6 will be completed by way of trenchless installation method. This has the potential produce extended periods of noise and vibration. There is also the possibility of extended work hours and the need for construction lighting (due to low light conditions).

Mitigation and Protective Measures

If laneways or driveways are affected as a result of pipeline construction, they will be left in place over the trench where requested by the landowner, for as long as possible and practical. Access to residential properties and businesses should be maintained at all times to reduce stress on local residents and safety fences should be installed at the edge of the construction RoW, where public safety considerations are required.

Arrangements will be made with the communities and landowners for replacement of features that are impacted by construction activities.

Mitigation and protective measures for roads is outlined in Section 4.4.2. Consultation is ongoing with Infrastructure Ontario and HONI regarding easements to cross the existing overhead hydroelectric lines.

The contractor will be responsible for locating and exposing existing pipelines and utilities on lands that will be affected by trench excavation. During construction, machine operators will be informed where electrical transmission lines are present overhead. Lines that may interfere with the operation of construction equipment will be identified with warning poles and red flags.

When crossing Highway 6 the Traffic Management Plan (Section 4.4.2) and additional traffic controls should be implemented. Enbridge Gas will work with nearby landowners and businesses to develop appropriate mitigation measures for noise, vibration and lighting.

Standard construction mitigation measures will be implemented that include:

- Safety fencing will be erected around bore pits
- Wood decking will be installed to support continuous construction access during wet soil conditions, and assist in protecting vegetation and seed beds
- Excavated topsoil and subsoil for bore pits will be separated prior to stockpiling
- Erosion and sediment control measures will be installed around soil stockpiles

A detailed mitigation plan will be developed once the crossing method and design have been determined.

Net Impacts

With the implementation of the above mitigation and protective measures, no significant adverse residual impacts on infrastructure are anticipated.

4.4.5 Air Quality and Noise

Existing Conditions

The landscape along the proposed pipeline route is mostly agricultural and rural. There are also areas of open space, residential, commercial and natural heritage. Agricultural operations have the potential to expel air emissions. Although the study area does not have a high population density, air emissions will be released through automobile use.

According to Environmental Noise Guideline (MOECC 2016), the majority of the landscape along the proposed pipeline route would be categorized as a Class 3 area, meaning “a rural area with an acoustical environment that is dominated by natural sounds having little or no road traffic, such as a small community; agricultural area; a rural recreational area such as a cottage or a resort area; or a wilderness area.”

The study area experiences a low traffic volume that represents a minimal source of noise for the majority of the proposed pipeline route, with increased traffic volume on Highway 6.

Other minor noise sources within the study area include occasional sounds due to anthropogenic agricultural activities and occasional sounds due to anthropogenic domestic activities such as property maintenance and recreation.

Potential Impacts

Residential and business properties may experience noise, dust, vibration and equipment exhaust associated with construction activity. During operation, no substantial air or noise emissions are anticipated to occur.

See Section 4.2.1 for potential impacts due to blasting and hoe-ramming activities.

Mitigation and Protective Measures

During construction, motorized construction equipment should be equipped with appropriate mufflers and silencers as available. Company and construction personnel should avoid excessive idling of vehicles; vehicles and equipment should be turned off when not in use unless required for operation. To the greatest extent practical, activities that could create noise should be restricted to daylight hours and adhere to local noise by-laws. Sources of continuous noise, such as portable generators, should be shielded or located so as to reduce disturbance to residents and businesses.

The contractor should implement site practices during construction that are in line with the Environment Canada document ‘Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities’ (Cheminfo Services Inc., 2005), which may include:

- Maintaining equipment in compliance with regulatory requirements
- Protecting stockpiles of friable material with a barrier or windscreen in the event of dry conditions and dust



- Dust suppression of source areas
- Covering loads of friable materials during transport

Watering for dust control must not result in the formation of puddles, rutting by equipment or vehicles, the tracking of mud onto roads or the siltation of watercourses.

See Section 4.2.1 for mitigation and protective measures for blasting activities.

Net Impacts

With the implementation of the above mitigation and protective measures, no significant adverse residual impacts from air quality and noise are anticipated.

4.4.6 Contamination

Existing Conditions

A Contamination Overview Study (Appendix E) was completed for the project which considered the preferred pipeline route and activities within 250 m on either side to identify potential sources of contamination (PSOC). The overview included a search of public and private information databases for the investigated area by Environmental Risk Information Services (ERIS), and a limited site reconnaissance (i.e., a windshield-level survey which involved viewing the site and surrounding area from publicly accessible roadways) completed on January 4, 2019. PSOC were ranked as either low, moderate, or high depending on the distance of the potential source from the preferred route and the activity associated with the potential source.

Based on a review of the ERIS database report and the site reconnaissance, it was determined that 8 PSOC occur within 250 m of the proposed pipeline route. Of these, the potential for concern was moderate for one PSOC and low for seven PSOC. None if the identified PSOC were ranked as high.

A summary of the identified PSOC associated with the proposed pipeline route is provided in Table 4-10

Table 4-10: A summary of Potential Sources of Contamination (PSOC)

PSOC ID No.	Description of Potential Source	Location	Approximate Distance from the Site	Contaminant of Concern	Potential for Concern	Explanation of Potential for Concern
1	Enbridge Gas Kirkwall valve site	1374 Valens Road	Adjacent property to the west	Petroleum Hydrocarbons (PHCs), Polycyclic Aromatic Hydrocarbons (PAHs), and Volatile Organic Compounds (VOCs)	Low	Presence of metering equipment. No evidence of soil or groundwater contamination identified through Site observation and historical records review process.
2	Trans Canada Kirkwall Compressor Station	1376 Valens Road	Adjacent property to the west	PHCs, PAHs, and VOCs	Low	Presence of metering equipment. No evidence of soil or groundwater contamination identified through Site observation and historical records review process.
3	Imported fill material	Entire Site	On Site	PHCs, PAHs, VOCs, Metals and Inorganics	Moderate	It is expected that fill materials of unknown quality were imported onto the Site for the purposes of construction within the easement Therefore, the PSOC associated with imported fill along the Site is considered to be moderate.
4	Pad-mounted and pole-mounted transformers	Off Glenariff Drive and along various roadways	Within Study Area	PHCs and PCBs	Low	Pole-mounted transformers were identified along the roadway within the Study Area, as well as a pad-mounted transformer associated off Glenariff Drive with the residential communities off Concession 8 West. Given the low potential for these transformers to contain PCBs and/or transformer oil, they are considered to represent a PSOC with low potential concern.

Table 4-10: A summary of Potential Sources of Contamination (PSOC)

PSOC ID No.	Description of Potential Source	Location	Approximate Distance from the Site	Contaminant of Concern	Potential for Concern	Explanation of Potential for Concern
5	Scrap Cars, Debris, and Stockpiles	1454 Middletown Road	Approximately 75 m south of the Site	PHCs, PAHs, and VOCs	Low	Stockpiles of unknown origin/quality and several cars in varying states of disrepair were observed at this property, in addition to several piles of debris. The potential for migration of contaminants from these materials onto the Site represents a potential concern. This PSOC is considered to be low due to the distance of the property from the Site.
6	Historical Spills	Portions of Brock Road and Highway 6 within Study Area	On Site and within Study Area	PHCs, PAHs, and VOCs	Low	A few unplottable records existed for spills (≤100 L) of diesel, gasoline, and oil along Brock Road and Highway 6 between 1990 and 1997. These spills may have occurred within the Study Area. The PSOC associated with these spills is considered to be low due to the age and size of the spills.



Table 4-10: A summary of Potential Sources of Contamination (PSOC)

PSOC ID No.	Description of Potential Source	Location	Approximate Distance from the Site	Contaminant of Concern	Potential for Concern	Explanation of Potential for Concern
7	Verbinnen's Tree Nursery	1504 Brock Road	Adjacent property to the south	Pesticides and Herbicides	Low	During the site reconnaissance, a tree nursery was identified adjacent to the south of the Site. It is possible that bulk storage of pesticides and herbicides may be present given their likely use at the tree nursery to protect against disease and pests. Based on the nature of the activities at this property, the PSOC is considered to be low.
8	Hamilton valve site	43 Carlisle Road	Adjacent property to the southeast	PHCs, PAHs, and VOCs	Low	Presence of metering equipment. No evidence of soil or groundwater contamination identified through Site observation and historical records review process.

The windshield survey did not permit a detailed assessment of the presence of PSOCs at private properties; therefore, it is possible that above ground or underground fuel storage may exist on-site or at adjacent properties.

Potential Impacts

Construction activities, including excavation and associated trench dewatering, could expose contamination that may be present in soil or groundwater. This could result in increased mobility of existing contamination and/or increased human or ecological exposure to contaminants.

Mitigation and Protective Measures

Based on the findings, the following recommendations are provided:

- Should excess soil be generated at the Site during future construction activities, or if contaminated soils are suspected (e.g., if observed material contained anthropogenic substances, PHC odours/staining, and debris/waste), representative soil samples should be collected and submitted for chemical analysis to determine management options and appropriate handling and health and safety guidelines.
- Should excess soil be generated at the Site during construction activities, soils that do not meet the Standards listed in Table 1 of the MECP document Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (April 15, 2011) may not be considered inert fill upon excavation, and off site management options for excess soils that cannot be reused within the Site must be considered.
- It is understood that salt-related parameters may not be considered to be contaminants in a road alignment, when de-icing salt has been used for winter road maintenance (O.Reg. 153/04 s.48 (3)); however, soil or water impacted by salt should be managed according to MECP guidance if it is to be removed from the RoW.
- Should excess water be generated at the Site during construction activities, water quality analyses should be conducted to determine appropriate management methods, such as done in support of a PTTW. This work should be done in coordination with a qualified person for environmental site assessment (QP_{ESA}) as defined by Ontario Regulation 153/04, to maintain data quality and provide an appropriate assessment of water quality. The QP_{ESA} should be aware of the PSOCs identified herein so as to select an appropriate list of analytes.
- Should evidence of soil or water impacts be identified during construction (e.g., staining, odours, petroleum hydrocarbon sheen) samples should be collected for laboratory analyses to confirm concentrations of potential contaminants so as to develop appropriate material management, and health and safety guidelines.
- Monitoring wells within the study area can provide a conduit from the ground surface, and should be abandoned in accordance with Reg. 903 if they are no longer in use.



- A Phase I ESA, and Phase II ESA (if recommended as part of the Phase I ESA) should be considered for any property that will be acquired by Enbridge Gas and a site-specific evaluation of PSOCs should be completed. If building demolition will be required, designated substance surveys should be completed for buildings or structures prior to demolition.

With the implementation of the above mitigation and protective measures, no significant adverse residual impacts from contamination are anticipated.

4.4.7 Waste Management

Potential Impacts

Improper disposal of waste material generated during construction may result in contamination to soil, groundwater, and/or surface water resources on and off the construction RoW. Litter generated during construction may also become a nuisance to landowners and/or surrounding residents if not contained.

Mitigation and Protective Measures

The construction contractor should implement a site-specific waste collection and disposal management plan, which may include:

- Waste materials, sanitary waste and recycling transported off-site by licensed waste contractors.
- The responsible management of fill (see Section 4.2.5).
- Labelling and storage of hazardous and liquid wastes in a secure area that would contain material in the event of a spill.
- Implementation of a waste management program consisting of reduction, reuse, and recycling of materials.

Net Impacts

With the implementation of the above mitigation and protective measures, no significant adverse residual impacts from waste management are anticipated.

4.4.8 Land Use

Existing Conditions

The proposed pipeline route is located in the City of Hamilton. The City of Hamilton has two official plans. The Urban Hamilton Official Plan that applies to lands within the urban area of the city and the Rural Hamilton Official Plan that applies to the rural area of the city. The proposed pipeline is located within the rural area of the city. The Rural Hamilton Official Plan designates the route as agriculture, rural, open space and utility. According to Section 3.1.1 “the following uses shall be permitted in all land use designations as set out in the policies below:” b) Transportation facilities and existing electrical facilities

used directly for the generation and distribution or electric power, natural gas pipelines and new facilities and approved under the Environmental Assessment Act and other relevant statues shall be permitted in any land use designation located in Rural Hamilton provide they meet the conditions of the Plan."

Under the Official Plan'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)

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). 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.

Potential Impacts

As noted above, natural gas pipelines are permitted facilities in the various municipal land uses, and thus no impacts to municipal land use designations will occur.

Potential impacts on agricultural land is discussed in Section 4.2.5 (soils) and 4.2.6 (agricultural tile drainage). Potential impacts on agricultural and non-agricultural businesses are discussed in Section 4.4.1. Potential impacts on uses of land will be interruption to access or use.

Mitigation and Protective Measures

Mitigation and protective measures for agricultural soils and drainage and for businesses are discussed in Sections 4.2.5, 4.2.6 and 4.4.1, respectively.

Consultation has been initiated, and will continue, with the City of Hamilton as well as landowners along the proposed pipeline route in order to identify methods of minimizing disturbance to property and maintaining access to lands, to the extent possible. Where work is to occur within CA regulated areas, permits will be obtained from the GRCA as per O.Reg 150/06, HCA as per O.Reg. 161/06 or CH as per O.Reg. 162/06.

Net Impacts

With the implementation of the above mitigation and protective measures, no significant adverse residual impacts on land use are anticipated.



4.4.9 Archaeological Resources

Existing Conditions

A Stage 1 Archaeological Assessment (AA) (Appendix F) has been conducted for the entire route evaluation study area. A copy of the completed Stage 1 AA report has been submitted to the MTCS for review and inclusion into the *Ontario Public Register of Archaeological Reports*.

Initial background research compiled information concerning potential archaeological resources within the study area. An examination of the *Ontario Archaeological Sites Database* has shown that there 14 registered archaeological sites within the study area and five registered archaeological sites within one kilometre of the study area. The City of Hamilton's municipal archaeological management plan (City of Hamilton 2016) was examined and illustrates the study area as a locale of archaeological potential.

Overall the Stage 1 AA determined that the entirety of the study area retains potential for the identification of Indigenous and Euro-Canadian archaeological resources.

Potential Impacts

The Stage 1 AA has determined that the majority of the study area retains potential for the identification of Indigenous and Euro-Canadian archaeological resources.

A map of archaeological potential is provided on Figure 14, Appendix C.

Mitigation and Protective Measures

Based on the findings of the Stage 1 AA, further necessary stages of archaeological assessment (i.e., Stage 2 AA) are required, which will provide for the assessment and mitigation of identified archaeological resources, if any are found. Wherever possible, archaeological sites that are determined to have cultural heritage value and interest should be mitigated in whole or in part by avoidance and preservation. However, if avoidance and preservation is not feasible, mitigation by excavation is an approved alternative. For identified Indigenous sites that could be subject to impact by the project, Stage 2, 3 and Stage 4 work will include engagement with the appropriate Indigenous community.

Net Effects

With the implementation of the above mitigation and protective measures, no significant adverse residual impacts on archaeological resources are anticipated.

4.4.10 Cultural Heritage Resources

Existing Conditions

A Cultural Heritage Assessment Report (CHAR) is in progress to identify heritage resources (both built heritage resources and cultural heritage landscapes) along the proposed pipeline route (Appendix G).

Through municipal and agency consultation, and a windshield survey conducted on January 30, 2019, a total of 26 cultural heritage resources (CHRs) have been identified within 50 m of the proposed pipeline routes (Figure 15, Appendix C). Of the 26 identified CHRs, 13 CHRs are situated within the CHAR Study Area. The CHAR Study Area refers to all properties through which the preferred pipeline route crosses plus a 50 m buffer surrounding Project components.

Potential Impacts

Impacts to cultural heritage resources are generally categorized as either direct (destruction or alteration) or indirect (shadows, isolation, obstruction, change in land use, and land disturbance). Along the proposed pipeline route, potential impacts to cultural heritage resources are limited to vibration damage to structural stability.

Mitigation and Protective Measures

In order to prevent negative impacts, the 13 CHR's identified within the CHAR Study Area should be isolated from project activities. It is recommended that site plan controls be put in place prior to construction to prevent potential impacts as a result of the project. The site plan control methods shall be determined in advance of construction by the proponent to indicate where project activities are restricted. These controls should be communicated to the construction contractor and should be indicated on all construction mapping and communicated to the construction team leads.

Identified heritage attributes of one CHR are situated within 50 m of the proposed pipeline route. The resource identified is:

- 750 Concession 8 West (CHR-11)

This resource is at risk for indirect impacts resulting from construction-related ground vibration. It is recommended that Enbridge consult with a qualified building conditions specialist or geotechnical engineer with previous experience working with heritage structures to identify appropriate vibration mitigation measures in advance of construction. It is also recommended that this consultation be expanded to include all structures within proximity to project construction. Mitigation measures for vibration may include developing an appropriate vibration setback distance, a vibration attenuation study, and/or a construction monitoring program.

Net Impacts

With the implementation of the above mitigation and protective measures, no significant adverse residual impacts on cultural heritage resources are anticipated.



4.4.11 Indigenous Interests

Existing Conditions

There are no Indigenous communities located along the proposed pipeline route, however, the Ministry of Energy, Northern Development and Mines identified the potential for impacts to the following Indigenous communities:

- Mississaugas of the Credit;
- Six Nations of the Grand River; and
- Haudenosaunee Development Institute.

Ontario, as the Crown, has a legal duty to consult with Indigenous peoples regarding projects or decisions that may adversely impact constitutionally protected Indigenous or treaty rights.

Potential Impacts

Although not known to occur, the project may affect traditional territories of Indigenous communities and during construction harvesting and hunting in the construction RoW could be impeded. There is the potential to disturb culturally significant resources or artifacts. Archaeological surveys could also result in the finding of Indigenous artifacts. Potential permits and approvals required for the project (see Section 1.2.5) may trigger a duty to consult.

Mitigation and Protective Measures

Enbridge Gas has sought input from the identified Indigenous communities and will continue engaging with Indigenous communities as the project moves forward. Enbridge Gas will also continue to work with their respective Economic Development departments and Enbridge Gas's contractors to find opportunities for their participation in providing goods and services during construction. Information on the current state of Indigenous engagement will be provided in the application to the OEB.

Mitigation and protective measures for archaeology are discussed in Section 4.4.9.

Net Impacts

By undertaking the above engagement and archaeological assessments, no significant adverse residual impacts on Indigenous interests are anticipated.

4.5 SUMMARY OF RECOMMENDATIONS

Table 4-11 provides a summary of the recommended supplemental studies, mitigation and protective measures identified in Sections 4.2-4.4.

Table 4-11: Summary of Potential Impacts and Recommended Mitigation and Protective Measures

Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures
PHYSICAL FEATURES		
Bedrock Geology and Drift Thickness *Section 4.2.1*	Noise, vibration, fly rock damage and dust may impact wildlife, residences, water wells and businesses when blasting/hoe-ramming activities occur to remove bedrock.	Where hoe-ramming is undertaken the addition of water should be considered to reduce dust where appropriate. In locations where hoe-ramming is required in close proximity to residential homes or buildings the construction contractor should inspect foundations and other structures for integrity prior to and after hoe-ramming. 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. If a significant quantity of bedrock has been removed, the material should be temporarily stockpiled and later transported to a local aggregate producer for reduction to crushed stone. Additionally, the material can be offered to interested landowners and businesses in the vicinity of the project. In locations where blasting is required in close proximity to residential homes or buildings, a blasting consultant should be retained to monitor potential blasting impacts. The monitoring program should include the inspection of foundations and other structures for integrity prior to and after blasting activity. The identification of homes and buildings to be monitored, in proximity to the blast, should be determined by the blasting consultant. Notices of blasting/hoe-ramming should be circulated to residents in the area of blasting/hoe-ramming locations. Monitoring of adjacent wells is recommended. 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.
Surficial Geology and Physiography *Section 4.2.2*	Disturbance to the overburden along the proposed pipeline may cause surface soil erosion and watercourse sedimentation, particularly in areas of steep slopes during construction or post-construction. Trench slumping may occur.	Where there is potential for soil erosion, the need for and location of erosion and sediment control (ESC) measures should be determined by an inspector with appropriate qualifications and installed prior to the commencement of clearing. When land is exposed, the exposure should be kept to the shortest practical period. Natural features should be preserved to the extent practical. Temporary

Table 4-11: Summary of Potential Impacts and Recommended Mitigation and Protective Measures

Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures
		vegetation and mulching should be used to protect areas as appropriate. Where required, natural vegetation should be reestablished as soon as practical. The contractor must obtain adequate quantities of materials to control erosion. Additional supplies should be maintained in a readily accessible location for maintenance and contingency purposes. ESC structures should be reviewed to maintain their effectiveness through the life of construction and post-construction rehabilitation. Extreme precipitation events could result in damage to ESC measures which could lead to erosion. When site conditions permit, ESC measures should be repaired and re-installed on erosion susceptible surfaces. If the erosion is resulting from a construction-related activity, the activity should be halted immediately until the situation is rectified. To avoid the trench from slumping, trench walls in susceptible soils should be sloped and should be monitored during wet conditions for the potential to slump. Trench boxes may be required depending on site specific conditions. At areas of the landscape with steep slopes site-specific mitigation and protective measures should be considered at the discretion of Enbridge Gas's on-site inspection team, including: placing erosion control measures at intervals along the slopes; restricting the movement of heavy machinery and construction personnel during construction on the slope; re-establishing existing contours and drainage upon completion of construction; re-establishing slopes as soon as practical, including at the conclusion of each stage of construction from the top of slope down, through hydromulching and hydroseeding with quick germinating seed mixture appropriate to surrounding vegetation; and monitoring of vegetation until established Slope stability should be reviewed at watercourse crossing locations. Watercourse banks should be seeded and stabilized immediately following crossing. ESC and stabilization measures should be maintained during construction, restoration and rehabilitation until vegetative cover is established. Where evidence of erosion exists, corrective control measures should be implemented as soon as conditions permit. Permits obtained under O.Reg. 150/06 from GRCA, O.Reg. 161 from HCA or O.Reg. 162 from CH may contain conditions pertaining to ESC.

Table 4-11: Summary of Potential Impacts and Recommended Mitigation and Protective Measures

Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures
Hydrogeology *Section 4.2.3*	Hydrostatic Testing and Dewatering/Sand-pointing An uncontrolled discharge of water could cause downstream flooding, erosion, sedimentation, or contamination. Private Water Wells Depending on the proximity to wells, the depth of the well installation and the groundwater levels encountered during excavation, trench dewatering may impact water well quality or quantity at some of the overburden supply wells. Municipal Water Supply The proposed pipeline does not extend through any WHPAs or IPZs associated with any municipal groundwater supply system.	Refueling of equipment should be undertaken outside of areas mapped as highly vulnerable aquifer. If required, 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. 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. Hydrostatic Testing and Dewatering/Sand-pointing For groundwater dewatering, the MECP allows registration under the EASR for construction dewatering projects where takings will be greater than 50,000 L/day and less than 400,000 L/day; however, should groundwater takings exceed 400,000 L/day, a PTTW may be required from the MECP. If surface water is used as the source water for the hydrostatic test, a PTTW application would be required and would include an assessment of the capacity of the source to provide the required water without impacting the ecosystem, and

Table 4-11: Summary of Potential Impacts and Recommended Mitigation and Protective Measures

Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures
		recommendations for mitigation measures such as screened water intakes to limit intake of debris and organisms and 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/sand-pointing and/or hydrostatic testing, energy dissipation techniques should be used. Discharge piping should be free of leaks and should be properly anchored to prevent bouncing or snaking during surging. Protective measures may include dewatering at low velocities, dissipating water energy by discharging into a filter bag or diffuser, and utilizing protective riprap or equivalent. If energy dissipation measures are found to be inadequate, the rate of dewatering should be reduced or dewatering discontinued until satisfactory mitigation measures are in place. Discharge should be monitored to make sure that no erosion or flooding occurs. To assess the potential for introduction of contaminated water to soils or bodies of water, testing of hydrostatic and trench dewatering discharge water should be considered. 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. An environmental consultant should be consulted to determine what testing is necessary for the discharge water. <u>Private Water Wells</u> A private well survey should take place to assess domestic groundwater use near the preferred pipeline and a private well monitoring program may be recommended for residents who rely on overburden groundwater supply for domestic use. <u>Municipal Water Supply</u> There are no nearby municipal supply wells, and therefore additional mitigation measures are not required to protect groundwater drinking supply sources.
Extractive Resources: Aggregates and Petroleum Pools *Section 4.2.4*	No impacts anticipated.	N/A

Table 4-11: Summary of Potential Impacts and Recommended Mitigation and Protective Measures

Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures
Soil and Soil Capability *Section 4.2.5*	Surface stoniness following pipeline construction. The proposed pipeline route crosses agricultural land with a range of agricultural capability. There are potential impacts to topsoil as a result of construction including compaction, loss of organic matter and degraded soil structure. Excess subsoil may be removed from the site. Trenching and construction activities across agricultural land have the potential to affect soil quality and agricultural capability. The movement of heavy machinery on wet soil may cause rutting, compaction, and mixing of topsoil with subsoil. When exposed, soils are more prone to erosion from the loss of vegetative cover. Improperly salvaged topsoil can result in topsoil and subsoil mixing, compaction, rutting, and erosion, which can potentially decrease crop yields. Where equipment is moving from one agricultural field to another there is the potential for the spread of soil pests/diseases to previously unimpacted fields.	Picking of stones 10 cm and larger should be employed following soil replacement activities and subsoiling with an agricultural subsoiler. Repeated stone picking following sub-soiling, discing, chisel ploughing and cultivating should be undertaken <u>Excess Soil</u> It is noted that the MECP has proposed regulating the movement of excess soils in the province of Ontario. It is recommended that Enbridge Gas retain a qualified person for environmental site assessment who is knowledgeable in the current excess soils guidelines, as well as the proposed regulation, in order to make recommendations for the management of excess soils for this project. <u>Wet Soil Shutdown</u> 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. <u>High Winds</u> During construction activities, weather should be monitored to identify the potential onset of high wind conditions and to preserve topsoil. In the event that high winds occur, the contractor should implement protective measures such as: suspend earth moving operations; apply dust suppressants or vegetate the soil stockpiles; protect soil stockpiles with a barrier or windscreen. In conjunction with the above measures, all required materials and equipment should be readily accessible and available for use as required.

Table 4-11: Summary of Potential Impacts and Recommended Mitigation and Protective Measures

Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures
		Soil Stripping Topsoil depths should be measured prior to stripping so that the proper depth of topsoil is removed and replaced. Where stripping is undertaken on agricultural lands, topsoil and subsoil should be stripped and stockpiled separately to avoid mixing. Where the pipeline crosses woodlands or wetlands the organic and duff layer should be stripped where feasible, given local substrate conditions. Where stripping is undertaken in woodlands or wetlands, organic material and subsoil should be stripped and stockpiled separately to avoid mixing. If clean-up is not practical during the construction year, it should be undertaken in the year following construction, starting once the soils have sufficiently dried. Interim soil protection measures should be implemented in sensitive areas to stabilize the RoW for over-wintering. Soil Compaction Where soil has been compacted by the construction process on agricultural lands, an agrologist should determine where decompaction may be necessary. Compaction can be alleviated by using farm equipment such as an agricultural subsoiler prior to replacing the topsoil. Sub-soiling with an agricultural subsoiler, followed by discing, chisel ploughing and cultivating, to smooth the surface, should be considered on agricultural lands. In high traffic areas of the RoW where deep compaction persists, additional deep tillage or subsoiling may be required on a site-specific basis. Soil density and/or penetrometer measurements on and off the easement may be used as a means of assessing the relative degree of soil compaction caused by construction along the RoW as well as determining that the RoW has been sufficiently decompacted. Soil Pests/Diseases In consultation with the landowner and an agrologist, Enbridge Gas will develop and implement a soil sampling plan on agricultural lands for potential pests and/or diseases that are known to the area. If the results indicate an issue or concern, in consultation with the landowner, Enbridge Gas will work with the agrologist, to develop a best practice protocol. Any imported topsoil used for rehabilitation will also have a composite sample analyzed for identified concerns before it is placed on the easement.

Table 4-11: Summary of Potential Impacts and Recommended Mitigation and Protective Measures

Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures
Agricultural Tile Drains *Section 4.2.6*	Construction activities, including trenching and the movement of heavy machinery, have the potential to crush and/or sever agricultural tile drains.	Enbridge Gas should undertake consultation with landowners of agricultural fields to confirm where systematic tile drainage is present. If tile drainage is present, Enbridge Gas should undertake standard mitigation during trenching, including: Develop site specific tile plans with an independent tile contractor Conduct pre-tiling, and install header tile to maintain tile system function Excavate the pipeline trench to a depth that allows clearance between the top of the proposed pipeline and the bottom of existing drainage systems Record and flag severed or crushed tile drains If a main drain, header drain, or large diameter drain is severed, maintain field drainage and prevent flooding of the work area and adjacent lands through temporary repairs Cap the downstream side of severed drains that cross the trench to prevent the entry of soil, debris and rodents, as required Repair damaged and severed drains following construction After repair and before backfilling, invite the landowner to inspect and approve the repair
Natural Hazards *Section 4.2.7*	A flooding event during construction could result in construction delays, soil erosion, sedimentation of a watercourse, trench slumping, and damage or loss of construction equipment and contamination of a watercourse as a result of equipment entering a watercourse.	If flooding necessitates a change in the construction schedule, affected landowners and regulatory agencies should be notified and construction should continue at non-affected locations. Temporary workspaces should be located above the floodplain to the extent practical, unless necessary for watercourse crossings. All work in the floodplains will be subject to a permit under O.Reg. 150/06 from GRCA, O.Reg. 161/06 from HCA or O.Reg. 162/06 from CH.
BIOPHYSICAL FEATURES		
Aquatic Features *Section 4.3.1*	Contamination of surface water features due to accidental spills. <u>Dam and Pump Crossing</u> Construction of an open cut crossing has the potential to affect fish directly through impacts on water quality (erosion, sedimentation, and accidental spills),	Mitigation and protective measures for erosion and sediment control are outlined in Section 4.2.2. During construction, the primary concern to surface water quality is the potential for a contaminant spill. 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

Table 4-11: Summary of Potential Impacts and Recommended Mitigation and Protective Measures

Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures
	disruption/harassment (vibration and noise) and loss of habitat. Indirect impacts include restrictions to habitat use and fish passage. Long term impacts can include changes to habitat such as substrate, increased erosion potential, loss of in-stream cover and riparian shading.	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. Temporary vehicle crossings and dam and pump pipeline crossings should be completed following the measures outlined in industry standards and the Enbridge Environmental Guidelines for Construction (Enbridge 2012) When working near aquatic features, the following mitigation measures are recommended: In-water work for warmwater habitats is typically permitted from July 1 to March 15 (no work from March 16 to June 30) (MNRF, 2013). In-water work for the Spencer Creek crossings is July 1 to September 15 (no work from September 16 to June 30) due to Redside Dace. Watercourses should not be obstructed in a way that impedes the free movement of water and fish. Prior to removal of the vegetation cover, effective mitigation techniques for erosion and sedimentation should be in place to protect water quality. Disturbance to the area during construction should be limited and grubbing activities should be delayed until immediately prior to grading operations. Soil exposure should be reduced prior to commencing construction, and the period that soil remains exposed for grading should be limited. Exposed soils surrounding watercourses should be seeded immediately following construction. Temporary erosion and sediment control measures should be maintained and kept in place until work within or near a watercourse has been completed and stabilized. Temporary sediment control measures should be removed at the

Table 4-11: Summary of Potential Impacts and Recommended Mitigation and Protective Measures

Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures
		completion of the work but not until permanent erosion control measures have been established. Construction material, excess material, construction debris and empty containers should be stored a minimum of 30 m from watercourses and watercourse banks. Equipment maintenance and refueling should be controlled to prevent entry of petroleum products or other deleterious substances, including any debris, waste, rubble or concrete material, into a watercourse, unless otherwise specified in the contract. Deleterious substances (fuel, oil, spoil) should be stored >30 m from the watercourse. Any such material that inadvertently enters a watercourse should be removed in a manner satisfactory to the environmental inspector. 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. Conditions of water crossing permit(s), if applicable, will be adhered to. Additional supplies should be maintained on-site, in a readily accessible location, for maintenance and contingency purposes. Prior to construction, adequate quantities of the materials listed below, or comparable substitutions, should be on site to control erosion and sediment deposition: Sediment control fencing Sediment control logs (i.e., SiltSoxx™) Straw bales Wooden stakes Sand bags Water energy dissipater Filter cloth Water pumps (including stand-by pumps and sufficient lengths of hose) Culvert

Table 4-11: Summary of Potential Impacts and Recommended Mitigation and Protective Measures

Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures
		Additional Measures: The following measures are applicable to trenched crossings: *Flow Diversion/Dewatering* If in-water works are required, the work area should be isolated from the remainder of the surface water feature. Downstream flows should be maintained using dam and pump or dam and flume techniques. When dewatering the work area, dewatering operations should be managed to prevent erosion and/or release of sediment laden or contaminated water to the waterbody (e.g. settling basin, filter bag, energy dispersion measures). An isolation/containment plan should be designed and implemented to isolate temporary in-water work zones and maintain flow around the work zone. Maintenance of downstream flow should avoid potential upstream flooding and desiccation of downstream aquatic habitat and organisms. To further reduce the potential for flooding during construction, the weather forecast should be monitored prior to the start of construction to ensure that in-water works occur during a dry period. *Fish Rescue Plan* Prior to dewatering the work zone, fish trapped in the construction area shall be collected and moved using capture, handling, and release techniques to reduce harm and stress. The intakes of pumping hoses should be equipped with an appropriate device to avoid entraining and impinging fish (see *Measures to Avoid Causing Harm to Fish and Fish Habitat* (2013) at the following DFO website http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/measures-mesures-eng.html). Fish rescue plans should be developed on a site-specific basis and implemented by qualified professionals with the appropriate permitting in place (i.e. MNRF Licence to Collect Fish for Scientific Purposes). *Site Restoration and Riparian Planting* Following construction, the bed and banks of the crossing locations should be restored to pre-construction conditions to the extent possible in accordance with environmental permits. Bank slopes should be restored to match existing grades; however, alterations may be made to maintain slope stability and limit future erosion. Exposed banks should be re-vegetated with native plants to provide riparian cover and aid in erosion and sediment control. Stream beds should be

Table 4-11: Summary of Potential Impacts and Recommended Mitigation and Protective Measures

Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures
		restored to maintain slopes and tie in with existing grades. Bed material should be replaced to match pre-construction conditions. *Permitting* The *Fisheries Act* prohibits causing serious harm to fish unless authorized by DFO. This applies to work being conducted in or near water bodies that support fish that are part of or that support a CRA fishery. Since November 25, 2013, proponents must take the responsibility to determine whether their projects meet the DFO requirements under the Self-Assessment process. If serious harm cannot be avoided, proponents should contact DFO for a formal review and/or approval under the *Fisheries Act*. Following finalization of plans, a Self-Assessment should be completed for all project activities that have the potential to cause serious harm to fish. If it is determined that serious harm is likely to occur because of project-related activities, a Request for Review should be completed and submitted to DFO to determine approvals requirements under the *Fisheries Act*. The pipeline route will be located within the regulated boundary of the GRCA, HCA and CH. Permits under Ontario Regulation 150/06, 161/06 and 162/06 respectively, will be required prior to construction activities in the regulated boundaries. If activities are required below the high-water line, then the DFO and MECP must be contacted to determine if SARA and ESA Permits are required.
Designated Natural Areas and Vegetation *Section 4.3.2*	Where there is natural vegetation, woodlands and wetlands within or adjacent to the proposed pipeline route, potential impacts include the removal of native vegetation, introduction or spread of invasive species, and indirect effects such as dust, erosion, and accidental spills.	Environmental mitigation and protective measures during construction include the following: Field surveys will be conducted prior to construction to assess the presence or absence of wetlands. ELC and botanical surveys will be conducted prior to construction to assess the significance and boundaries of vegetation communities and to identify vascular plant species, including plant species of concern. The results of the surveys will be used to confirm mitigation and protective measures. Where the RoW abuts woodlands on one side, route pipeline to avoid woodlot area where possible. Determine municipal requirements or permits for tree removal prior to construction.

Table 4-11: Summary of Potential Impacts and Recommended Mitigation and Protective Measures

Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures
		Clearing should be minimized to the extent possible in sensitive areas such woodlots, along watercourses, along the side of the ANSI and in areas of significant groundwater recharge. 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 (ex. 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 work areas. Enbridge Gas should consult with landowners and GRCA, HCA and CH 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, and the replacement of individual trees on a 1:1 basis. 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. If a landowner is not interested in planting trees on their property, Enbridge Gas will offer the trees to GRCA, HCA, CH or to a local community group. 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 work areas and permanent easement should be done with a native seed mix reviewed by GRCA, HCA or CH. 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.

Table 4-11: Summary of Potential Impacts and Recommended Mitigation and Protective Measures

Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures
		Mitigation and protective measures are outlined in Section 4.4.5 for dust, Section 4.2.2 for erosion and Section 4.2.3 and 4.3.1 for accidental spills.
Wildlife, Wildlife Habitat and Species at Risk *Section 4.3.3*	Potential impacts on wildlife and wildlife habitat from construction include direct mortality from construction vehicles, habitat destruction through vegetation removal, habitat degradation through spills and sensory disturbance of wildlife during construction.	Environmental mitigation and protective measures during construction include the following: Field surveys will be undertaken before construction to assess the presence or absence of wildlife and wildlife habitat. Detailed design of the proposed pipeline should be reviewed to avoid and reduce the likelihood of impact upon wildlife habitat to the extent possible, and in particular habitats of endangered, rare, special concern, and threatened species. Equipment and vehicles should yield the RoW to wildlife. 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. Fencing should be erected around deep excavations to prevent wildlife entrapment. The contractor should inform their personnel to not threaten, harass or injure wildlife. If wildlife is encountered during construction, personnel are required to move away from the animal and wait for the animal to move off the construction site. Where practical, avoid construction in the vicinity of areas that may provide habitat for amphibians during the amphibian breeding season (March 1 – June 30). Amphibian habitat will be identified during field investigations. Areas of potential bat maternity roosting habitat will be identified during field investigations. 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). Mitigation recommendations for SAR bats will be prepared upon consultation with MECP. Work (soil excavation) within wetlands is recommended to occur outside of the winter months (i.e., not between November 1 and March 30) to avoid potential impacts to hibernating frogs and turtles. 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.

Table 4-11: Summary of Potential Impacts and Recommended Mitigation and Protective Measures

Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures
		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. Habitat assessments and species occurrence surveys will be conducted for SAR. A report will be prepared to document results and recommend mitigation measures. If SAR are found along the proposed pipeline route Enbridge Gas will undertake consultation with the MECP regarding the potential need for a permit under the ESA and/or species-specific mitigation Mitigation and protective measures are outlined in Section 4.3.2 for vegetation removal and Section 4.2.3 for accidental spills.
SOCIO-ECONOMIC ENVIRONMENT		
Employment and Business *Section 4.4.1*	Project demands for labour and goods and services can result in both beneficial and adverse effects. Positive effects may not be evenly distributed among populations, with some residents in a better position to receive economic benefits than others. Similarly, adverse effects may affect some residents more than others. Residual effects on employment are related to the project's labour demand compared to the labour supply. Three types of employment are considered: • Direct employment: labour that is hired directly for the project	It is expected that the project will generally result in positive effects on employment by employing local and Indigenous people, and by reducing the unemployment rate in the region. These positive effects do not require mitigation, but Enbridge Gas will identify and implement various mechanisms to enhance project benefits. The potential effects of the project as a result of purchasing labour, goods and services is expected to be positive during construction and operation, so no mitigation will be required. However, Enbridge Gas has and will continue to work with local and Indigenous businesses to enhance their potential for successfully bidding on project contracts regarding the supply of goods and services, particularly for the operation phase. One initiative to help encourage further local and Indigenous content on the project is to post project purchasing requirements in advance, so that businesses can position themselves to effectively bid to supply goods and services needed for construction and operation. Increased

Table 4-11: Summary of Potential Impacts and Recommended Mitigation and Protective Measures

Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures
	• Indirect employment: labour hired by companies in order to produce and provide goods and services needed for the project • Induced employment: labour hired by industries that produce and provide consumer items and services purchased by people who are directly or indirectly employed by the project Labour conditions will be affected by direct, indirect and induced employment during all project phases. The project could affect business through purchases of labour, goods and services from local businesses, including businesses owned by Indigenous peoples, and will result in increased local employment income and municipal government revenue. Local businesses will likely benefit from supplying the project with goods and services. Land clearing and other construction-related project activities could adversely affect agricultural productivity and operations, and businesses along the proposed pipeline route that include Verbinnen's Nursery, Taylor Hills Equine Centre and Green Relief. Other potential adverse effects include impairment to the use and enjoyment of property and conflicts with farm machinery and other vehicular movement.	participation of local and Indigenous businesses will enhance positive local economic effects. With respect to potential adverse effects on agricultural and non-agricultural (commercial and industrial) businesses, Enbridge Gas will engage with land owners and the City of Hamilton to address access to the project area, the portion of land that will be altered as part of site preparation, long-term changes to agricultural and non-agricultural land and the development of appropriate and feasible mitigation measures
Community Services and Infrastructure	The presence of temporary workers in the local communities during the six-month	Project employees might require medical attention while staying in the area. The contractor and Enbridge Gas will have emergency response equipment and



Table 4-11: Summary of Potential Impacts and Recommended Mitigation and Protective Measures

Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures
Section 4.4.2	long construction period has the potential to increase the demand for housing and local community services and infrastructure. Non-local project workers are expected to stay in temporary accommodations, including hotels, motels, and campgrounds. They may also choose to rent houses or apartments. The vacancy rate for temporary rentals will likely be able to accommodate the temporary increase. The short duration that the workers will reside near any one community, as well as the structure of the work shifts, will limit the need for workers to use the services and infrastructure in local communities. The transportation of project goods, services and workers has the potential to lead to increased use of existing transportation infrastructure. Also, increased traffic volumes along local road networks could increase travel times and reduce road safety, which might lead to increased use of local emergency services due to potential vehicle accidents and workplace accidents. In addition, the production of project-related waste could place additional stress on the capacity of local landfills. During operation, the workforce will be relatively small (likely requiring only 100 hours per year, or an average of approximately 2 hours per week) and localized, and will put minimal additional demands on local services and	trained personnel on-site during construction. In addition, an Emergency Response Plan will be developed and implemented, which will address field health services, emergency call-out procedures and fire response plans. Safety fencing will be used where necessary to separate the work area. Environmental mitigation and contingency and management plans will be in place to reduce the likelihood of emergency events and to prepare for the management of emergency events on site. If an emergency incident were to occur, it is anticipated that the comprehensive mitigation, contingency plans, and safety strategies will result in a localized and low-intensity response. A Traffic Management Plan should be in place for all roads affected by construction, which at a minimum outlines measures to: • Control the movement of materials and personnel to and from the construction site • Post signs to warn oncoming motorists of construction activity • Control traffic at road crossings • Reduce on-road disturbance and land closures • Store equipment as far from the edge of the road as practical • Install construction barricades at road crossings Traffic disruptions during construction will be reduced by adherence to the Traffic Management Plan. Guidelines will be developed for vehicular use on the RoW and associated access roads to avoid traffic congestion and accidents. Access to existing transportation infrastructure will be addressed through standard mitigation and will be reversible once the construction phase ends. The capacity of waste disposal sites will be considered and if project needs are not easily accommodated, alternative disposal locations will be considered. Enbridge Gas will provide project information to local communities and service providers so that they are prepared for any possible demand on community services and infrastructure related to a temporary population increase. Additional consultation with residents and businesses adjacent to the proposed pipeline route will be held in advance of construction commencement. Contact information for a designated Enbridge Gas representative will be available to address questions and concerns during construction. Consultation has been initiated and will continue with municipal personnel.

Table 4-11: Summary of Potential Impacts and Recommended Mitigation and Protective Measures

Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures
	infrastructure. Some operation workers might already reside in the local area; however, some might need to come from outside communities and may use local community and emergency services.	
Perceived Health and Well-Being *Section 4.4.3*	Perceived health and well-being is influenced by a number of factors such as individual lifestyles, social and community networks, living conditions, general socio-economic and environmental conditions. The project has the potential to affect a number of these factors, which could change the way that local residents perceive their health and well-being. During public consultation for the project, comments were raised regarding noise, dust, monetary compensation for loss of crops and trees, disruption to business, as well as enjoyment of property. Since perceived health and well-being is influenced by improved economic conditions, the project is expected to have positive effects by creating direct, indirect, and induced employment, and through project spending within the City of Hamilton (see Section 4.4.1). There is also the potential to enhance these benefits further by selecting local and Indigenous businesses to provide services to the project, thus increasing economic activity and the associated benefits (see Section 4.4.1). This economic stimulus could increase local spending and increase income for some residents and their families. Higher income from project	Mitigation and protective measures for air quality and noise are outlined in Section 4.4.5. If laneways or driveways are affected as a result of pipeline construction, they will be left in place over the trench where requested by the landowner, for as long as feasible. Access to residential properties and businesses should be maintained at all times to reduce stress on local residents and safety fences should be installed at the edge of the construction RoW, where public safety considerations are required. A Traffic Management Plan should be implemented to reduce effects of project-related traffic on traffic volumes, which could reduce access to businesses and farmland (see Section 4.4.2). In addition, Enbridge Gas will work with landowners to address specific concerns they may have regarding monetary compensation and their property, such as access, disruption to businesses and tile drainage repairs. While pipeline construction activities have the potential to temporarily affect the local landscape, restoration of the construction area will leave little evidence that a pipeline exists in the area. Vegetative buffers at watercourses and road crossings will be implemented and be compliant with applicable permits and regulations. Additional consultation with residents and businesses along and adjacent to the proposed pipeline route will take place in advance of construction activity. Enbridge Gas will develop an issues resolution framework to help resolve stakeholder issues that may arise during project construction and operation, and to select the appropriate mitigation measures to resolve these issues.



Table 4-11: Summary of Potential Impacts and Recommended Mitigation and Protective Measures

Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures
	employment could increase the real and perceived quality of life of some local residents. Construction activity will temporarily affect the landscape of the construction area and could impede property access. Construction activities also have the potential to disturb the perceived aesthetic value that residents place on their property and the area in general. The potential for project activities to interfere with aesthetic value, property enjoyment, access to business, and with the production of agricultural products, could have an adverse effect on perceived health and well-being of some residents. Potential safety concerns also exist at locations where properties, residents and vehicles come in proximity to construction activities. Potential increases in noise, dust, exhaust (see Section 4.4.5) and traffic congestion on roads could also cause stress and affect how people perceive their quality of life. Increased traffic could also impede customer access to businesses and access by landowners and farmers to their land. The temporary workforce may increase demands on existing recreation facilities and conservation areas, including arenas and swimming pools. Since project construction is scheduled to occur during spring, summer and fall months, winter recreation activities will not be affected.	

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Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures
Infrastructure *Section 4.4.4*	The proposed project will be constructed parallel and overlapping an existing Enbridge Gas easement, with some temporary lands required for construction purposes. Impacts to a community garden in the Antrim Glen Residential Community and to tennis courts within the Ponderosa Nature Resort will occur. Where temporary lands are required limited impacts to agricultural lands may occur. The proposed pipeline has the potential to interact with buildings, roads/highways, hydroelectric lines, and buried and overhead utilities. Potential impacts include damage to the infrastructure and harm to personnel. Highway 6 crossing has the potential produce extended periods of noise and vibration. There is also the possibility of extended work hours and the need for construction lighting (due to low light conditions).	Mitigation and protective measures for roads are outlined in Section 4.4.2. Mitigation and protective measured for agricultural lands are outlined in Section 4.2.5. Arrangements will be made with the communities and landowners for replacement of features that are impacted by construction activities. Consultation is ongoing with Infrastructure Ontario and HONI regarding easements to cross the existing overhead hydroelectric lines. The contractor will be responsible for locating and exposing existing pipelines and utilities on lands that will be affected by trench excavation. During construction, machine operators will be informed where electrical transmission lines are present overhead. Lines that may interfere with the operation of construction equipment will be identified with warning poles and red flags. Standard construction mitigation measures will be implemented that include: • Safety fencing will be erected around bore pits • Wood decking will be installed to support continuous construction access during wet soil conditions, and assist in protecting vegetation and seed beds • Excavated topsoil and subsoil for bore pits will be separated prior to stockpiling • Erosion and sediment control measures will be installed around soil stockpiles A detailed mitigation plan will be developed once the crossing method and design have been determined.
Air Quality and Noise *Section 4.4.5*	Residential and business properties may experience noise, dust and equipment exhaust associated with construction activity. During operation, no substantial air or noise emissions are anticipated to occur. Potential impacts from blasting activities are outlined in Section 4.2.1	During construction, motorized construction equipment should be equipped with mufflers and silencers as available. Company and construction personnel should avoid idling of vehicles; vehicles or equipment should be turned off when not in use unless required for operation of the vehicle or equipment. To the greatest extent practical activities that could create noise should be restricted to daylight hours and adhere to local noise by-laws. Sources of continuous noise, such as portable generators, should be shielded or located so as to reduce disturbance to residents and businesses. Where pipeline installation will take an extended time period to complete, such as watercourse and road crossings, an assessment

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Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures
		should be undertaken to determine the suitability and effectiveness of temporary noise barriers adjacent to residential or business properties. The contractor should implement site practices during construction that are in line with the Environment Canada document 'Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities' (Cheminfo Services Inc., 2005), which may include: Maintaining equipment in compliance with regulatory requirements Protecting stockpiles of friable material with a barrier or windscreen in the event of dry conditions and dust Dust suppression of source areas Covering loads of friable materials during transport Watering for dust control must not result in the formation of puddles, rutting by equipment or vehicles, the tracking of mud onto roads or the siltation of watercourses. Mitigation and protective measures for blasting activities are outlined in Section 4.2.1.
Contamination *Section 4.4.6*	Presence of metering equipment and infrastructure relating to pipeline maintenance and operations at the Enbridge Gas Kirkwall valve site at1374 Valens Road, Cambridge, Ontario. Presence of metering equipment and infrastructure relating to pipeline maintenance and operations at the TransCanada Kirkwall Compressor Station at 1376 Valens Road, Cambridge, Ontario. Pad-mounted and pole-mounted transformers, Off Glenariff Drive and along various roadways Scrap Cars, Debris, and Stockpiles at 1454 Middletown Road, Millgrove, Ontario.	Should excess soil be generated at the Site during future construction activities, or if contaminated soils are suspected (e.g., if observed material contained anthropogenic substances, PHC odours/staining, and debris/waste), representative soil samples should be collected and submitted for chemical analysis to determine management options and appropriate handling and health and safety guidelines. Should excess soil be generated at the Site during construction activities, soils that do not meet the Standards listed in Table 1 of the Ministry of Environment, Conservation, and Parks (MECP) document Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (April 15, 2011) may not be considered inert fill upon excavation, and off-site Management options for excess soils that cannot be reused within the Site must be considered. It is understood that salt-related parameters may not be considered to be contaminants in a road alignment, when de-icing salt has been used for winter road maintenance (O.Reg. 153/04 s.48 (3)); however, soil or water

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Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures
	Historical diesel, gasoline and oil spills along Brock Road and Highway 6 within the Study Area Potential pesticide and herbicide use and storage Verbinnen's Tree Nursery at 1504 Brock Road, Dundas, Ontario. Presence of metering equipment and infrastructure relating to pipeline maintenance and operations at the Hamilton valve site at 43 Carlisle Road, Freelton, Ontario Imported fill material along the entire proposed route. The windshield survey did not permit a detailed assessment of the presence of PSOCs at private properties; therefore, it is possible that above ground or underground fuel storage may exist on-site or at adjacent residential, industrial, or commercial properties that were not observed from adjacent roadways.	impacted by salt should be managed according to MECP guidance if it is to be removed from the RoW. Should excess water be generated at the Site during construction activities, water quality analyses should be conducted to determine appropriate management methods, such as done in support or a PTTW. This work should be done in coordination with a qualified person for environmental site assessment (QP_{ESA}) as defined by Ontario Regulation 153/04, to maintain data quality and provide an appropriate assessment of water quality. The QP_{ESA} should be made aware of the PSOCs identified so as to select an appropriate list of analytes. Should evidence of soil or water impacts be identified during construction (e.g., staining, odours, petroleum hydrocarbon sheen) samples should be collected for laboratory analyses to confirm concentrations of potential contaminants so as to develop appropriate material management, and health and safety guidelines. A Phase I ESA, and Phase II ESA (if recommended as part of the Phase I ESA) should be considered for any property that will be acquired by Enbridge Gas and a site-specific evaluation of PSOCs should be completed. If building demolition will be required, designated substance surveys should be completed for buildings or structures prior to demolition.
Waste Management *Section 4.4.7*	Improper disposal of waste material generated during construction may result in contamination to soil, groundwater, and/or surface water resources on and off the construction RoW. Litter generated during construction may also become a nuisance to landowners and/or surrounding residents if not contained.	The construction contractor should implement a site-specific waste collection and disposal management plan, which may include: Waste materials, sanitary waste and recycling transported off-site by licensed waste contractors. The responsible management of fill (see Section 4.2.5). Labelling and storage of hazardous and liquid wastes in a secure area that would contain material in the event of a spill. Implementation of a waste management program consisting of reduction, reuse, and recycling of materials.

Table 4-11: Summary of Potential Impacts and Recommended Mitigation and Protective Measures

Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures
Land Use *Section 4.4.8*	Natural gas pipelines are permitted facilities in the various municipal land uses, and thus no impacts to municipal land use designations will occur. Potential impacts on agricultural land is discussed in Section 4.2.5 (soils) and 4.2.6 (agricultural tile drainage). Potential impacts on agricultural and non-agricultural businesses are discussed in Section 4.4.1. Potential impacts on uses of land will be interruption to access or use.	Mitigation and protective measures for agricultural soils, drainage and for businesses are discussed in Sections 4.2.5, 4.2.6 and 4.4.1, respectively. Consultation has been initiated, and will continue, with the City of Hamilton as well as landowners along the proposed pipeline route in order to identify methods of minimizing disturbance to property and maintaining access to lands, to the extent possible. Where work is to occur within CA regulated areas, permits will be obtained from the GRCA as per O.Reg 150/06, HCA as per O.Reg. 161/06 or CH as per O.Reg. 162/06.
Archaeological Resources *Section 4.4.9*	The Stage 1 AA has determined that the majority of the entirety of the study area retains potential for the identification of Indigenous and Euro-Canadian archaeological resources.	Based on the findings of the Stage 1 AA, further necessary stages of archaeological assessment (i.e., Stage 2 AA) are required, which will provide for the assessment and mitigation, as necessary, of identified archaeological resources, if any are found. Wherever possible, archaeological sites that are determined to have cultural heritage value and interest should be mitigated in whole or in part by avoidance and preservation. However, if avoidance and preservation is not feasible, mitigation by excavation is an approved alternative. For identified Indigenous sites that could be subject to impact by the project, Stage 3 and Stage 4 work will include engagement with the appropriate Indigenous community.
Cultural Heritage Resources *Section 4.4.10*	Along the proposed pipeline route, potential impacts to cultural heritage resources are limited to vibration damage to structural stability.	In order to prevent negative impacts, any potential cultural heritage resource within 50 m of the proposed pipeline route should be isolated from project activities. It is recommended that site plan controls be put in place prior to construction to prevent potential impacts as a result of the Project. The site plan control methods shall be determined in advance of construction by the proponent to indicate where project activities are restricted. These controls should be communicated to the construction contractor and should be indicated on all construction mapping and communicated to the construction team leads. As identified heritage attributes associated with one cultural heritage resource is situated within 50 m of the proposed pipeline route it is recommended that Enbridge Gas consult with a qualified building conditions specialist or geotechnical engineer with previous experience working with heritage structures

Table 4-11: Summary of Potential Impacts and Recommended Mitigation and Protective Measures

Environmental Feature(s)	Potential Impact(s)	Mitigation and Protective Measures
		to identify appropriate vibration mitigation measures in advance of construction. Mitigation measures for vibration may include developing an appropriate vibration setback distance, a vibration attenuation study, and/or a construction monitoring program.
Indigenous Interests *Section 4.4.11*	Although not known to occur, the project may affect traditional territories of Indigenous communities and during construction harvesting and hunting in the construction RoW could be impeded. There is the potential to disturb culturally significant resources or artefacts. Archaeological surveys could also result in the finding of Indigenous artifacts. Potential permits and approvals required for the project (see Section 1.2.5) may trigger a duty to consult.	Enbridge Gas has sought input into the project from the identified Indigenous communities and will continue engaging with Indigenous communities as the project moves forward. Enbridge Gas will also continue to work with their respective Economic Development departments and Enbridge Gas's contractors to find opportunities for their participation in providing goods and services during construction. Information on the current state of Indigenous engagement will be provided in the application to the OEB. Mitigation and protective measures for archaeology are discussed in Section 4.4.9.

5.0 CUMULATIVE EFFECTS ASSESSMENT

The recognition of cumulative effects assessment as a best practice is reflected in many regulatory and guidance documents. With regard to development of hydrocarbon pipelines in Ontario, the OEB Environmental Guidelines note that cumulative effects should be identified and discussed in the ER. The cumulative effects assessment refers to the potential effects associated with the project.

Building upon the intent of the OEB Environmental Guidelines, the OEB has specified that only those effects that are additive or interact with the effects that have already been identified as resulting from the project are to be considered under cumulative effects. In such cases, it will be necessary to determine whether these effects warrant mitigation measures. The cumulative effects assessment has been prepared with consideration of this direction from the OEB.

5.1 METHODOLOGY

The cumulative effects assessment describes the potential cumulative effects resulting from the interaction of residual effects of constructing and operating the proposed pipeline with the effects of other unrelated projects. The other projects assessed are those that are either existing or approved and that have a high likelihood of proceeding.

Cumulative effects include the temporal and spatial accumulations of change that occur within an area or system due to past, present, and future activities. Change can accumulate within systems by either an additive (i.e., cumulative) or interactive (i.e., synergistic) manner. Positive residual effects have not been assessed in the cumulative effects assessment.

By applying the principles of avoidance, minimization, and compensation to limit project-specific effects, potential adverse residual effects on environmental and socio-economic features have been greatly limited before accounting for the effects of other unrelated projects.

The cumulative effects assessment methodology is designed to evaluate and manage the additive and interactive effects from the following sources:

- Existing infrastructure, facilities, and activities as determined from available data sets
- The proposed pipeline
- Future activities where the undertaking will proceed, or has a high probability of proceeding

Although rare in occurrence, it is plausible that accidents or emergency events may arise due to an unforeseen chain of events during the project's construction or operational life. Due to the rarity and magnitude of such events, they have not been assessed here, as they are extreme in nature when compared to the effects of normal construction and operation activities and require separate response plans.



5.2 STUDY BOUNDARIES

Spatial

To make assumptions about the magnitude and probability of effects, an approximate 100 m boundary around the proposed pipeline route was used for the cumulative effects assessment. The 100 m boundary has been found, through previous experience with pipeline construction, to be appropriate for the most commonly encountered net effects.

Temporal

The temporal boundaries for the cumulative effects assessment reflect the nature and timing of project activities, and the availability of information surrounding future projects with a high probability of proceeding. The project schedule identifies three key milestone activities:

1. ER and technical design – 2019
2. Construction – 2021
3. Operation and Maintenance – 2021 to 2071*

**Fifty years of operation is used as an assumption, although the pipeline may be operational beyond fifty years.*

Based upon these milestone activities, two time periods were selected for evaluation: 2021 and 2026. The year 2021 was selected to represent the construction period, and the year 2026 was selected to represent the operation and maintenance period. Forecasting beyond 2026 increases the uncertainty in predicting whether projects will proceed, and the effects associated with these projects.

5.3 PROJECT INCLUSION LIST

The project inclusion list was developed by reviewing publicly available information for projects and activities with the potential for effects to interact with the identified effects of the proposed pipeline within the spatial and temporal study boundaries. The following resources were reviewed:

- Canadian Environmental Assessment Agency, Canadian Environmental Assessment Registry (CEA Agency, 2019)
- Government of Ontario, Environmental Assessment Projects by Category (Government of Ontario, 2019)
- Government of Ontario, Renewable Energy Approval Projects (2019)
- MTO, Southern Highways Program (2017-2021) (MTO, nd)
- City of Hamilton, Capital Construction Projects (2019)
- National Energy Board, Major Facilities Applications (NEB, 2019)

- OEB Applications Currently Before the Board (facilities applications only) (OEB, 2019)

Based on the review of publicly available resources, the project inclusion list in Table 5-1 included the following projects for consideration of cumulative effects:

Table 5-1: Project Inclusion List for Cumulative Effects

Project Name	Project Location	Proponent	Schedule	Project Description	Interaction with the Proposed Pipeline
*Milton Logistics Hub Project[1]	Milton, Ontario	Canadian National Railway Company	Currently undergoing Federal Environmental Assessment, Public Hearing June 2019.	The Canadian National Railway Company is proposing the construction and operation of a logistics hub, designed to transfer containers between trucks and railcars.	Potential for traffic management issues and congestion due to construction vehicles.
*Waterdown to Finch Project	Waterdown (rural Hamilton) to North York	Imperial Oil Limited	Submitted to the Ontario Energy Board on February 25, 2019.	Imperial Oil Limited is planning to replace approximately 63 km of the existing Sarnia Products Pipeline.	Potential for traffic management issues and congestion due to construction vehicles.
Westover to Copetown Temporary Transmission Line Project	Hamilton	Hydro One Networks Inc.	Class EA initiated. Work may begin as early as November 2019 to meet a target in-service date of May 2020.	Hydro One Networks Inc. is planning to install a temporary 115 kilovolt (kV) wood pole transmission line approximately 13 km in length. It will largely run parallel to an existing 500 kV line. It will be installed for approximately two years and is planned to be removed by Fall 2021.	Potential for traffic management issues and congestion due to construction vehicles.

1. Canadian National Railway Company (2019)

*The projects referenced are more that 100 m away however are large in magnitude and therefore have been included in this assessment to be conservative.

In addition to the above, it is assumed that on-going improvements, upgrades and maintenance to municipal infrastructure such as bridges, culverts, drains or roads will occur within the spatial and temporal study boundaries.

5.4 ANALYSIS OF CUMULATIVE EFFECTS

Sections 4.2-4.4 of the ER consider the potential impacts of the project on specific features and conditions and propose mitigation and protective measures to eliminate or reduce the potential impacts. The cumulative effects assessment evaluates the significance of residual impacts (after mitigation) of the project along with the effects of other unrelated projects.



5.4.1 Construction – Year 2021

Residual project impacts which may occur during project construction are outlined in Sections 4.2-4.4. To consider the additive and interactive effects at their maximum intensity, the cumulative effects assessment assumes that construction of other unrelated projects and the proposed pipeline construction will occur concurrently.

Potential cumulative effects resulting from the proposed pipeline construction and the concurrent projects are additive effects on soil, vegetation, wildlife and wildlife habitat, air quality and the acoustic environment.

Soil

Soil erosion and reduced soil capability is a potential residual effect associated with construction of the project. Mitigation and protective measures for soil are outlined in Section 4.2.2. Provided that concurrent projects follow mitigation measures similar to those outlined in this report, the probability of erosion control failure occurring concurrently is low and based on the nature of the proposed projects the magnitude of such an event would be low. As such, adverse cumulative residual effects on the natural environment from erosion are not anticipated to be significant, and cumulative effects on soil capability are not anticipated to occur.

Vegetation

Where there is natural vegetation within or adjacent to the proposed pipeline route, potential impacts include the removal of native vegetation, and indirect effects such as dust, erosion, and accidental spills. However, with the implementation of the mitigation and protective measures outlined in this report, such as 1:1 vegetation replanting, and provided that concurrent projects follow mitigation measures similar to those outlined in this report, adverse cumulative residual effects on vegetation are not anticipated to be significant.

Wildlife and Wildlife Habitat

Potential residual effects on wildlife and wildlife habitat associated with construction of the project are accidental direct mortality, habitat removal and sensory disturbance. Mitigation and protective measures for wildlife and wildlife habitat are outlined in Section 4.3.3. In the event of project-related wildlife deaths, the MNRF will be contacted. If mortality occurs between concurrent projects for similar species, the Ministry will be able to note the occurrences and coordinate with Enbridge Gas to adjust construction activities. Potential cumulative effects resulting from sensory disturbance (i.e., noise, air pollution and dust) are discussed below.

Provided that the above measures are undertaken, and provided that concurrent projects follow mitigation measures similar to those outlined in this report, adverse cumulative residual effects on wildlife and wildlife habitat will be of low probability and will be mitigated as coordinated through the MECP, and therefore are not anticipated to be significant.

Air Quality and Acoustic Environment

Potential residual effects on air quality associated with construction of the project and concurrent projects are an increase in noise and air pollutants from operation of vehicles and equipment, and an increase in dust from construction activities. Mitigation and protective measures for air quality and the acoustic environment are outlined in Section 4.4.5. Provided that the concurrent projects follow mitigation measures similar to those outlined in this report, cumulative effects will be of low magnitude and reversible. Therefore, adverse residual cumulative effects on air quality and the acoustic environment are not anticipated to be significant.

5.4.2 Operation and Maintenance – Year 2026

Development and maintenance activities which have a probability of proceeding during operation and maintenance of the project include:

- Road works: Future road rehabilitation and resurfacing
- Water works: Future installation of water and wastewater pipelines
- Pipeline construction and maintenance: Future pipeline construction and maintenance of existing hydrocarbon pipelines

Operation and maintenance activities undertaken by Enbridge Gas will be completed in co-ordination with the Enbridge Gas Environmental Planning Team and will consider potential impacts on natural heritage and socio-economic environment. Appropriate mitigation measures will be developed and implemented based on the proposed maintenance work. Enbridge Gas will obtain all necessary agency permits and approvals, as required. Given the limited scale of impact of any potential operation and maintenance activities, it is anticipated that residual impacts will be minimal and that should any interaction occur with other projects, significant adverse residual effects are not anticipated to be significant.

5.5 SUMMARY OF CUMULATIVE EFFECTS

The potential cumulative effects of the project were assessed by considering development that has a high probability of proceeding just prior to or concurrent with construction of the project. An approximate 100 m boundary around the project site was used to assess the potential for additive and interactive effects of the project and other developments on environmental and socio-economic features.

Municipal projects may contribute to cumulative effects within the study boundaries. Improvements to municipal infrastructure such as bridges, culverts, drains or roads may occur during the operational phase of the project. The cumulative effects assessment determined that, provided the mitigation and protective measures outlined in this report are implemented and that concurrent projects implement similar mitigation and protective measures, potential cumulative effects are not anticipated to occur, or if they do occur are not anticipated to be significant.



6.0 MONITORING AND CONTINGENCY PLANS

6.1 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 and socio-economic features. Ultimately, the knowledge gained from monitoring is used to avoid or reduce issues which may arise during construction of subsequent pipeline projects.

Previous pipeline construction experience, and a review of post-construction monitoring reports from other projects, indicates that impacts from pipeline construction are for the most part temporary. The mitigation and protective measures to eliminate or reduce impacts are well known and have been shown to be effective. With this in mind, Enbridge Gas should adhere to the following general monitoring practices:

- Trained personnel should be on-site to monitor construction and should be responsible for checking that the mitigation and protective measures and monitoring requirements within the ER are executed. Enbridge Gas should implement an orientation program for inspectors and contractor personnel to provide information regarding Enbridge Gas's environmental program and commitments, as well as safety measures;
- Recommendations and commitments made in this ER and other applicable permits and reports should be incorporated into clearing and construction activities. The commitments of this ER and other permits and reports should become part of the contract specification with the contractor selected to construct the project, as noted in section 5.8.4 of the OEB Environmental Guidelines;
- 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 should be conducted.

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

6.1.1 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.



6.1.2 Water Wells

Before construction, a private water well survey should take place to assess domestic groundwater use near the proposed pipeline route and determine the need for a water well monitoring program, as outlined in Section 4.2.3.

6.1.3 Watercourse Crossings

Watercourse crossings have the potential to affect fish, fish habitat, and water quality. Enbridge Gas's on-site inspection team should oversee all watercourse crossings and confirm that work is conducted as outlined in Section 4.3.1, and as per the conditions of relevant permits (see Section 1.2.5).

6.1.4 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).

6.1.5 Species at Risk

Should SAR be identified during vegetation, wildlife, and/or wildlife habitat field surveys, construction monitoring may need to be undertaken. The exact nature of monitoring will be determined in consultation with the MECP and DFO and will depend on the species present.

6.1.6 Cultural Heritage Resources

Any cultural heritage resources within 50 m of the proposed pipeline route will require site plan controls that will need monitoring. In addition, if a vibration assessment results in additional mitigation measures, these will need to be monitored where construction activities occur within 50 m of a cultural heritage resource. Further details are provided in Section 4.4.10.

6.1.7 Residents and Businesses

Construction activities will impact directly affected landowners and surrounding residents and businesses. During construction, a designated Enbridge Gas representative will be available to monitor and respond to requests and concerns voiced by residents and business owners. Landowners affected by construction will be notified in advance of construction activities in their area, as feasible. The notification will provide the contact information for a designated Enbridge Gas representative.

Enbridge Gas's on-site inspection team will also monitor the contractors' implementation of the Traffic Management Plan, to see that site access to residences and businesses has been maintained and that traffic is not being unnecessarily interrupted.

While efforts will be undertaken to reduce impacts, a comment tracking system will also be implemented. An Enbridge Gas representative will record the time and date of calls, the nature of the concern, the corrective action taken, and the time and date of follow-up contact.

Following completion of construction, Enbridge Gas will contact residents and businesses along the easement to continue ongoing communications where necessary. During the first two years, particular attention will be paid to monitoring and documenting impacts associated with construction of the proposed pipeline.

6.1.8 Municipal Roads

A pre-construction road condition assessment will be conducted to document road conditions. Following the completion of construction activities, a post-construction road condition assessment with be conducted to determine if there are any areas where construction impacts occurred. If construction impacts are found appropriate repairs will be completed.

6.2 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, human error causing accidental spills, and the discovery of unexpected finds. 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.

6.2.1 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.



6.2.2 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.

6.2.3 Unexpected Finds: Archaeological or Heritage Resources and Unknown Contaminated Soils

Should previously unknown archaeological or heritage resources be uncovered or suspected of being uncovered during construction, ground disturbance in the find location should cease immediately. The MTCS and an archaeologist licensed in the Province of Ontario should be notified immediately. A site-specific response plan should then be employed following further investigation of the specific find. The response plan would indicate under which conditions the ground disturbance activity in the find location may resume.

In the event that human remains are uncovered or suspected of being uncovered during ground disturbance, the above measures should be implemented along with notifying local police, the coroner's office, and the Cemeteries Regulation Unit of the Ontario Ministry of Government and Consumer Services (1-800-889-9768).

In the event that previously unknown materials or contaminated soils are uncovered or suspected of being uncovered, construction in the find location should cease immediately. In such an instance, Enbridge Gas should retain expert advice on assessing and developing a plan to include soil sampling, handling, disposal and remediation.

7.0 CONCLUSION

The environmental study investigated data on the physical, biophysical, and socio-economic environment along the proposed pipeline route and related facilities. In the opinion of Stantec, the recommended program of supplemental studies, mitigation and protective measures, and contingency measures are considered appropriate to protect the features encountered. Monitoring will assess whether mitigation and protective measures were effective in both the short and long term.

With the implementation of the recommendations in this report, on-going communication and consultation, and adherence to permit, regulatory and legislative requirements, potential adverse residual environmental and socio-economic impacts of the project are not anticipated to be significant.

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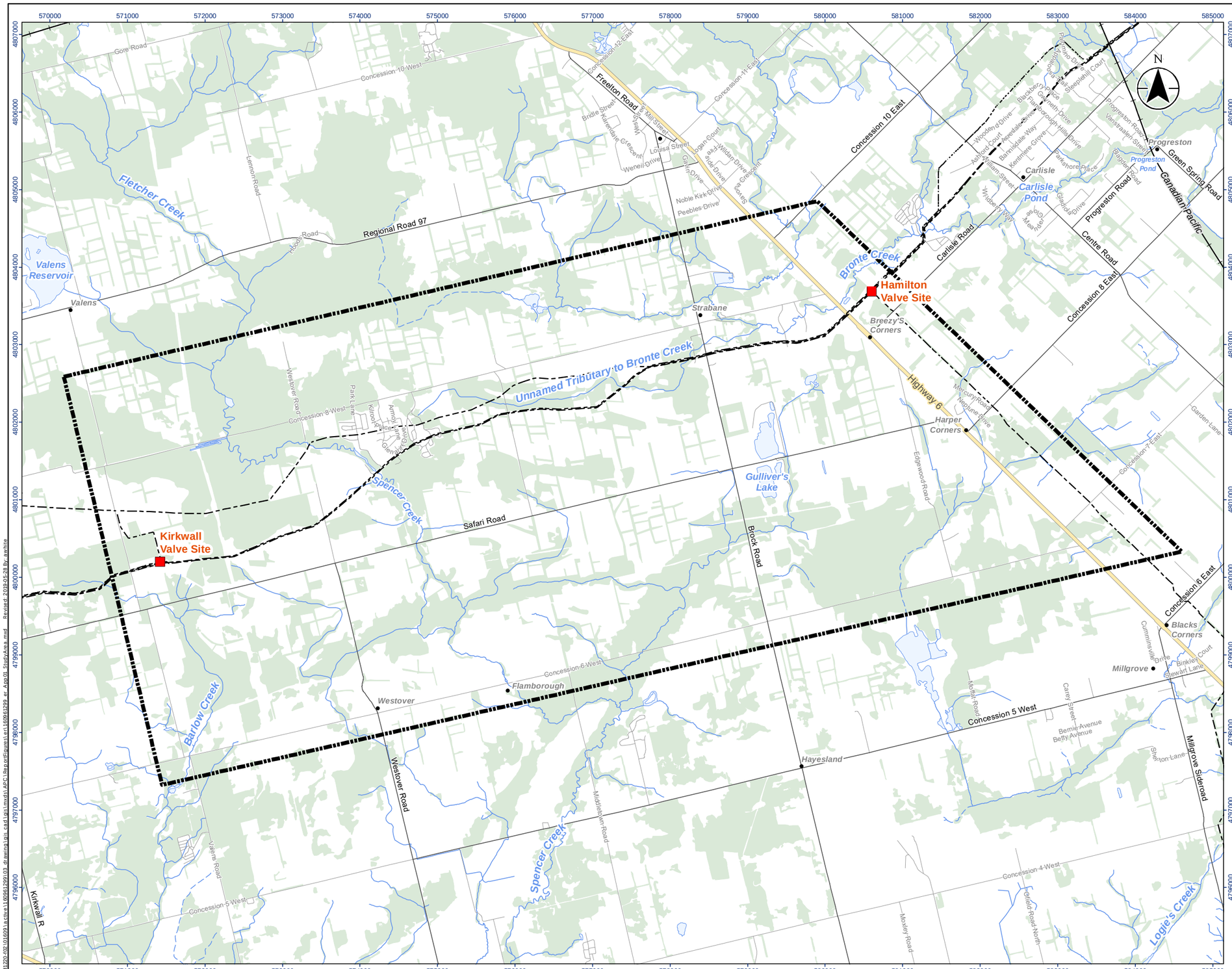
APPENDICES

Disclaimer: *The appendices in this report are not fully accessible under the Accessibility for Ontarians with Disabilities Act, 2005 (AODA). The report was originally prepared before accessibility requirements applied to this document, and some appendix materials were provided by organizations other than Stantec.*



APPENDIX A:
ROUTE FIGURES





Stantec

Legend

- Study Area
- Enbridge Existing Station
- Enbridge Existing Pipeline
- Railway
- Expressway / Highway
- Major Road
- Minor Road
- Waterbody

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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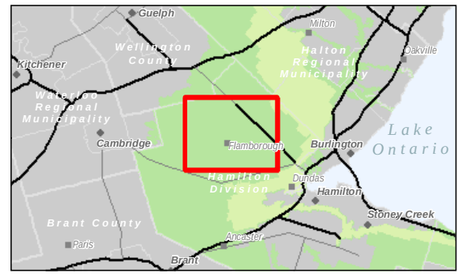

Project Location
City of Hamilton

160961299 REVA
Prepared by AW on 2019-05-28
Technical Review by ABC on YYYY-MM-DD

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
1

Title
Study Area

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Revised: 2019-05-28 By: awhite
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Stantec

Legend

- Study Area
- Route Alternative - A
- Route Deviation - A1
- Route Deviation - A2
- Route Alternative - B
- Enbridge Existing Station
- Enbridge Existing Pipeline
- Railway
- Expressway / Highway
- Major Road
- Minor Road
- Waterbody

0 1 2 km

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Notes

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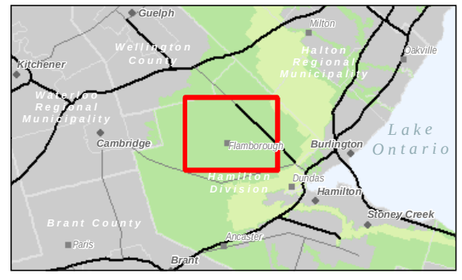

Project Location
City of Hamilton

160961299 REVA
Prepared by AW on 2019-05-28
Technical Review by ABC on YYYY-MM-DD

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
2

Title
Route Alternatives

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Stantec

Legend

- Study Area
- Preliminary Preferred Route - A
- Route Deviation - A1
- Route Deviation - A2
- Route Alternative - B
- Enbridge Existing Station
- Enbridge Existing Pipeline
- Railway
- Expressway / Highway
- Major Road
- Minor Road
- Waterbody

0 1 2 km

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Notes

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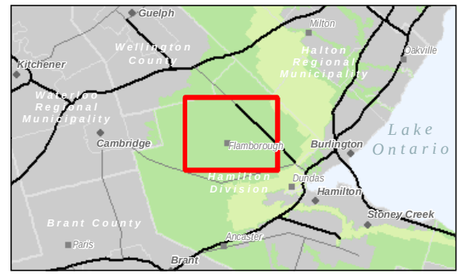

Project Location
City of Hamilton

160961299 REVA
Prepared by AW on 2019-05-28
Technical Review by ABC on YYYY-MM-DD

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
3

Title
Preliminary Preferred Route

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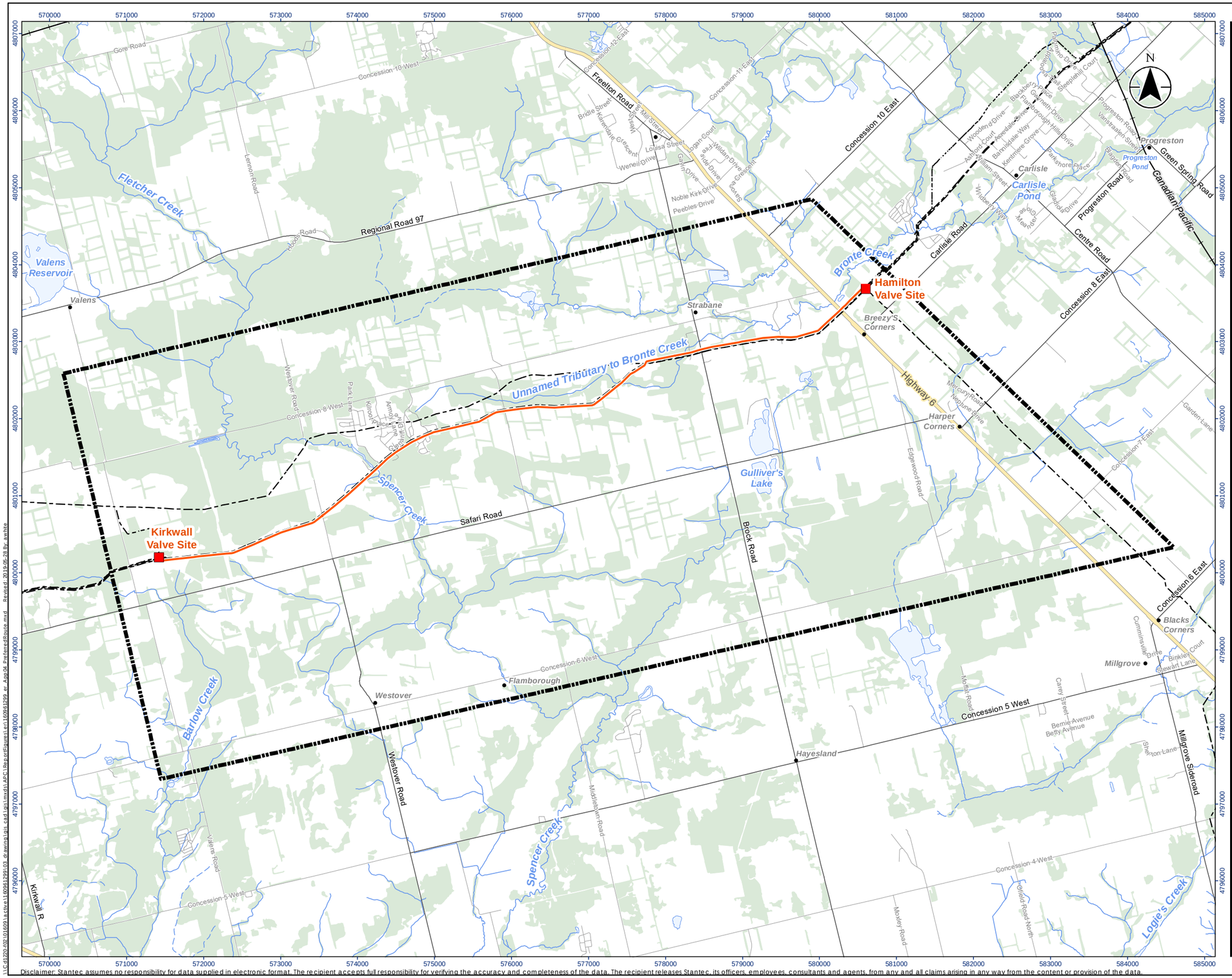

Stantec

Legend

- Study Area
- Preferred Route
- Enbridge Existing Station
- Enbridge Existing Pipeline
- Railway
- Expressway / Highway
- Major Road
- Minor Road
- Waterbody

0 1 2 km

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Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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Project Location
City of Hamilton

160961299 REVA
Prepared by AW on 2019-05-28
Technical Review by ABC on YYYY-MM-DD

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
4

Title
Preferred Route

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APPENDIX B:
CONSULTATION



APPENDIX B1:
PROJECT SUMMARY AND CONTACT LIST



Union Gas Limited – Proposed NPS 48 Kirkwall – Hamilton Pipeline Project Summary for the Ministry of Energy, Northern Development and Mines

1. Introduction

This Summary Report has been prepared to provide the Ministry of Energy, Northern Development and Mines ("ENDM") with an overview of the Kirkwall – Hamilton Pipeline Project ("Project"), to support the preparation of a contact list of indigenous communities that may have an interest in the Project.

1.1 Project Overview

To increase existing capacity and accommodate additional demand for natural gas, Union Gas Limited ("Union Gas") is proposing to construct a new NPS 48-inch diameter natural gas pipeline. The proposed pipeline is planned to be in service as early as Fall 2021 and will be located within the municipality of the City of Hamilton. The proposed pipeline will generally parallel three existing Union Gas pipelines between the existing Kirkwall valve site and the Hamilton gate station. The length of the pipeline will be determined by the final route chosen but will be approximately 10-14 km. The study area within which alternative routes will be developed and evaluated, and within which a preferred route will be identified is shown in Figure 1 (attached).

The following table provides the co-ordinates for the valve site and station.

Proposed Locations	Latitude	Longitude
Kirkwall Valve Site	**43.351282**	**-80.118709**
Hamilton Gate Station	**43.381753**	**-80.004919**

2. Regulatory Requirements and Approvals

Ontario Energy Board ("OEB") review and approval is required before this Project can proceed. As part of that application, an Environmental Review (ER) will be conducted in accordance with the OEB *Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario 7th Edition* (2016). The ER for this Project is anticipated to be completed and submitted to the OEB as early as summer 2019. Construction of the Project is planned to begin as early as spring/summer 2021 with an in-service date 6 months after construction start. Other permits and authorizations for the Project will be determined and may be necessary at the Federal, Provincial and Municipal levels.

3. Environmental Planning Process

The environmental planning process for the Project will be initiated in the fall of 2018 by Union Gas, with support provided throughout the process by consultant archaeologists, cultural heritage specialists,

and other environmental specialists. The following provides a general overview of the environmental planning process for the Project:

- **Complete an Environmental Report (ER)**
  - Describe the proposed work necessary for the Project;
  - Complete a route evaluation study
  - Describe the procedures that will be followed during construction of the facilities;
  - Identify potential environmental impacts and recommend measures to minimize those impacts; and
  - Describe the consultation opportunities.
- **Complete all necessary studies and assessments**
  - An Archaeological Assessment will be conducted by a licensed archaeologist in accordance with the Ministry of Tourism, Culture and Sport (MTCS) guidelines to identify known or potential archaeological resources within the Project area and will develop an appropriate mitigation plan if required.
  - A heritage specialist will review the running line for potential cultural heritage landscapes and built heritage resources and will develop an appropriate mitigation plan if required.
  - A qualified biologist will review the running line for potential species at risk and determine if any species will be impacted by construction activities and will develop an appropriate mitigation plan if required.
- **Obtain all necessary environmental permits and approvals**
  - Union Gas will work with all relevant governing agencies (i.e. the Ministry of the Environment, Conservation and Parks (MECP), the Ministry of Natural Resources and Forestry (MNRF), Grand River Conservation Authority (GRCA), Hamilton Conservation Authority (HCA), Conservation Halton (CH), Fisheries and Oceans Canada (DFO)) to obtain any permits and/or approvals should it be necessary.

4. Consultation

Consultation is an important part of the environmental planning process and may include discussions with the relevant federal and provincial agencies, the municipality, interested and potentially affected landowners, and interest groups, as well as First Nations and Metis Nations as identified by ENDM.

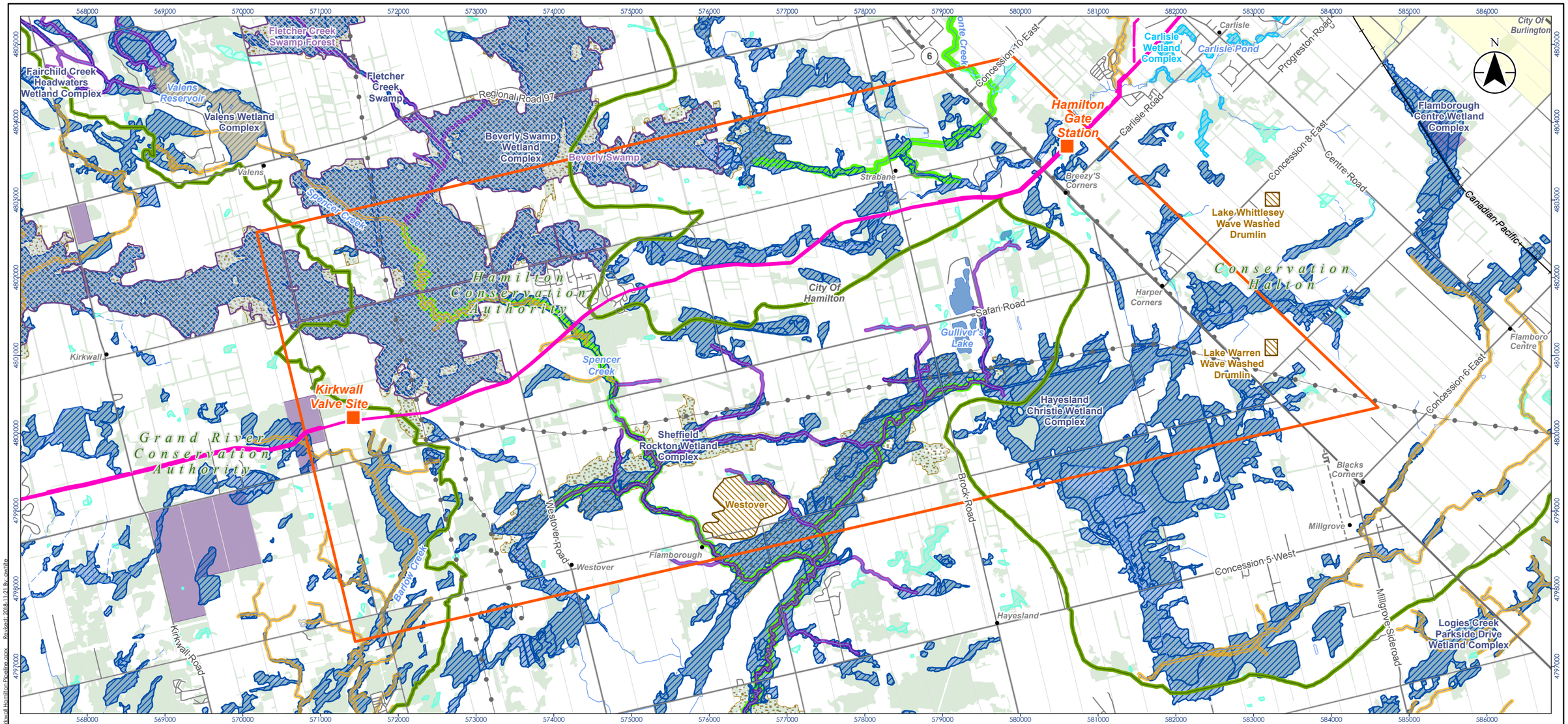
Union Gas will contact the municipality, MECP, MNRF, DFO, GRCA, HCA and CH to discuss and review the project. Union Gas will also contact landowners along the proposed route.

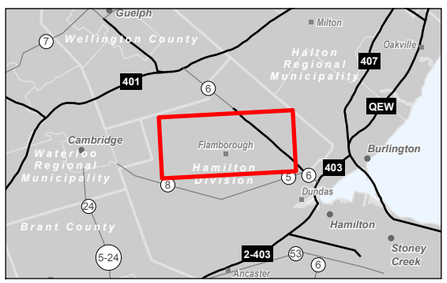
5. Project Activities

The pipeline will be installed using Union Gas's standard construction practices which include grading the site, digging the trench, installing the welded pipeline in the trench, testing the pipeline, and restoring the area to its original condition. The crossing methods used for watercourse crossings along the selected route will be determined during detailed design and will be based on site specific conditions and the results of geotechnical investigations.

6. Summary and Conclusion

The purpose of this report is to provide ENDM with preliminary information regarding the Project and acquire a list of Indigenous communities that may be interested in providing feedback during the Project planning process. Data collection and field studies will be undertaken to determine the potential effects of the Project during the construction and operation phases. Mitigation measures to manage these potential effects will be identified and will include proposed monitoring and contingency plans which will be implemented to ensure effects are minimized.





Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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Legend

- General Study Area
- Existing Union Gas Station
- Existing Union Gas Pipeline
- Other Named Place
- Highway
- Major Road
- Minor Road
- Railway
- Hydro Line
- Unknown Transmission Line
- Watercourse (Intermittent)
- Watercourse (Permanent)
- Constructed Drain
- Conservation Area Administrative Boundary
- Crown Land Held/Acquired
- ANSI, Earth Science
- ANSI, Life Science
- Spawning Area
- Niagara Escarpment Plan Boundary
- Greenbelt Natural Heritage System
- Thermal Regime, Cold
- Thermal Regime, Warm
- Thermal Regime, Cold
- Thermal Regime, Warm
- Aquatic Species at Risk Distribution
- Wetland, Provincially Significant
- Wetland, Other Evaluated
- Wetland, Not evaluated per OWES
- Waterbody
- Lot
- Deer Wintering Area
- Niagara Escarpment Plan
- Greenbelt Natural Heritage System
- Wooded Area
- Municipal Boundary, Lower
- Municipal Boundary, Upper

0 1 2 km

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Stantec

uniongas
An Enbridge Company

Project Location
City of Hamilton

160961229
Prepared by AMW on 2018-11-14
Technical Review by MC on 2018-11-14

Client/Project
UNION GAS LIMITED
KIRKWALL TO HAMILTON PIPELINE PROJECT

Figure No.
1

Title
Background Data Review

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Table B1.1: OPCC Members

First Name	Last Name	Title	Representing	Address	Town	Province	Postal Code	Phone	Email	Notes
Zora	Crnojacki		Ontario Energy Board	P.O Box 2319, 2300 Younge Street, 26th Floor	Toronto	ON	M4P 1E4	416-440-8104	zora.crnojacki@oeb.ca	
Linda	Pim		Ministry of Agriculture, Food and Rural Affairs	1 Stone Road West, 3rd Floor SE	Guelph	ON	N1G 4Y2	519-826-3380	Linda.Pim@ontario.ca	
Dan	Minkin	Heritage Planner	Ministry of Tourism, Culture & Sports	401 Bay Street	Toronto	ON	M7A 0A7	416-314-7147	dan.minkin@ontario.ca	Laura Hatcher removed - Dan Minkin added
Tony	Difabio		Ministry of Transportation	301 St. Paul Street, 2nd Floor	St. Catharines	ON	L2R 7R4	905-704-2656	tony.difabio@ontario.ca	
Kourosh	Manouchehri		Technical Standards and Safety Authority	345 Carlingview Drive	Toronto	ON	M9W 6N9	416-734-3539	kmanouchehri@tssa.org	
Sally	Renwick	Team Lead, Environmental Planning	Ministry of Natural Resources and Forestry	300 Water Street	Peterborough	ON	K9J 8M5	705-755-5195	sally.renwick@ontario.ca	
Ross	Lashbrok	Manager, Community Planning and Development	Ministry of Municipal Affairs and Housing, Western Municipal Services Office	777 Bay Street, 4th Floor, Suite 425	Toronto	ON	M5G 2E5	416-585-6063	ross.lashbrok@ontario.ca	
Shannon	McCabe	Senior Advisor, Indigenous Energy Policy Unit	Ministry of Energy	77 Grenville Street, 6th Floor	Toronto	ON	M7A 2C1	416-212-6704	shannon.mccabe@ontario.ca	
Natalie	Stacey	Regional Contact-West Central	Ministry of Environment, Conservation and Parks	119 King Street West,12th Floor	Hamilton	ON	L8P 4Y7	905-521-7639	natalie.stacey@ontario.ca	
Patrick	Grace		Infrastructure Ontario	1 Dundas Street West, Suite 2000	Toronto	ON	M5G 2L5		patrick.grace@infrastructureontario.ca	
Joseph	Vecchiolla		Ministry of Economic Development, Job Creation and Trade	777 Bay Street, 4th Floor, Suite 425	Toronto	ON	M5G 2E5	416-325-1561	joseph.vecchiolla@ontario.ca	No longer an OPCC member, no replacement as of April 16 2019

Table B1.2: Agencies

First Name	Last Name	Title	Representing	Address	Town	Province	Postal Code	Phone	Email	Notes
Karla	Barboza	Team Lead - Heritage (Acting)	Ministry of Tourism, Culture and Sports	401 Bay Street	Toronto	ON	M7A 0A7	416-314-7120	Karla.barboza@ontario.ca	
James	Hamilton	Manager, Heritage Program Unit	Ministry of Tourism, Culture and Sports	401 Bay Street	Toronto	ON	M7A 0A7	416-212-7505	james.hamilton@ontario.ca	
Shereen	Smithanik	Senior Policy Advisor, Indigenous Energy Policy	Ministry of Energy, Northern Development and Mines	77 Grenville Street, 6th Floor	Toronto	ON	M7A 2C1	416-326-0513	shereen.smithanik@ontario.ca	
Dawn	Palin Rokosh	Director, Planning and Implementation Branch	Ministry of Infrastructure	777 Bay Street, 4th Floor, Suite 425	Toronto	ON	M5G 2E5	416-325-7673	dawn.palin.rokosh@ontario.ca	
David	Cooper	Manager, Environmental and Land Use Policy & Stewardship	Ministry of Agriculture and Food, Ministry of Rural Affairs	1 Stone Road West, 3rd Floor SE	Guelph	ON	N1G 4Y2	519-826-3117	david.cooper@ontario.ca	
Michele	Doncaster	Policy Advisor, Land Use Policy & Stewardship	Ministry of Agriculture and Food, Ministry of Rural Affairs	1 Stone Road West, 3rd Floor SE	Guelph	ON	N1G 4Y2	519-826-4369	michele.doncaster@ontario.ca	
Drew	Crinklaw	Rural Planner, Land Use Policy & Stewardship	Ministry of Agriculture and Food, Ministry of Rural Affairs	667 Exeter Road	London	ON	N6E 1L3	519-873-4085	drew.crinlaw@ontario.ca	
Roman	Dorfman	Real Estate Coordinator	Hydro One Networks Inc.	185 Clegg Road	Markham	ON	L6G 1B7	905-946-6243	roman.dorfman@hydroone.com	
Beth	Brown	Supervisor of Resource Planning - Central	Grand River Conversation Authority	400 Clyde Road, PO Box 729	Cambridge	ON	N1R 5W6	519-621-2763 x 2307	bbrown@grandriver.ca	
Nathan	Garland	Resource Planner	Grand River Conversation Authority	400 Clyde Road	Cambridge	ON	N1R 5W6	519-621-2763 x 2237	ngarland@grandriver.ca	
Cassandra	Connolly	Regulations Officer	Conservation Halton	2596 Britannia Road West	Burlington	ON	L7P 0G3	905-336-1158 x 2301	cconnolly@hrca.on.ca	
Scott	Peck	Deputy Chief Administrative Officer/Director, Watershed Planning and Engineering	Hamilton Conservation Authority	838 Mineral Springs Road	Ancaster	ON	L9G 4X1	905-525-2181 x 130	scott.peck@conservationhamilton.ca	
Darren	Kenny	Watershed Officer	Hamilton Conservation Authority	838 Mineral Springs Road, PO Box 81067	Ancaster	ON	L9G 4X1	905-525-2181 x131	Darren.Kenny@conservationhamilton.ca	
Jason	Thorn	General Manager, Planning and Economic Development	City of Hamilton	71 Main Street West, 3rd Floor	Hamilton	ON	L8P 4T5	905-546-2424 x 4349	Jason.Thorne@hamilton.ca	
Cameron	Blaney	Corridor Management Officer, Enchroachments Niag/Ham/Halton	Ministry of Transportation	159 Sir William Hearst Avenue, 7th Floor, Building D	Downsview	ON	M3M 0B7	416-235-4387	cameron.blaney@ontario.ca	
Kaisha	Bruetsch	Senior Policy Advisor, Indigenous Affairs	Ministry of Energy, Northern Development and Mines	900 Bay Street, 4th Floor	Toronto	ON	M7A 1T7	416-327-9473	kaisha.bruetsch@ontario.ca	

Table B1.3: Indigenous Community

Title	First Name	Last Name	Position	cc	Indigenous community	Address	Town	Prov	PC	Phone	Email	Notes
Chief	Stacy	Laforme		Fawn Sault, Mississaugas of the Credit First Nation Megan Devries, Mississaugas of the Credit First Nation	Mississaugas of the Credit First Nation	2789 Mississauga Road R.R. #6	Hagersville	ON	N0A 1H0	905-768-1133	Barbara.Smoke@mncfn.ca	
	Fawn	Sault	Consultation Manager	Megan Devries, Mississaugas of the Credit First Nation Chief Stacy Laforme, Mississaugas of the Credit First Nation	Mississaugas of the Credit First Nation	2789 Mississauga Road R.R. #6	Hagersville	ON	N0A 1H0	905-768-4260	Fawn.Sault@mncfn.ca	
	Megan	Devries	Archaeological Coordinator	Chief Stacy Laforme, Mississaugas of the Credit First Nation Fawn Sault, Mississaugas of the Credit First Nation	Mississaugas of the Credit First Nation	2789 Mississauga Road R.R. #6	Hagersville	ON	N0A 1H0	905-768-4260	Megan.DeVries@mncfn.ca	
Chief	Ava	Hill		Joanne Thomas, Six Nations of the Grand River	Six Nations of the Grand River	1695 Chiefswood Road, PO Box 5000	Ohsweken	ON	N0A 1M0	519-445-4399	avahill@sixnations.ca	
	Joanne	Thomas	Consultation Supervisor	Chief Ava Hill, Six Nations of the Gand River	Six Nations of the Grand River	2496 Chiefswood Road, PO Box 500	Ohsweken	ON	N0A 1M0	519-753-0665	jthomas@sixnations.ca	
				Karl Hill, Haudenosaunee Development Institute	Haudenosaunee Development Institute (HDI)	16 Sunrise Court, Suite 407	Ohsweken	ON	N0A 1M0	519-445-4222	hdi2@bellnet.ca	Email from Todd on Feb 13 requesting all future information be sent to hdi2@bellnet.ca instead of hdi2@bellnet.ca
	Karl	Hill	Consultation Coordinator		Haudenosaunee Development Institute (HDI)	16 Sunrise Court, Suite 407	Ohsweken	ON	N0A 1M0	519-445-4222	karl.j.hill@gmail.com	

APPENDIX B2: NEWSPAPER NOTICES

Local

VIOLENCE
continued from // **A1**

25 additional police officers in 2019, which will mean increased police presence and increased safety in our community."

Police say most of this year's shootings have been "targeted." Here's a synopsis of each one:

- Jan. 2 — Barton Street East and Avondale Street: a gun was fired at the door of an apartment at 910 Barton St. E. Nobody was injured.
- Jan. 14 — Brunswick Street and Melvin Avenue: Police find bullet holes in an SUV and shell casings. There were no injuries.
- Jan. 30 — Mountain Brow Boulevard and Rendell Boulevard: Cece Luppino, son of a Hamilton mobster, is gunned down at his Mountain home.
- Feb. 3 — Leeming Street and Wright Avenue: Police were called after shots were fired, striking a window of a home. Nobody was injured.
- Feb. 5 — Roxborough Avenue and Beland Avenue North: A man is his 20s was taken to hospital with non-life-threatening injuries after he was shot just after midnight.
- Feb. 5 — Gage Avenue North and Cannon Street East: In the second shooting of the day, two men were taken to hospital with non-life-threatening injuries.
- Feb. 9 — Cutts Crescent and Pumpkin Pass: Bullets were fired into a Binbrook home on Saturday in what police called a "targeted" shooting. There were no injuries.
- Feb. 10 — Stone Church Road East and Upper Wellington Street: Police find a bullet hole in the side of a Mountain home at 9:30 a.m. The complainant said a loud bang was heard between 1 and 2 a.m. Nobody was hurt.

Diodati said it's too early to say whether any of the shootings are connected, or to discount the involvement of gangs. He noted the correlation between the drug trade and shootings in general.

"I think the biggest change in the market is the prevalence of fentanyl and other opiate-based drugs. We saw a similar spike with the advent of crack cocaine."



CATHIE COWARD THE HAMILTON SPECTATOR FILE PHOTO

Hamilton police respond to a shooting at Barton Street East and Balmoral Avenue on Feb. 5.



BARRY GRAY THE HAMILTON SPECTATOR FILE PHOTO

Police examine vehicle with windows shot out at Brunswick and Melvin Avenue on Jan. 14.

Fentanyl — a hospital painkiller that's available in bootleg form on the street — is a particularly powerful opiate fuelling an overdose epidemic in Hamilton and across North America.

"It's profitable for drug dealers. It all comes down to supply and demand," Diodati said.

In general, police say victims of Hamilton's shootings and witnesses alike have been uncooperative when it comes to providing information.

Diodati says he understands the "trepidation" in talking to police, noting fear of retribution or being a "rat," in street parlance.

The victims themselves can be involved in criminal activity, which can make them reluctant to speak with police, he added.

Cracking down on gun crime isn't just a police responsibility; it requires a coalescence of community services, Diodati emphasized.

"We need to be engaging our youth at a young age," he said, adding, "There is a socioeconomic piece that needs to be looked at."

Ruth Greenspan, executive director of the local John Howard Society, pointed to poverty, addiction and joblessness as underlying factors.

"People have no hope, no housing, and I think the gun violence is just a symptom of the problems going on in society."

The way to tackle gun crime is through preventive measures, such as improving access to jobs, education and housing, she said.

Greenspan also referenced a January 2018 McMaster University-led study that found half of the people in Canadian prisons experienced childhood abuse. "Sometimes there's just a lot of harm and a lot of hurt that needs to be healed."

The John Howard Society's Youth at Risk Development program has focused on preventing youth and gang violence. "It's a huge preventive program and I think that's key," Greenspan said.

But due to a lack of funding, its previous contingent of 15 staff has been cut to two. Funding for those two positions runs out in August.

Those who wish to contact police with information about shootings in Hamilton can call Det. Sgt. Jason Cattle at 905-546-3887.

Diodati also urges people to use Crime Stoppers, an option for anyone who wishes to remain anonymous. Call 1-800-222-8477 or visit www.crimestoppers hamilton.com.

tmoro@thespec.com
905-526-3264 | @TeviahMoro

Tories lose candidate as Ex-Ticat Marwan Hage drops out

KEVIN WERNER
Hamilton Community News

The Hamilton East-Stoney Creek federal Conservative riding association is looking for a new candidate to take on incumbent Liberal MP Bob Bratina in this fall's federal election.

Marwan Hage, the former Hamilton Tiger-Cats football player, father of two children and who is now operating a number of Tim Hortons franchises, has left the political field and won't be the Hamilton East-Stoney Creek federal candidate for the Conservative Party.

"I have realized I can't give this election campaign the full time and effort it needs," said the 37-year-old Hage.

He told the Conservative Party last month he was withdrawing his candidacy.

Hage said he still remains "100 per cent behind" Conservative party leader Andrew Scheer.

Hage, who was born in Lebanon, had a 10-year playing career with the Tiger-Cats before retiring. This was the first time he had entered politics.

Ken Audziss, candidate nominations chair, said the local riding association is working with the federal party to name a new candidate. He said further details will be available in March.

Meanwhile, the Hamilton East-Stoney Creek federal NDP has three candidates vying to become the flag-bearer to take on Bratina.

East Hamilton businessman Harpreet Gill, Juanita Maldonaldo, assistant to former Hamilton East-Stoney Creek NDP MP Wayne Marston, and labour lawyer and law professor Nick Milanovic will be seeking the NDP nomination March 3 at the Grand Olympia Banquet Centre starting at 2 p.m.

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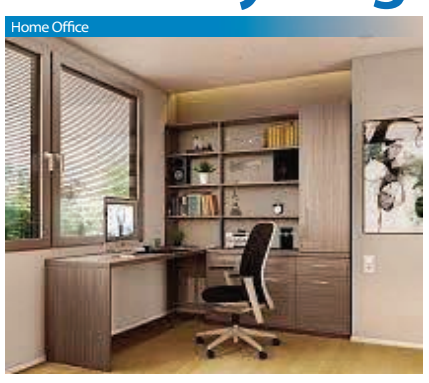

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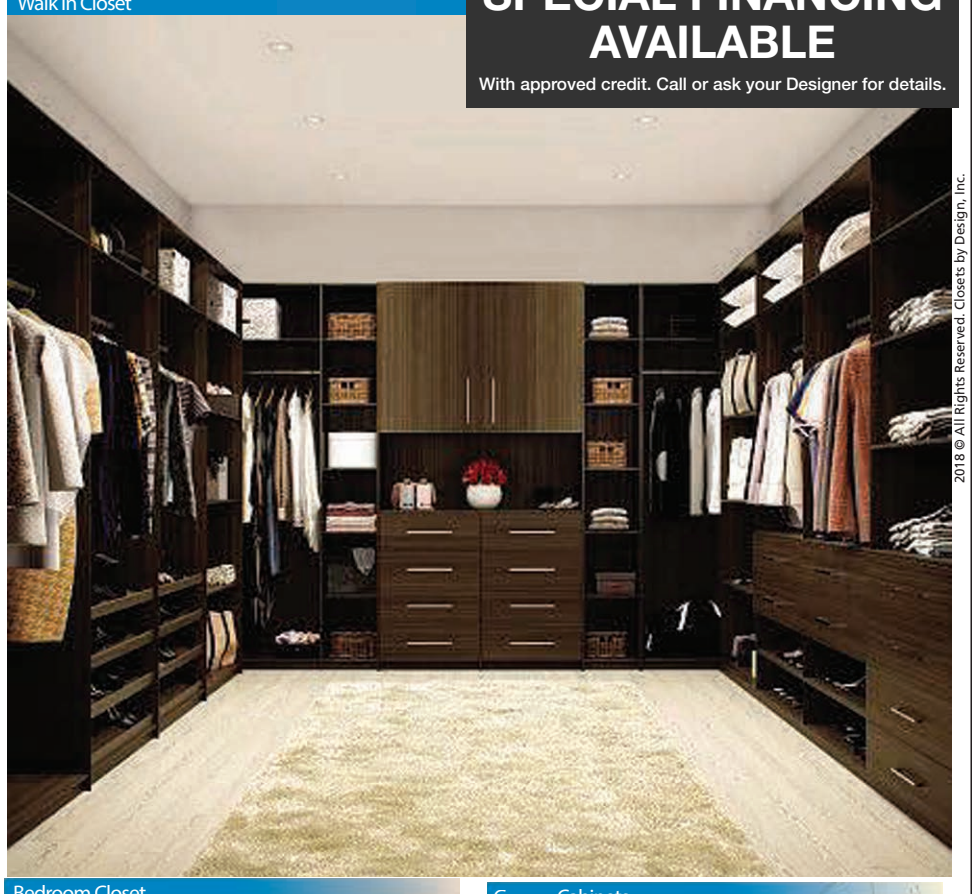

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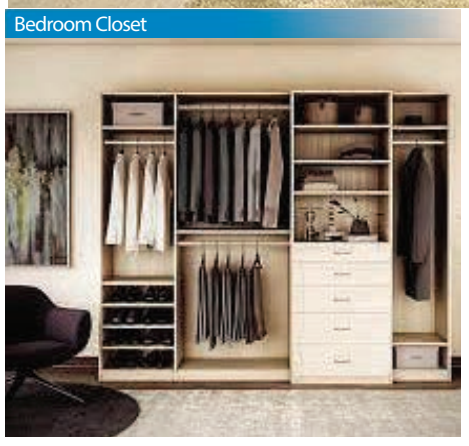

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R0014955312

ENBRIDGE GAS INC. - NOTICE OF PROJECT COMMENCEMENT AND INFORMATION SESSION KIRKWALL-HAMILTON PIPELINE PROJECT

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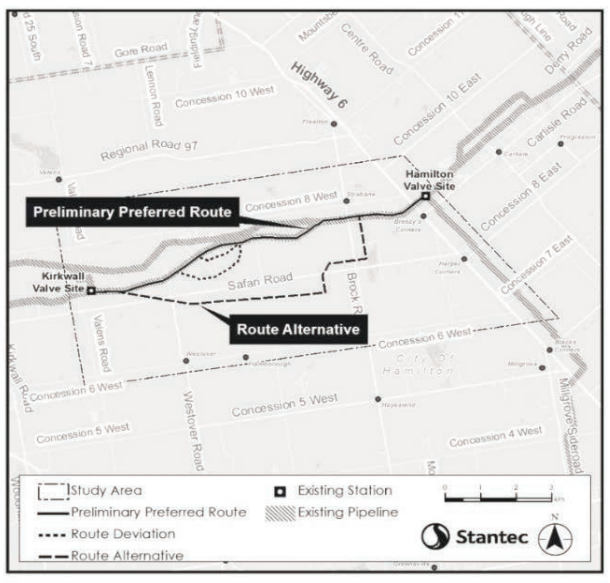

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Wednesday, Feb. 27, 2019
5 p.m. to 8 p.m.
Carlisle Arena
1496 Centre Road
Carlisle, ON L0R 1H2

If you cannot attend the Information Session but would like to learn more, please contact:

Michael Candido
Project Manager
Stantec Consulting Ltd.
Phone: 519-780-8139
Email:
Michael.Candido@Stantec.com

Enbridge Gas
Phone: 1-855-381-9138
Email: projects@uniongas.com
Or visit our project webpage:
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BUSINESS

OPEN BOOK TUTORING OPENS MINDS TO THE JOYS OF LEARNING

JULIA LOVETT
jlovett@flamborough
review.com

A fun and bright learning space has opened up in Waterdown, and it's all about getting back to basics.

Open Book Tutoring Centre aims to help children become the total reader they always could be by working to ensure they have the building blocks needed to succeed.


Angela Graham

"Teaching is what I've done for most of my working life. It's my passion; it's my joy," said facility owner Angela Graham. "I just love the challenge of educating young children."

Before moving to Waterdown a few of months ago, Graham owned and operated a Montessori school in Etobicoke for 17 years and was trained in Association Montessori Internationale (AMI) by Renilde Montessori, granddaughter of Montessori founder Maria Montessori.

The local centre currently caters to younger learners up to and including students in Grade 4. It provides after-school tutoring and is working on expanding its offering, including a full-day Montessori-based program, which is expected to start in September.

The lifelong educator said she has always taught young children and believes that is where a real difference can be made.

OPEN BOOK TUTORING CENTRE

LOCATION
5 Mill St. S.
HOURS
Monday to Friday from 1 to 7 p.m.
Saturday from 10 a.m. to 2 p.m.
The facility is closed Sundays.
CONTACT
Phone: 289-895-9049
Website: www.facebook.com/openbooktutoringcentre

"I'm just a firm believer that education is pivotal to everything," she said. "When they get what they need from the very beginning, they just go through life and it's a breeze."

Open Book Tutoring welcomes the community to its open house set for Saturday, Feb. 16, from 11 a.m. to 3 p.m. It will also host a parent information night on Feb. 21 at 7:30 p.m.

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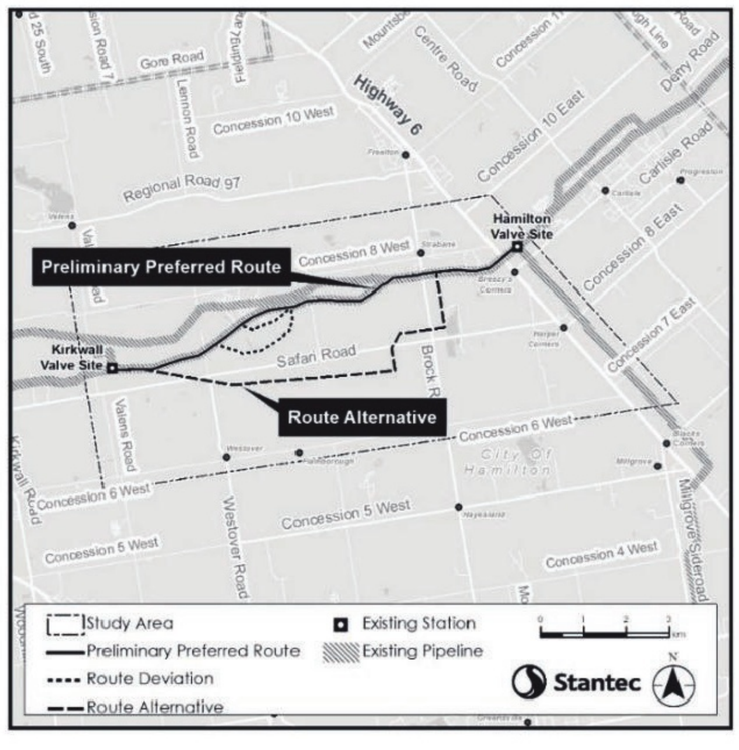

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Local

Residents forced out by mystery odour

NICOLE O'REILLY
The Hamilton Spectator

Residents on Mary Street were forced from their homes after an investigation into a gas smell in the neighbourhood.

About 60 homes were evacuated on Mary Street Monday morning over the smell that the Hamilton Fire Department said was coming from the sewer system.

Residents were forced to stay out of their homes until about 2 p.m. while the sewers were flushed and houses checked.

Crews were originally dispatched just before 10 a.m. to 238 Mary St. for an odour investigation, Hamilton Fire Deputy Chief John Verbeek said.

On-scene firefighters noticed a petroleum-based smell at this home and several neighbouring addresses. The call was upgraded to a HAZMAT (hazardous materials) response, drawing addition resources and monitoring equipment to the scene, Verbeek said.

All properties between Cannon and Barton streets were evacuated. Then crews narrowed down the smell as coming from the sewer system.

Hamilton Fire remained on scene until the investigation was complete.



GARY YOKOYAMA THE HAMILTON SPECTATOR

On Mary Street, firefighters went door-to-door, asking residents to leave while they investigated a mystery sewer smell.

noreilly@thespec.com
905-526-3199 | @NicoleatTheSpec

City now waits for plans to change paramedics

Amalgamation of emergency services 'not quite set in stone as it appeared to be'

Hamilton Community News

Hamilton officials are taking a more optimistic approach to the provincial government's recent announcement it will merge paramedic services across Ontario.

Paul Johnson, general manager of community and emergency services, said Ontario is prepared to talk with various stakeholders, including municipalities, about its plans.

"This announcement is not quite set in stone as it appeared to be," said Johnson. "They are still in the process of determining if this makes sense to do across the province. The short answer is they will do more consultation."

Paramedic Services Chief Michael Sanderson said the provincial government is already creating a format to "engage" in discussions with communities and other groups. Last week the Association of Municipalities of Ontario revealed the province in its 2019 budget is proposing to integrate Ontario's 59 emergency health service operators — 52 emergency medical services and six First Nations — and 22 provincial dispatch communication centres into 10 units. The province provides 100 per cent funding to the services.

Hayley Chazan, spokesperson for Christine Elliot, Minister of Health said "it is too early to discuss outcomes" but confirmed discussions with stakeholders will begin "shortly."

But Mario Posteraro, president of OPSEU, Local 256, said union officials have yet to hear from the provincial government to discuss any merger plans.

"What they say and what they do are two separate issues with this government," said Posteraro. "Trust is non-existent and paramedics are nervous about what the end game plan is and how it will impact patients and taxpayers and themselves."

Mayor Fred Eisenberger said he is "hopeful" the province's plans will be revamped through further discussions with stakeholder groups. He said the idea to regionalize paramedic services "flies in the face" of Hamilton's continuing request to have local control for dispatch services.

"It's critically important we have a voice at the table," said Eisenberger. "I hope the province listens carefully."

ENBRIDGE GAS INC.
NOTICE OF SECOND INFORMATION SESSION
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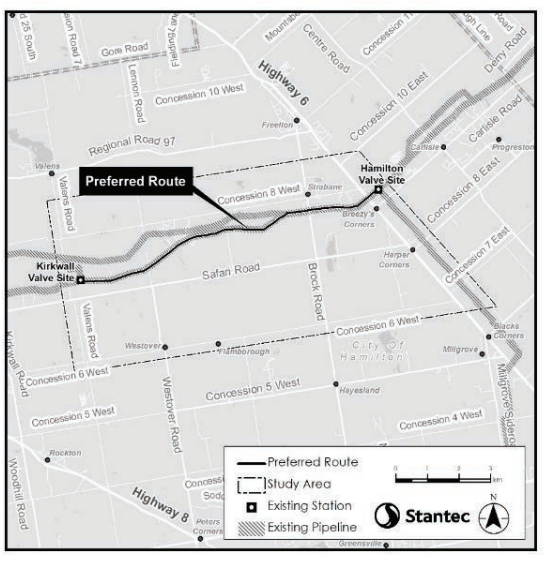

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The Information Session will be held at the following time and location:

Thursday May 9, 2019
5 p.m. to 8 p.m.
Valens Community Centre
1818 Valens Road
Flamborough, ON N0B 2J0

If you cannot attend the Information Session but would like to learn more, please contact:

Michael Candido
Project Manager
Stantec Consulting Ltd.
Phone: 519-780-8139
Email:
michael.candido@stantec.com

Enbridge Gas
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WATERDOWN'S BEAUPRE PURSUES NCAA VOLLEYBALL DREAM



GERRY GRAHAM photo

Waterdown's Aimee Beaupre celebrates after signing with Youngstown State. The St. Mary Catholic Secondary School student received a scholarship with the Ohio university, where she'll play volleyball with the NCAA Division I Penguins.

LARRY MOKO

Aimee Beaupre of St. Mary Catholic Secondary School has fulfilled other people's DREAMS and now she's preparing to pursue her own dream.

Beaupre, a Waterdown resident, has signed a volleyball scholarship offer from Ohio's Youngstown State University. The NCAA Division 1 Penguins are part of the Horizon League.

"My biggest goal is to play Division 1," Beaupre said during the recent signing ceremony at St. Mary that was attended by many of her teammates, coaches and family members. "Then, we'll see where it goes from there."

An outstanding middle player on the volleyball court, Beaupre committed to the Youngstown-based school recently after returning from a service trip to the Dominican Republic. She was in that country over the March break with a group of Grade 12 students from St. Mary to participate in the annual DREAMS program (Dominican Republic Education and Medical Support).

Since 2000, more than 600 St. Mary students have raised funds and travelled to impoverished mountain communities in the Dominican Republic to build homes and schools.

"I had the honour and privilege to travel with Aimee and be her teacher-chaperone on our most recent DREAMS trip," St. Mary senior girls volleyball coach Chiara Salvatore said. "Seeing Aimee in yet another environment, outside of the classroom and off the volleyball court, I was able to witness the sincerity that she has in helping others. I also saw what happiness and joy it brought to Aimee herself."

Beaupre, whose parents are Sandra and Jan, played four years of volleyball in the Hamilton-Wentworth Catholic league. And during that period she achieved great success. The Crusaders captured city championships in her Grade 9, 10 and 11 years. Even with a young squad this season, St. Mary reached the league final against the ACMT Jaguars.

The two-time Hamilton-Wentworth Catholic Athletic Association (HWCA) all-star helped St. Mary qualify for three overall Ontario Federation of School Athletic Associations (OFSAA) appearances. Team medal wins at

See LOCAL, page 20

ENBRIDGE GAS INC. - NOTICE OF SECOND INFORMATION SESSION KIRKWALL-HAMILTON PIPELINE PROJECT

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Project Manager
Stantec Consulting Ltd.
Phone: 519-780-8139
Email:
michael.candido@stantec.com

Enbridge Gas
Phone: 1-855-381-9138
Email:
projects@uniongas.com
Or visit our project webpage:
www.uniongas.com/projects/Kirkwall-Hamilton

APPENDIX B3: LETTERS

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

February 12, 2019
File: 160961299

«First_Name» «Last_Name», «Title»
«Representing»
«Address»
«Town», «Province» «Postal_Code»
«Email_»

SENT VIA EMAIL

Dear «First_Name» «Last_Name»,

Reference: Enbridge Gas Inc. Pipeline Project – Notice of Commencement and Information Session: Kirkwall-Hamilton Pipeline Project

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As an integral part of this project, Enbridge Gas has hired Stantec Consulting Ltd. to undertake an environmental study of the construction and operation of the proposed pipeline and related facilities. The environmental study will 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 (2016)*. The environmental study process includes consultation and engagement with landowners, municipalities, agencies, Indigenous communities, and other interested parties through notices, mailouts, meetings, and Information Sessions.

An Environmental Report, summarizing the results of the environmental study, will accompany Enbridge Gas' application to the OEB, whose review and approval is required before the proposed project can proceed. The Environmental Report for the proposed project is anticipated to be completed and submitted to the OEB as early as summer of 2019 as part of the overall project application.

An Information Session is planned to seek feedback on the proposed project in general, the alternative pipeline routes and the preliminary preferred pipeline route. The Information Session will be conducted as a drop-in, and representatives from both Enbridge Gas and Stantec Consulting Ltd. will be available to answer questions.

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Carlisle, ON L0R 1H2

If you cannot attend the Information Session but would like to learn more about the project, please contact the undersigned.

Additional project information is available at: uniongas.com/projects

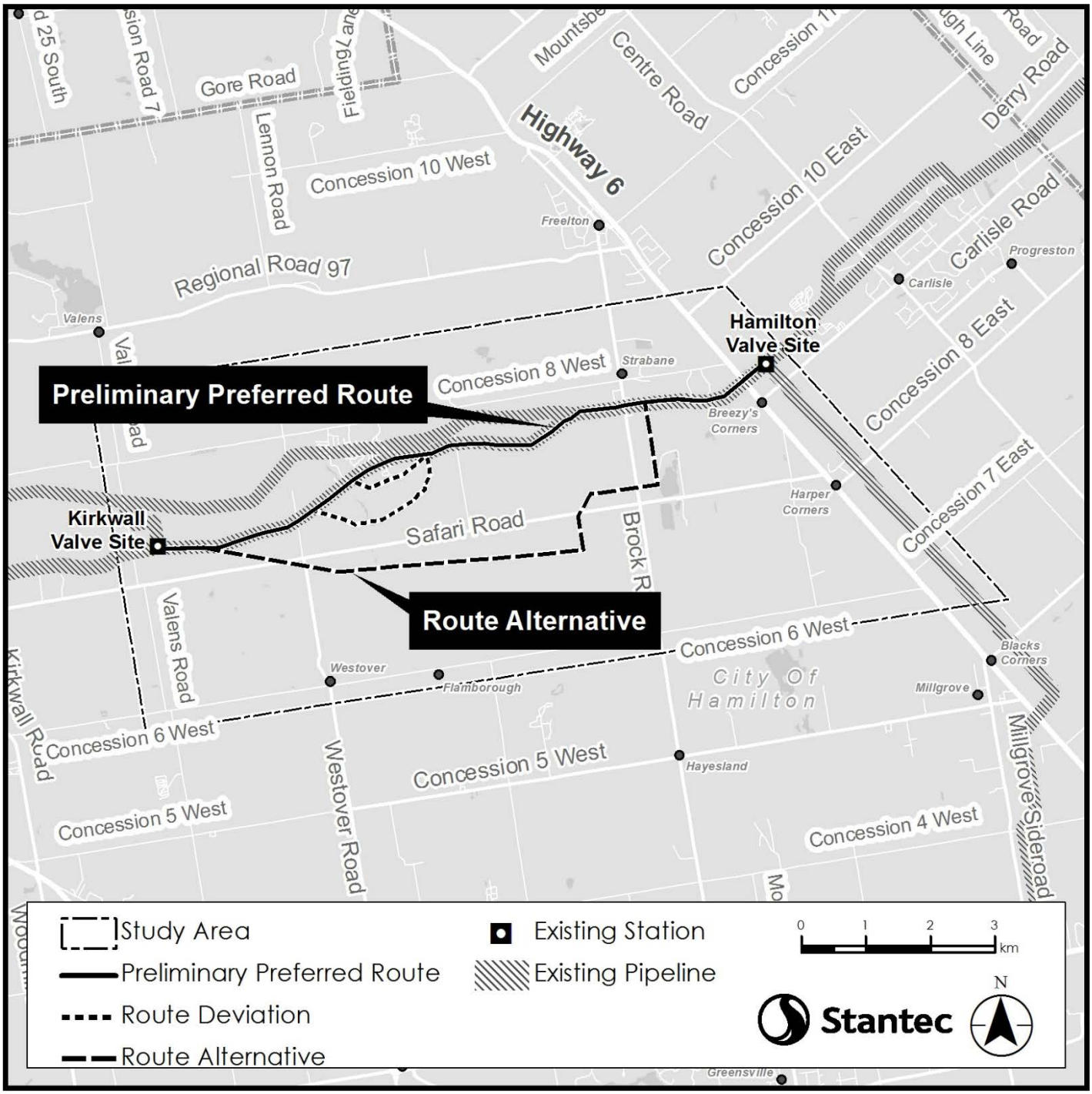
Regards,

Stantec Consulting Ltd.

Michael Candido
Project Manager
Assessment and Permitting
Stantec Consulting
1-70 Southgate Drive
Guelph, ON N1G 4P5
519-780-8139
Michael.Candido@stantec.com

Attachment: Map of Alternate Routes

c. Tony Vadlja, Enbridge Gas Inc. Operating as Union Gas


Preliminary Preferred Route
Route Alternative
Hamilton Valve Site
Kirkwall Valve Site
Highway 6
Gore Road
Regional Road 97
Concession 10 West
Concession 10 East
Concession 8 West
Concession 8 East
Concession 7 East
Concession 6 West
Concession 5 West
Concession 4 West
Safari Road
Centre Road
Derry Road
Carlisle Road
Lennon Road
Valens Road
Kirkwall Road
Westover Road
Millgrove Sideroad
Brock R
Freelton
Strabane
Breezy's Corners
Harper Corners
Carlisle
Progreston
Valens
Westover
Flamborough
City Of Hamilton
Millgrove
Blacks Corners
Hayesland
Greensville
Study Area
Existing Station
Preliminary Preferred Route
Existing Pipeline
Route Deviation
Route Alternative
0 1 2 3 km
N
Stantec

February 12, 2019

<<Recipient's Address>>

Attention: <<Title>><<First_Name>><<Last_Name>>

Dear <<First_Name>><<Last Name>>,

Reference: Enbridge Gas Inc. Pipeline Project – Notification of Commencement and Information Session: Kirkwall-Hamilton Pipeline Project

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

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, generally paralleling three existing Enbridge Gas pipelines. The length of the proposed pipeline will be determined by the final route chosen after input from the community but will be approximately 10-14km. If approved, construction of the pipeline could begin as early as spring/summer 2021 and be complete by the end of 2021.

As an integral part of this project, Enbridge Gas has hired Stantec Consulting Ltd. to undertake an environmental study of the construction and operation of the proposed pipeline and related facilities. The environmental study will 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 (2016)*. The environmental study process includes consultation and engagement with landowners, municipalities, agencies, Indigenous communities, and other interested parties through notices, mailouts, meetings, and Information Sessions.

An Environmental Report, summarizing the results of the environmental study, will accompany Enbridge Gas' application to the OEB. The Environmental Report for the proposed project is anticipated to be completed and submitted to the OEB as early as the summer of 2019 as part of the overall project application.

An Information Session is planned to seek feedback on the project in general, the alternative pipeline routes and the preliminary preferred pipeline route. The Information Session will be conducted as a drop-in, and representatives from both Enbridge Gas and Stantec Consulting Ltd. will be available to answer questions.

Wednesday, Feb. 27, 2019
5 p.m. to 8 p.m.
Carlisle Arena
1496 Centre Road
Carlisle, ON L0R 1H2

«Community» is invited to attend the Information Session and provide comments regarding the proposed project. Specifically, Stantec is seeking information about any adverse impacts that the proposed project may have on constitutionally protected aboriginal or treaty rights and any measures for mitigating those adverse impacts. Stantec is also seeking background environmental and socio- economic information that may be useful in compiling an inventory.

If you cannot attend the Information Session but would like to learn more about the project, please contact the undersigned.

Additional project information is available at: uniongas.com/projects

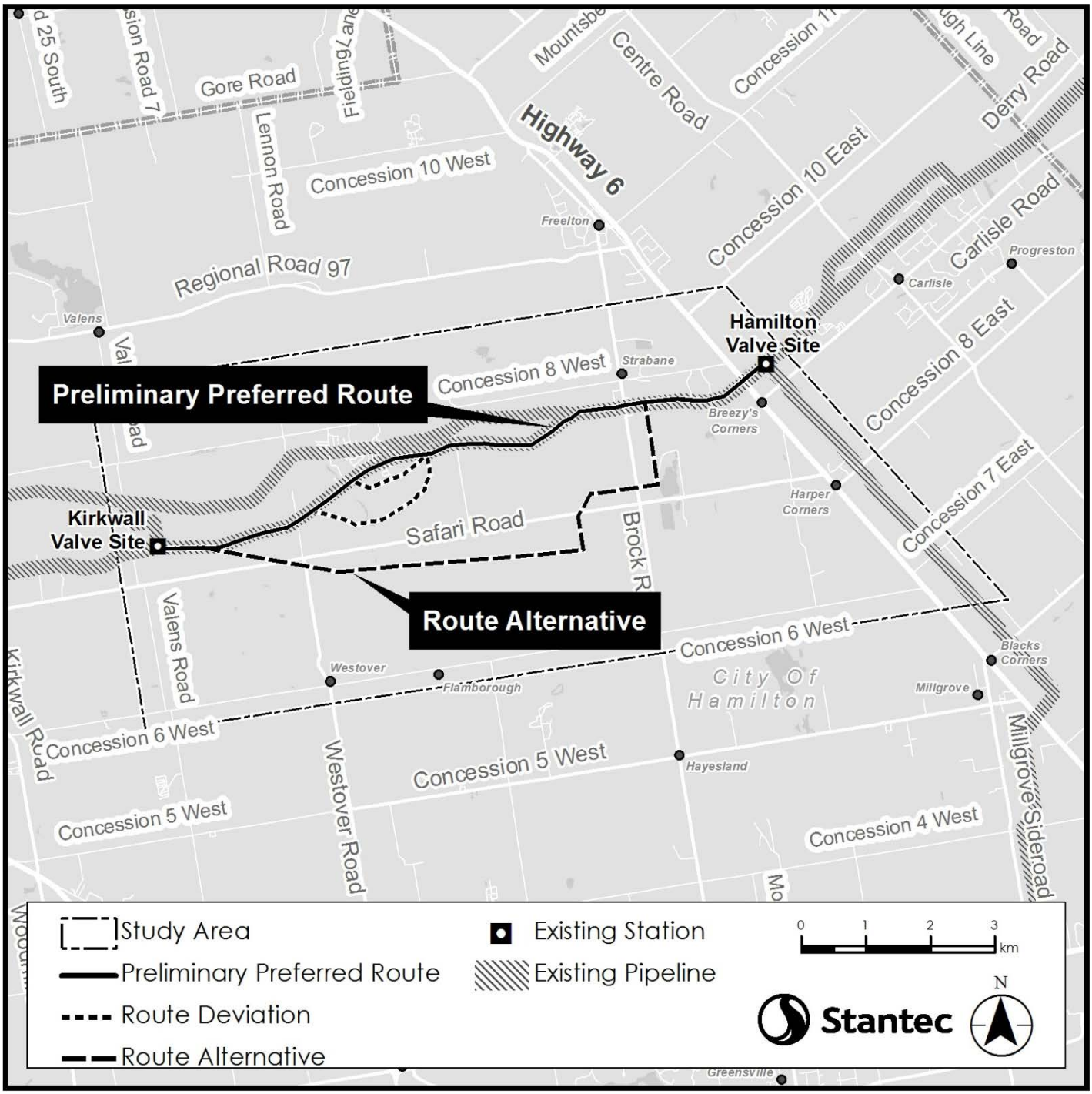
Miigwech,

Ken McCorkle

Ken McCorkle
Manager, Indigenous Affairs Enbridge Gas Inc.
50 Keil Drive North Chatham, ON N7M 5M1
Phone: 519-436-4600 ext. 5002243
Email: kmccorkle@uniongas.com

Attachment: Map of Alternative Routes

c. Michael Candido, Stantec Consulting Ltd.


Preliminary Preferred Route
Route Alternative
Hamilton Valve Site
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Highway 6
Gore Road
Regional Road 97
Concession 10 West
Concession 10 East
Concession 8 West
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Concession 5 West
Concession 4 West
Safari Road
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Carlisle Road
Lennon Road
Valens Road
Kirkwall Road
Westover Road
Millgrove Sideroad
Brock R
Freelton
Strabane
Breezy's Corners
Harper Corners
Carlisle
Progreston
Valens
Westover
Flamborough
City Of Hamilton
Millgrove
Blacks Corners
Hayesland
Greensville
Study Area
Existing Station
Preliminary Preferred Route
Existing Pipeline
Route Deviation
Route Alternative
0 1 2 3 km
N
Stantec

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

February 13, 2019
File: 160961299

Dear Resident,

Reference: Enbridge Gas Inc. Pipeline Project – Notice of Commencement and Information Session
Kirkwall-Hamilton Pipeline Project

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

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, generally paralleling three existing Enbridge Gas pipelines. The length of the proposed pipeline will be determined by the final route chosen after input from the community, but will be approximately 10-14km. If approved, construction of the pipeline could begin as early as spring/summer 2021 and be complete by the end of 2021.

You are receiving this letter because the preliminary preferred or alternate pipeline route is located on or in proximity to your property.

As an integral part of this project, Enbridge Gas has hired Stantec Consulting Ltd. to undertake an environmental study of the construction and operation of the proposed pipeline and related facilities. The environmental study will 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 (2016)*. The environmental study process includes consultation and engagement with landowners, municipalities, agencies, Indigenous communities, and other interested parties through notices, mailouts, meetings, and Information Sessions.

An Environmental Report, summarizing the results of the environmental study, will accompany Enbridge Gas' application to the OEB. The Environmental Report for the proposed project is anticipated to be completed and submitted to the OEB as early as summer of 2019 as part of the overall project application.

An Information Session is planned to seek feedback on the project in general, the alternative pipeline routes and the preliminary preferred pipeline route. The Information Session will be conducted as a drop-in, and representatives from both Enbridge Gas and Stantec Consulting Ltd. will be available to answer questions.

Reference: Enbridge Gas Inc. Pipeline Project – Notice of Commencement and Information Session Kirkwall-Hamilton Pipeline Project

Wednesday, Feb. 27, 2019
5 p.m. to 8 p.m.
Carlisle Arena
1496 Centre Road
Carlisle, ON L0R 1H2

If you cannot attend the Information Session but would like to learn more about the project, please contact the undersigned.

Please feel free to share this letter with your neighbours. If you are a landowner, it would also be appreciated if this letter could be shared with your tenants.

Additional project information is available at: uniongas.com/projects.

Regards,

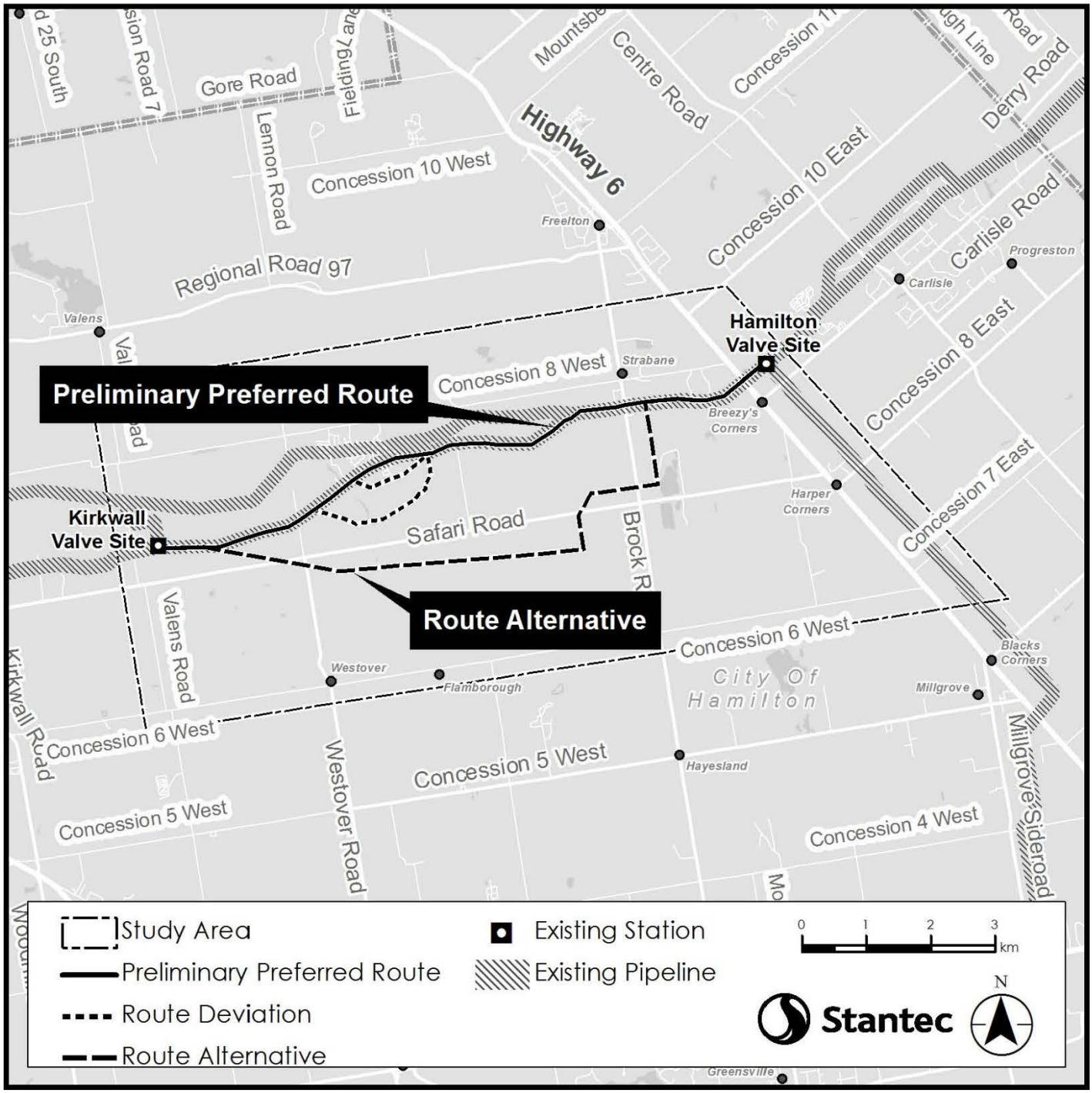
Stantec Consulting Ltd.



Michael Candido CAN-CISEC
Project Manager
Assessment and Permitting
Stantec Consulting
1-70 Southgate Drive
Guelph, ON N1G 4P5
519-79-8139
Michael.Candido@stantec.com

Attachment: Map of Alternate Routes

c. Tony Vadlja, Enbridge Gas Inc. Operating as Union Gas


Preliminary Preferred Route
Route Alternative
Kirkwall Valve Site
Hamilton Valve Site
Gore Road
Concession 10 West
Regional Road 97
Concession 8 West
Concession 6 West
Concession 5 West
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Kirkwall Road
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Freelton
Strabane
Breezy's Corners
Harper Corners
Carlisle
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Valens
Westover
Flamborough
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Millgrove
Blacks Corners
City Of Hamilton
Greensville
Study Area
Preliminary Preferred Route
Route Deviation
Route Alternative
Existing Station
Existing Pipeline
0 1 2 3 km
N
Stantec

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

February 12, 2019
File: 160961299

«First_Name» «Last_Name», «Title»
«Representing»
«Address»
«Town», «Province» «Postal_Code»
«Email_»

SENT VIA EMAIL

Dear «First_Name» «Last_Name»,

Reference: Enbridge Gas Inc. Pipeline Project – Notice of Commencement and Information Session: Kirkwall-Hamilton Pipeline Project

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

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, generally paralleling three existing Enbridge Gas pipelines. The length of the proposed pipeline will be determined by the final route chosen after input from the community but will be approximately 10-14km. If approved, construction of the pipeline could begin as early as spring/summer 2021 and be complete by the end of 2021.

As an integral part of this project, Enbridge Gas has hired Stantec Consulting Ltd. to undertake an environmental study of the construction and operation of the proposed pipeline and related facilities. The environmental study will 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 (2016)*. The environmental study process includes consultation and engagement with landowners, municipalities, agencies, Indigenous communities, and other interested parties through notices, mailouts, meetings, and Information Sessions.

An Environmental Report, summarizing the results of the environmental study, will accompany Enbridge Gas' application to the OEB, whose review and approval is required before the proposed project can proceed. The Environmental Report for the proposed project is anticipated to be completed and submitted to the OEB as early as summer of 2019 as part of the overall project application.

An Information Session is planned to seek feedback on the proposed project in general, the alternative pipeline routes and the preliminary preferred pipeline route. The Information Session will be conducted as a drop-in, and representatives from both Enbridge Gas and Stantec Consulting Ltd. will be available to answer questions.

Reference: Enbridge Gas Inc. Pipeline Project – Notice of Commencement and Information Session: Kirkwall-Hamilton Pipeline Project

Wednesday, Feb. 27, 2019
5 p.m. to 8 p.m.
Carlisle Arena
1496 Centre Road
Carlisle, ON L0R 1H2

If you cannot attend the Information Session but would like to learn more about the project, please contact the undersigned.

Additional project information is available at: uniongas.com/projects

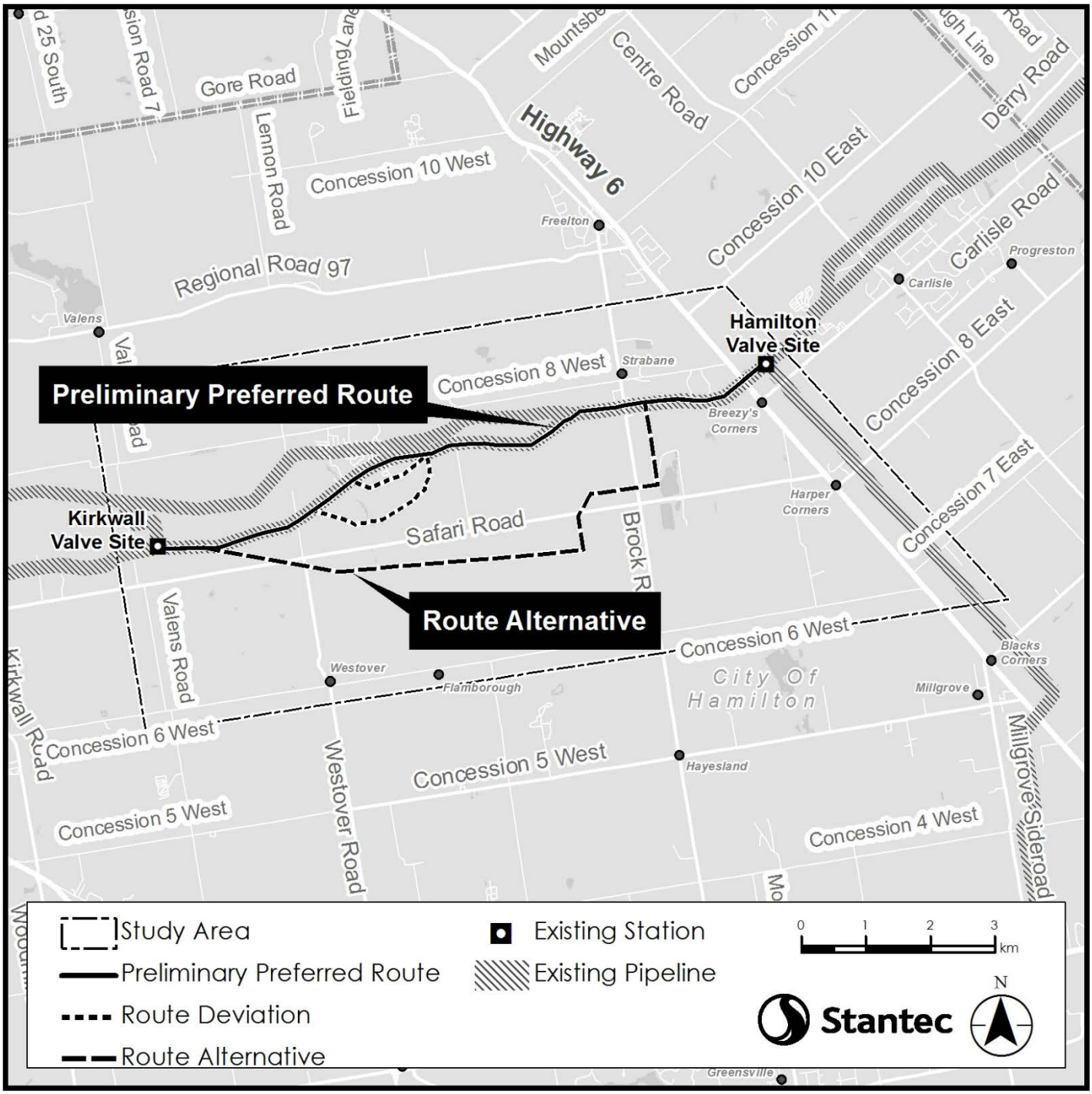
Regards,

Stantec Consulting Ltd.

Michael Candido
Project Manager
Assessment and Permitting
Stantec Consulting
1-70 Southgate Drive
Guelph, ON N1G 4P5
519-780-8139
Michael.Candido@stantec.com

Attachment: Map of Alternate Routes

c. Tony Vadlja, Enbridge Gas Inc. Operating as Union Gas


Preliminary Preferred Route
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Kirkwall Valve Site
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Kirkwall Road
Westover Road
Millgrove Sideroad
Brock R
Freelton
Strabane
Breezy's Corners
Harper Corners
Carlisle
Progreston
Valens
Westover
Flamborough
City Of Hamilton
Millgrove
Blacks Corners
Hayesland
Greensville
Study Area
Existing Station
Preliminary Preferred Route
Existing Pipeline
Route Deviation
Route Alternative
0 1 2 3 km
N
Stantec

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

April 18, 2019
File: 160961299

«First_Name» «Last_Name», «Title»
«Representing»
«Address»
«Town», «Province» «Postal_Code»
«Email_»

Dear «First_Name» «Last_Name»,

Reference: Enbridge Gas Pipeline Project – Notice of Second Information Session: Kirkwall-Hamilton Pipeline Project

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

Please note: As of Jan. 1, 2019, Union Gas and Enbridge Gas Distribution have amalgamated into one utility with the legal name Enbridge Gas Inc.

The proposed pipeline 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 Preliminary Preferred Route and Alternate Route were presented during an Information Session held on February 27th, 2019. Feedback on the routes was taken into consideration during the route evaluation process. The evaluation resulted in the selection of the Preferred Route, which will parallel three existing Enbridge Gas pipelines and will be 10 km in length. If approved, construction of the pipeline could begin as early as spring/summer 2021 and be complete by the end of 2021.

As an integral part of this project, Enbridge Gas has hired Stantec Consulting Ltd. to undertake an environmental study of the construction and operation of the proposed pipeline and related facilities. The environmental study will 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 (2016)*. The environmental study process includes consultation and engagement with landowners, municipalities, agencies, Indigenous communities, and other interested parties through notices, mailouts, meetings, and Information Sessions.

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Reference: Enbridge Gas Pipeline Project – Notice of Second Information Session: Kirkwall-Hamilton Pipeline Project

As a stakeholder with authority or a potential interest in developments in the project location you are invited to provide comments regarding the proposed pipeline. Specifically, Stantec is seeking information that may affect construction and operation of the proposed pipeline, including: background environmental and socio-economic information, planning principles or guidelines which fall under your authority and other proposed developments known in the area to assess potential cumulative effects.

The Information Session is planned to seek feedback on the proposed project in general and on the Preferred Route. The Information Session will be conducted as a drop-in, and representatives from both Enbridge Gas and Stantec Consulting Ltd. will be available to answer questions.

The Information Session will be held on:

Thursday, May 9, 2019
5 p.m. to 8 p.m.
Valens Community Centre
1818 Valens Road
Flamborough, ON N0B 2J0

If you cannot attend the Information Session but would like to learn more about the project, please contact the undersigned.

Additional project information is available at: uniongas.com/Kirkwall-Hamilton

Regards,

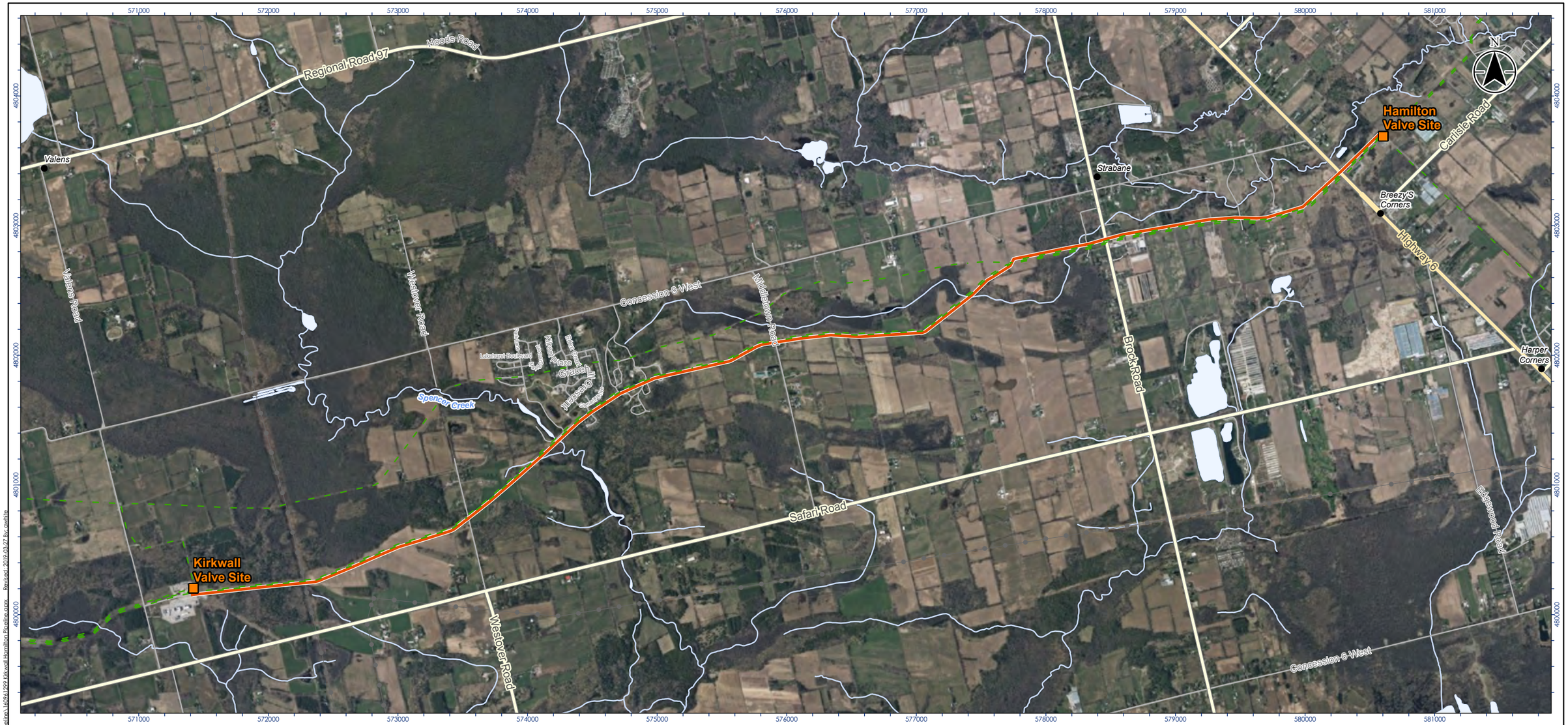
Stantec Consulting Ltd.

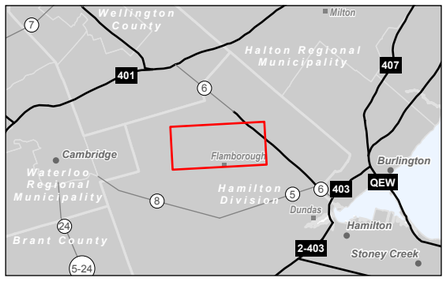


Michael Candido
Project Manager
Assessment and Permitting
Stantec Consulting
1-70 Southgate Drive
Guelph, ON N1G 4P5
519-780-8139
michael.candido@stantec.com

Attachment: Map of Preferred Route

c. Ryan Park, Enbridge Gas





Legend

- Preferred Route
- Existing Enbridge Station
- Existing Pipeline
- Highway
- Major Road
- Minor Road
- Hydro Line
- Watercourse
- Waterbody

0 0.5 1 km

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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, 2019.

Stantec

Project Location
City of Hamilton

160961229

Client/Project
ENBRIDGE GAS INC.
KIRKWALL TO HAMILTON PIPELINE PROJECT

Figure No.
1

Title
Preferred Route

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

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April 18, 2019

«Indigenous_communityAgency»
«Address»
«Town» «Prov» «PC»
«Email_»

Attention: «Title» «First_Name» «Last_Name», «Position»

Dear «Title» «First_Name» «Last_Name»,

Reference: Enbridge Gas Pipeline Project – Notice of Second Information Session: Kirkwall-Hamilton Pipeline Project

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

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As an integral part of this project, Enbridge Gas has hired Stantec Consulting Ltd. to undertake an environmental study of the construction and operation of the proposed pipeline and related facilities. The environmental study will 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 (2016)*. The environmental study process includes consultation and engagement with landowners, municipalities, agencies, Indigenous communities, and other interested parties through notices, mailouts, meetings, and Information Sessions.

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The Information Session is planned to seek feedback on the proposed project in general and on the Preferred Route. The Information Session will be conducted as a drop-in, and representatives from both Enbridge Gas and Stantec Consulting Ltd. will be available to answer questions.

The Information Session will be held on:

Thursday, May 9, 2019
5 p.m. to 8 p.m.
Valens Community Centre
1818 Valens Road
Flamborough, ON N0B 2J0

«Indigenous_communityAgency» is invited to attend the Information Session and provide comments on the proposed project. Specifically, Stantec is seeking information about any adverse impacts that the proposed project may have on constitutionally protected Indigenous or treaty rights and any measures for mitigating those adverse impacts. Stantec is also seeking background environmental and socio-economic information that may be useful in compiling an inventory.

If you cannot attend the Information Session but would like to learn more about the project, please contact the undersigned.

Additional project information is available at: uniongas.com/Kirkwall-Hamilton

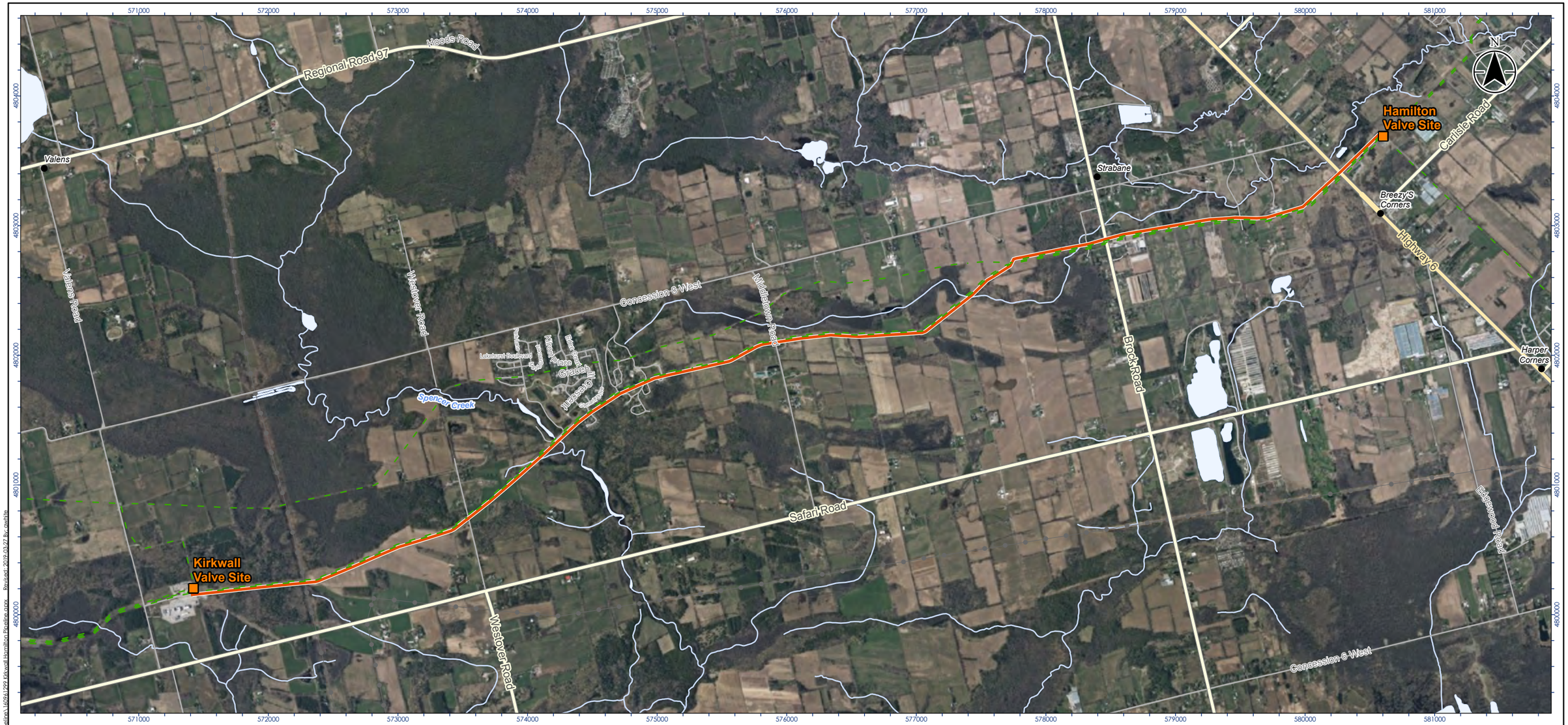
Miigwech,

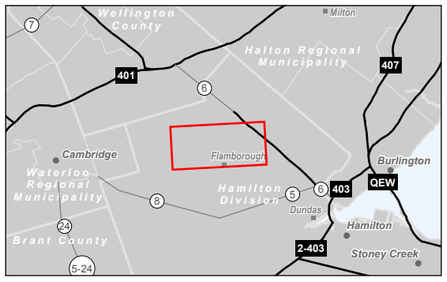
Ken McCorkle

Ken McCorkle
Manager, Indigenous Affairs Enbridge Gas
50 Keil Drive North Chatham, ON N7M 5M1
Phone: 519-436-4600 ext. 5002243
Email: kmccorkle@uniongas.com

Attachment: Map of Preferred Route

c. Michael Candido, Stantec Consulting Ltd.
«cc»





Legend

- Preferred Route
- Existing Enbridge Station
- Existing Pipeline
- Highway
- Major Road
- Minor Road
- Hydro Line
- Watercourse
- Waterbody

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, 2019.

Stantec

Project Location
City of Hamilton

160961229

Client/Project
ENBRIDGE GAS INC.
KIRKWALL TO HAMILTON PIPELINE PROJECT

Figure No.
1

Title
Preferred Route

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

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

April 17, 2019
File: 160961299

«Name1»
«Name2»
«Address1»
«Address2_RR»
«City», «Prov» «PostalCode»

Dear «Name1» and «Name2»,

Reference: Enbridge Gas Pipeline Project – Notice of Second Information Session Kirkwall-Hamilton Pipeline Project

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

Please note: As of Jan. 1, 2019, Union Gas and Enbridge Gas Distribution have amalgamated into one utility with the legal name Enbridge Gas Inc.

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You are receiving this letter as the Preferred Route is located on or adjacent to your property.

As an integral part of this project, Enbridge Gas has hired Stantec Consulting Ltd. to undertake an environmental study of the construction and operation of the proposed pipeline and related facilities. The environmental study will 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 (2016)*. The environmental study process includes consultation and engagement with landowners, municipalities, agencies, Indigenous communities, and other interested parties through notices, mailouts, meetings, and Information Sessions.

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Reference: Enbridge Gas Pipeline Project – Notice of Second Information Session Kirkwall-Hamilton Pipeline Project

The Information Session is planned to seek feedback on the project in general and on the Preferred Route. The Information Session will be conducted as a drop-in, and representatives from both Enbridge Gas and Stantec Consulting Ltd. will be available to answer questions.

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5 p.m. to 8 p.m.
Valens Community Centre
1818 Valens Road
Flamborough, ON N0B 2J0

If you cannot attend the Information Session but would like to learn more about the project, please contact the undersigned.

Please feel free to share this letter with your neighbours. If you are a landowner, it would also be appreciated if this letter could be shared with your tenants.

Additional project information is available at: uniongas.com/Kirkwall-Hamilton

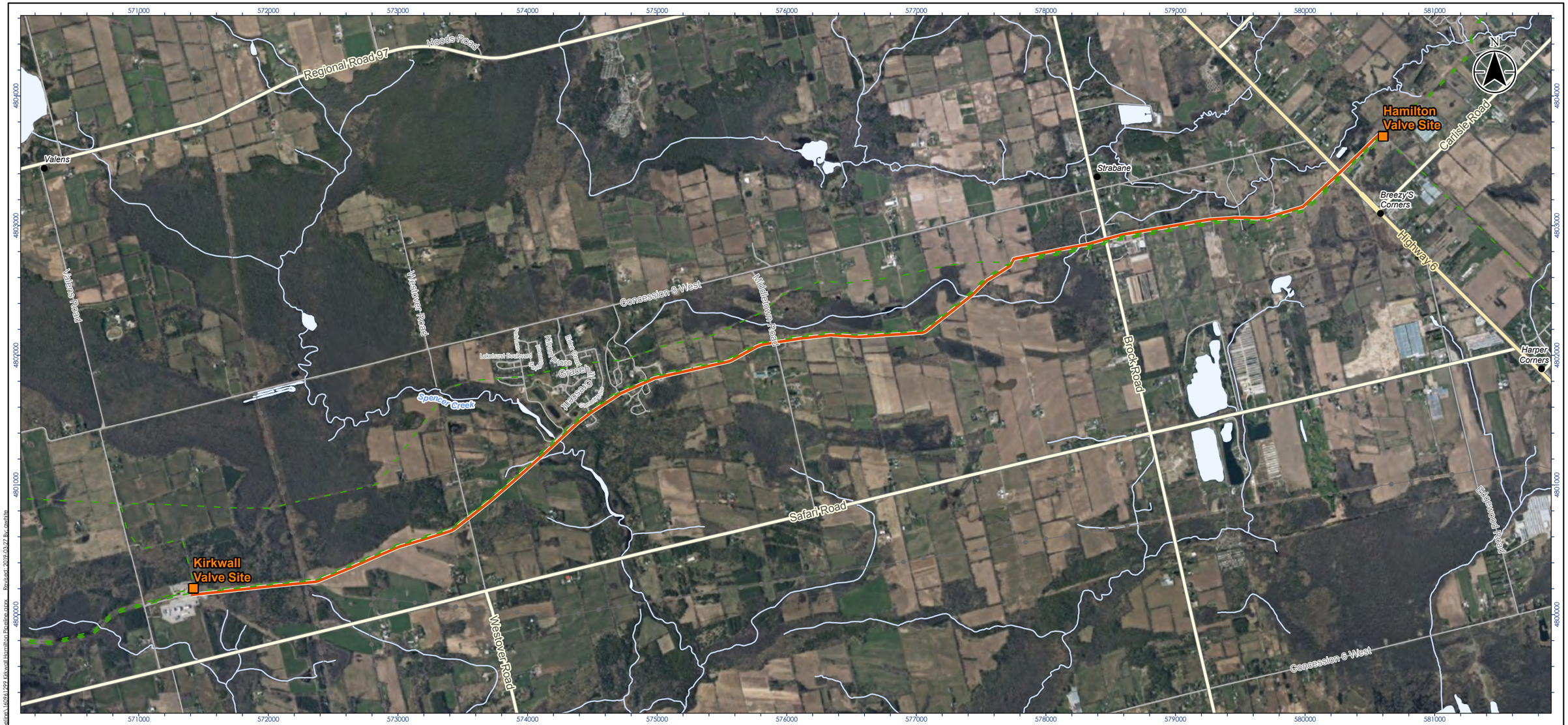
Regards,

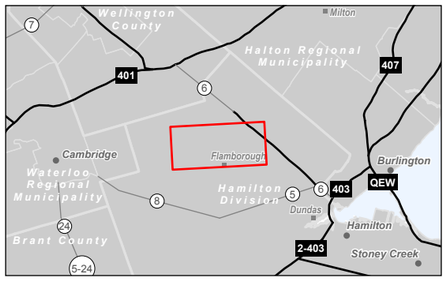
Stantec Consulting Ltd.

Michael Candido
Project Manager
Assessment and Permitting
Stantec Consulting
1-70 Southgate Drive
Guelph, ON N1G 4P5
519-780-8139
michael.candido@stantec.com

Attachment: Map of Preferred Route

c. Ryan Park, Enbridge Gas





Legend

- Preferred Route
- Existing Enbridge Station
- Existing Pipeline
- Highway
- Major Road
- Minor Road
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- Watercourse
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0 0.5 1 km

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Stantec

Project Location
City of Hamilton

160961229

Client/Project
ENBRIDGE GAS INC.
KIRKWALL TO HAMILTON PIPELINE PROJECT

Figure No.
1

Title
Preferred Route

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

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

April 17, 2019
File: 160961299

«Name1»
«Name2»
«Address1»
«Address2_RR»
«City» «Prov» «PostalCode»

Dear «Name1» and «Name2»,

Reference: Enbridge Gas Pipeline Project – Notice of Second Information Session Kirkwall-Hamilton Pipeline Project

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

Please note: As of Jan. 1, 2019, Union Gas and Enbridge Gas Distribution have amalgamated into one utility with the legal name Enbridge Gas Inc.

The proposed pipeline 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 Preliminary Preferred Route and Alternate Route were presented during an Information Session held on February 27th, 2019. Feedback on the routes was taken into consideration during the route evaluation process. The evaluation resulted in the selection of the Preferred Route, which will parallel three existing Enbridge Gas pipelines and will be 10 km in length. If approved, construction of the pipeline could begin as early as spring/summer 2021 and be complete by the end of 2021.

You are receiving this letter as a previously identified Alternate Route or Route Deviation was located on your property. However, please be advised that the Preferred Route is NOT located on your property.

As an integral part of this project, Enbridge Gas has hired Stantec Consulting Ltd. to undertake an environmental study of the construction and operation of the proposed pipeline and related facilities. The environmental study will 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 (2016)*. The environmental study process includes consultation and engagement with landowners, municipalities, agencies, Indigenous communities, and other interested parties through notices, mailouts, meetings, and Information Sessions.

An Environmental Report, summarizing the results of the environmental study, will accompany Enbridge Gas' application to the OEB. The Environmental Report for the proposed project is anticipated to be completed and submitted to the OEB as early as the summer of 2019 as part of the overall project application.

Reference: Enbridge Gas Pipeline Project – Notice of Second Information Session Kirkwall-Hamilton Pipeline Project

The Information Session is planned to seek feedback on the project in general and on the Preferred Route. The Information Session will be conducted as a drop-in, and representatives from both Enbridge Gas and Stantec Consulting Ltd. will be available to answer questions.

The Information Session will be held on:

Thursday, May 9, 2019
5 p.m. to 8 p.m.
Valens Community Centre
1818 Valens Road
Flamborough, ON N0B 2J0

If you cannot attend the Information Session but would like to learn more about the project, please contact the undersigned.

Please feel free to share this letter with your neighbours. If you are a landowner, it would also be appreciated if this letter could be shared with your tenants.

Additional project information is available at: uniongas.com/Kirkwall-Hamilton

Regards,

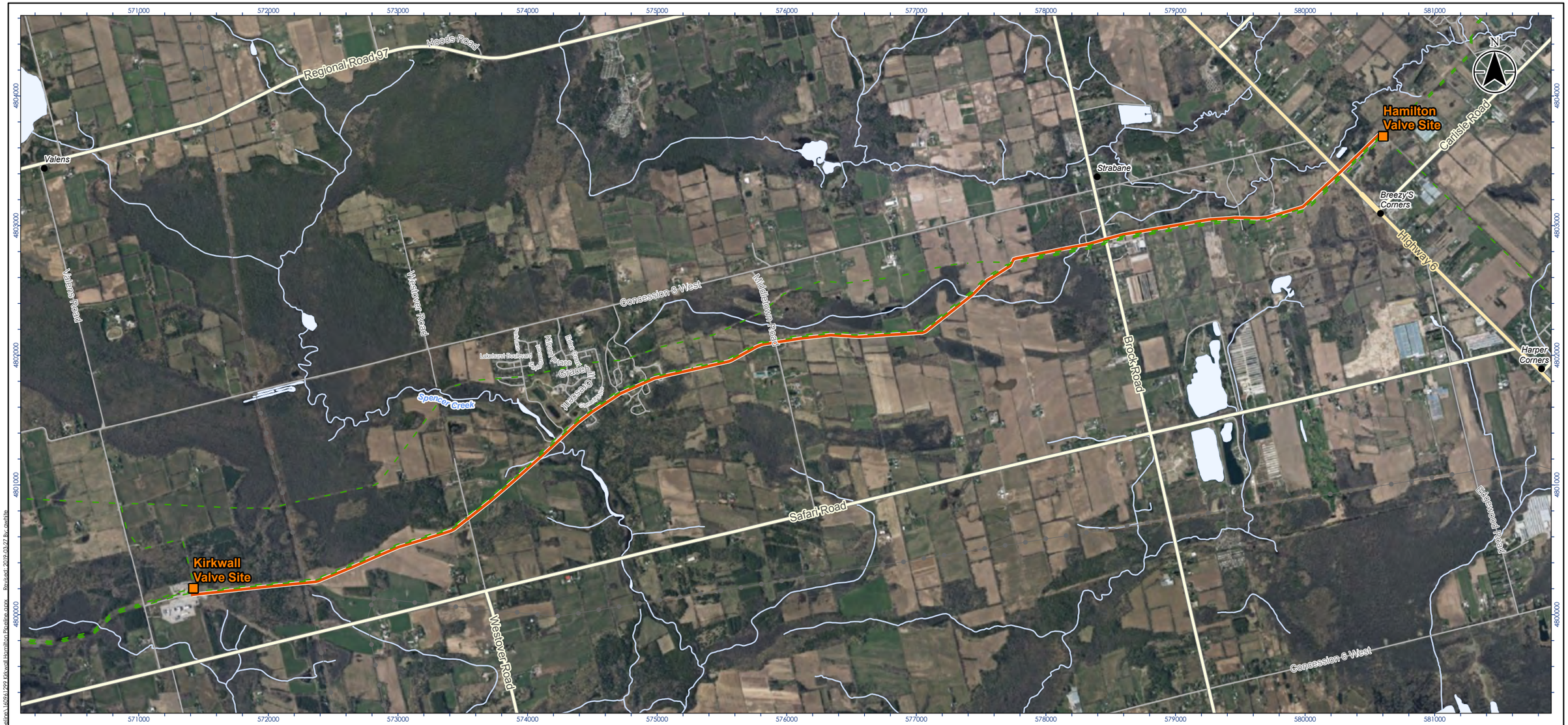
Stantec Consulting Ltd.

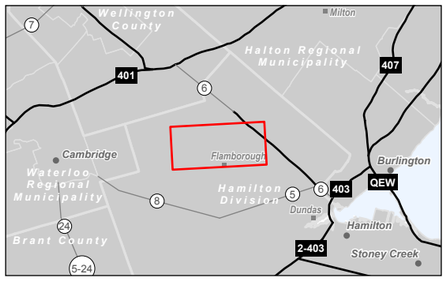


Michael Candido
Project Manager
Assessment and Permitting
Stantec Consulting
1-70 Southgate Drive
Guelph, ON N1G 4P5
519-780-8139
michael.candido@stantec.com

Attachment: Map of Preferred Route

c. Ryan Park, Enbridge Gas





Legend

- Preferred Route
- Existing Enbridge Station
- Existing Pipeline
- Highway
- Major Road
- Minor Road
- Hydro Line
- Watercourse
- Waterbody

0 0.5 1 km

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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, 2019.

Stantec

Project Location
City of Hamilton

160961229

Client/Project
ENBRIDGE GAS INC.
KIRKWALL TO HAMILTON PIPELINE PROJECT

Figure No.
1

Title
Preferred Route

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

April 18, 2019
File: 160961299

«First_Name» «Last_Name», «Title»
«Representing»
«Address»
«Town», «Province» «Postal_Code»
«Email_»

Dear «First_Name» «Last_Name»,

Reference: Enbridge Gas Pipeline Project – Notice of Second Information Session: Kirkwall-Hamilton Pipeline Project

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

Please note: As of Jan. 1, 2019, Union Gas and Enbridge Gas Distribution have amalgamated into one utility with the legal name Enbridge Gas Inc.

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An Environmental Report, summarizing the results of the environmental study, will accompany Enbridge Gas' application to the OEB, whose review and approval is required before the proposed project can proceed. The Environmental Report for the proposed project is anticipated to be completed and submitted to the OEB as early as the summer of 2019 as part of the overall project application.

Reference: **Enbridge Gas Pipeline Project – Notice of Second Information Session: Kirkwall-Hamilton Pipeline Project**

As a stakeholder with authority or a potential interest in developments in the project location you are invited to provide comments regarding the proposed pipeline. Specifically, Stantec is seeking information that may affect construction and operation of the proposed pipeline, including: background environmental and socio-economic information, planning principles or guidelines which fall under your authority and other proposed developments known in the area to assess potential cumulative effects.

The Information Session is planned to seek feedback on the proposed project in general and on the Preferred Route. The Information Session will be conducted as a drop-in, and representatives from both Enbridge Gas and Stantec Consulting Ltd. will be available to answer questions.

The Information Session will be held on:

Thursday, May 9, 2019
5 p.m. to 8 p.m.
Valens Community Centre
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If you cannot attend the Information Session but would like to learn more about the project, please contact the undersigned.

Additional project information is available at: uniongas.com/Kirkwall-Hamilton

Regards,

Stantec Consulting Ltd.



Michael Candido
Project Manager
Assessment and Permitting
Stantec Consulting
1-70 Southgate Drive
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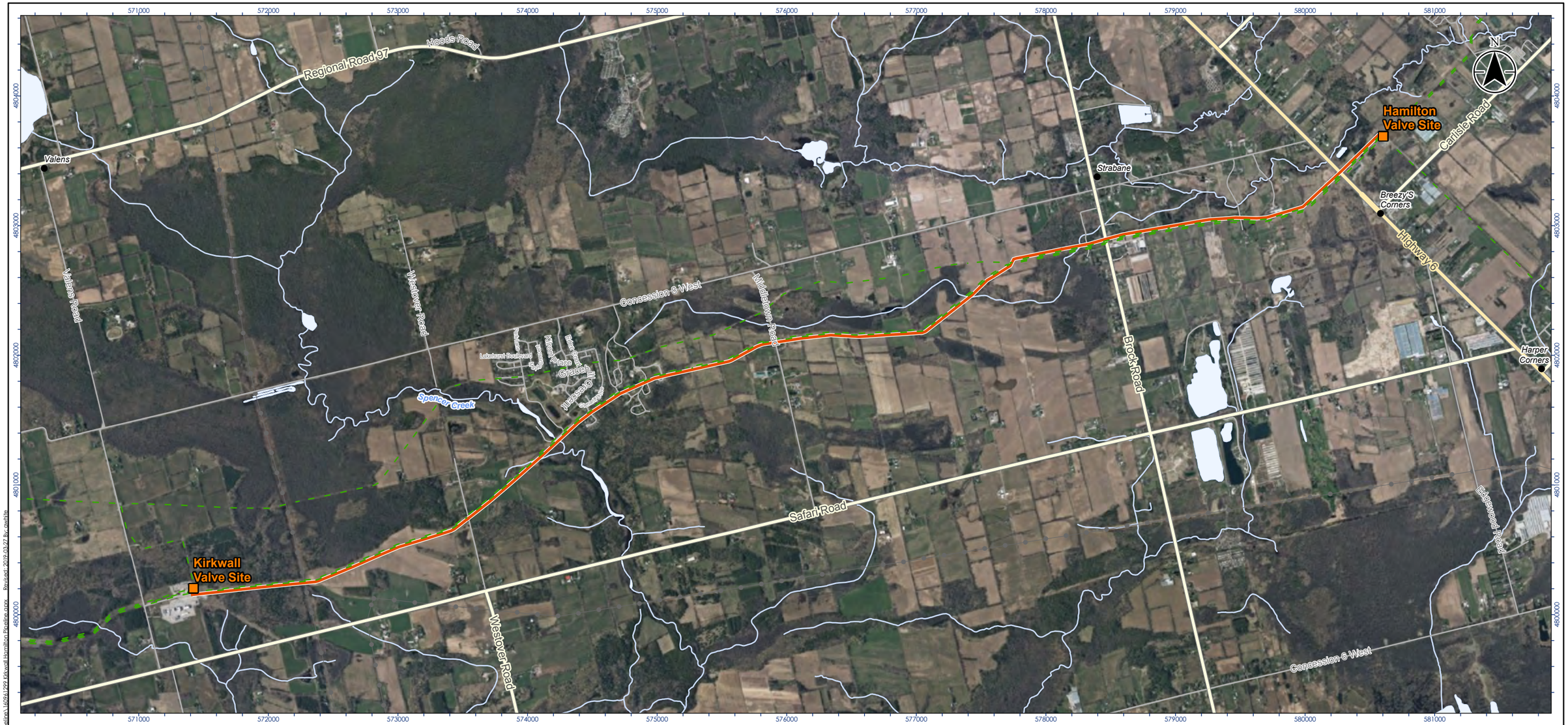
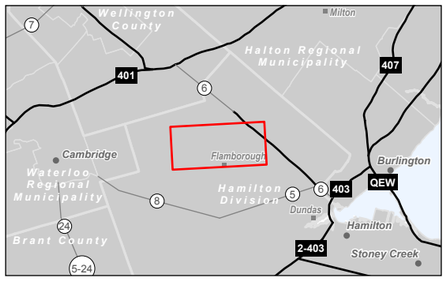
519-780-8139
michael.candido@stantec.com

Attachment: Map of Preferred Route

c. Ryan Park, Enbridge Gas





Legend

- Preferred Route
- Existing Enbridge Station
- Existing Pipeline
- Highway
- Major Road
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Stantec

Project Location
City of Hamilton

160961229

Client/Project
ENBRIDGE GAS INC.
KIRKWALL TO HAMILTON PIPELINE PROJECT

Figure No.
1

Title
Preferred Route

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APPENDIX B4: DISPLAY BOARDS, NEWSLETTER AND EXIT QUESTIONNAIRE

Kirkwall-Hamilton Pipeline Project Information Session



Welcome

Please view the display boards, speak to members of Stantec Consulting Ltd. (Stantec) and/or Enbridge Gas Inc. (Enbridge Gas), and complete a questionnaire providing your feedback.

Sign up at the front desk to have your attendance recorded as part of the environmental study and to receive future project updates. (Note: As of Jan. 1, 2019, Union Gas and Enbridge Gas Distribution have amalgamated into one utility with the legal name Enbridge Gas Inc.)

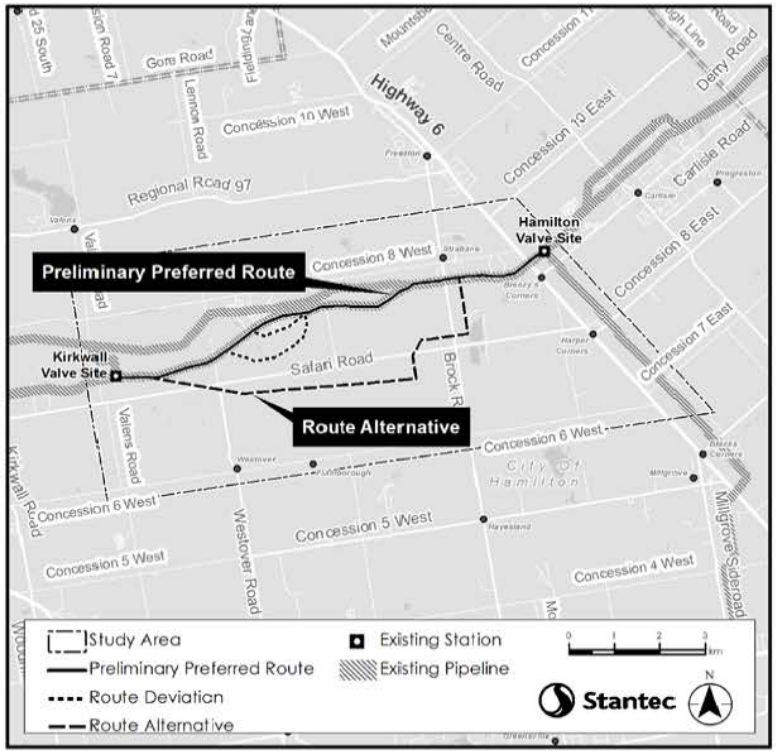
Our commitment

Enbridge Gas is committed to involving community members in this proposed project. We are dedicated to providing you with up-to-date information in an open, honest and respectful manner and will carefully consider your input.

Enbridge Gas provides safe and reliable delivery of natural gas to more than 3.5 million residential, commercial, and industrial customers across Ontario. Enbridge Gas is committed to environmental stewardship and conducts all of its operations in an environmentally responsible manner.

Kirkwall-Hamilton Pipeline Project
Information Session





Project overview

The proposed pipeline will be constructed between the existing Enbridge Gas Kirkwall valve site, located northeast of the intersection of Safari Road and Valens Road and the existing Enbridge Gas Hamilton valve site, located east of Highway 6 and north of Carlisle Road, generally paralleling three existing Enbridge Gas pipelines. The length of the proposed pipeline will be determined by the final route chosen after input from the community but will be approximately 10 – 14 km and will be 48 inches in diameter.

If approved by the Ontario Energy Board (OEB), construction of the proposed pipeline is planned to begin as early as spring/summer 2021 and be in service by the end of 2021.

Kirkwall-Hamilton Pipeline Project Information Session



Why is Enbridge Gas undertaking this project?

Enbridge Gas is undertaking the proposed project to increase existing capacity and accommodate additional demand for natural gas along its main natural gas transmission system, the Dawn Parkway System.

Kirkwall-Hamilton Pipeline Project Information Session



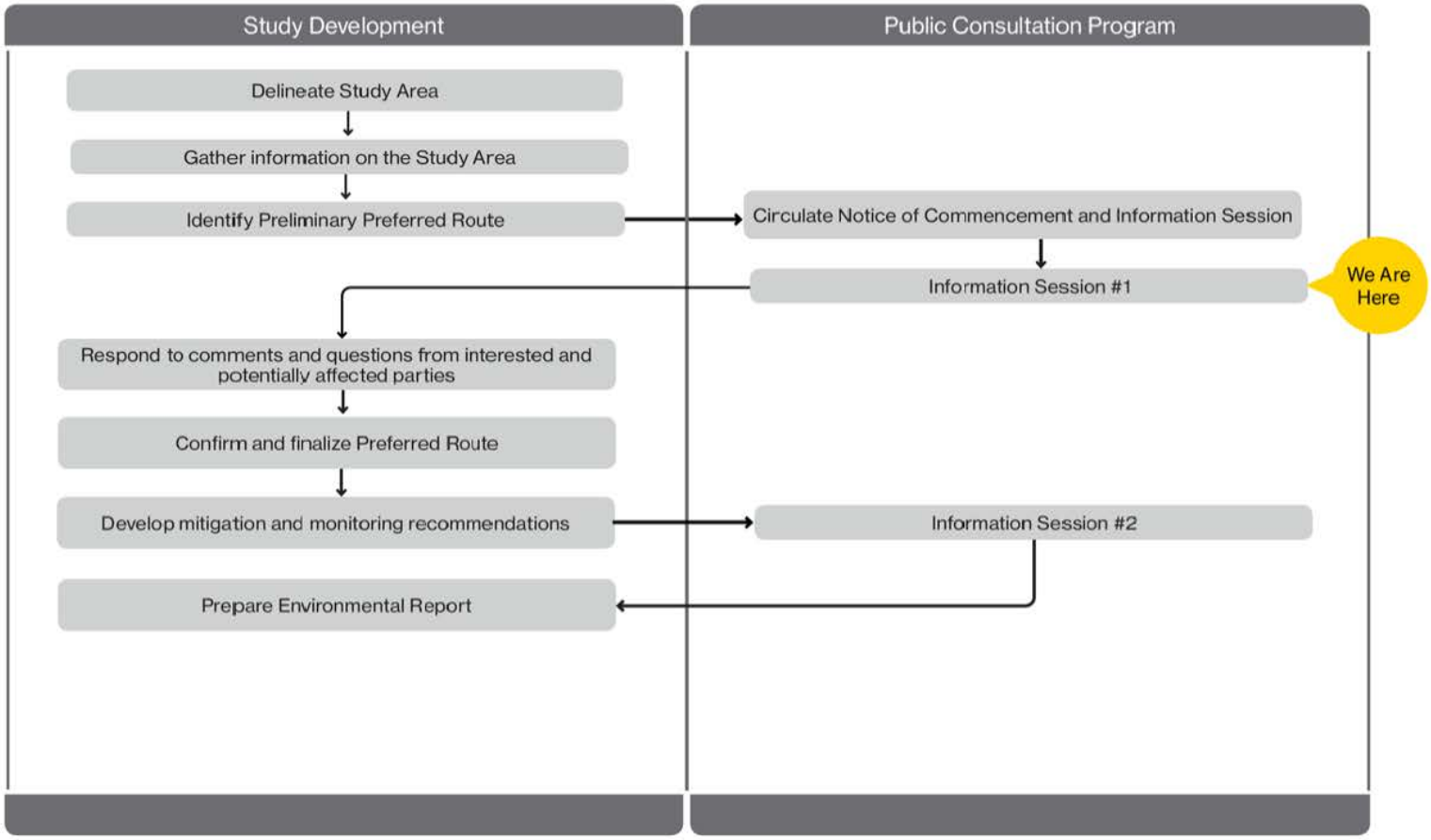
Environmental study process

The environmental study and subsequent Environmental Report for the project will be completed as per the Ontario Energy Board's (OEB) "Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario (2016)."

The study will:

- Undertake consultation to understand the views of interested and potentially affected parties.
- Consult with Indigenous Communities to understand interests and potential impacts.
- Be conducted during the earliest phase of the project.
- Identify potential impacts of the project.
- Develop environmental mitigation and protective measures to avoid or minimize potential impacts.
- Develop an appropriate environmental inspection, monitoring and follow-up program.

Kirkwall-Hamilton Pipeline Project
Information Session



Kirkwall-Hamilton Pipeline Project Information Session



Ontario Energy Board (OEB) review and approval process

The OEB is a body that regulates the natural gas industry in Ontario, in the public interest.

Enbridge Gas plans to submit an application for this project to the OEB. This application will include comprehensive information on the project including:

- The need for the project.
- Facility alternatives.
- Project costs and economics.
- Pipeline design and construction.
- Environmental mitigation measures.
- Land requirements.
- Consultation with Indigenous Communities.
- Consultation with various stakeholders including landowners and government agencies.

The OEB will then hold a public hearing to review the project.

If after this review the OEB determines that the project is in the public interest it will approve construction of the project.

Additional information about the OEB process can be found on the project newsletter and at:
www.ontarioenergyboard.ca

Submit Application → Public Hearing → Approval → Construction

Kirkwall-Hamilton Pipeline Project
Information Session

ENBRIDGE



Route evaluation methodology

The Preferred Route will be selected through a five-step process:

Step 1

Develop Routing Parameters

a. Establish a study area.
b. Establish routing objectives.
   i. Follow a reasonably direct path between start and end points.
   ii. Avoid sensitive environmental and socio-economic features.
   iii. Use existing linear features.
   iv. Follow existing lot and property lines.
c. Create an inventory of environmental and socio-economic features.

Step 2

Identify Alternative Routes in the Study Area

Identify reasonable and feasible routes within the study area in consideration of the routing objectives and environmental and socio-economic opportunities and constraints.

Step 3

Route Evaluation

An evaluation of the Alternative Routes will be conducted based on:

a. A quantitative comparative evaluation of impacts to environmental and socio-economic features.
b. A qualitative comparative evaluation.

Once complete, a Preliminary Preferred Route will be determined.

Step 4

Input on the Preliminary Preferred Route

Gather input on the Preliminary Preferred Route.

We Are Here

Step 5

Confirmation of the Preferred Route

A Preferred Route will be confirmed following consultation with landowners and other affected parties. The location of the Preferred Route may be refined as the project moves forward based on pre-construction field investigations, landowner requests and/or engineering and construction considerations.

Stantec

Kirkwall-Hamilton Pipeline Project
Information Session



Route evaluation methodology

In the study area, a variety of pipeline routing constraints are present: natural heritage features, slope, topography, and socio-economic features and landscapes. After creating a Geographic Information System (GIS) database of opportunities and constraints, a GIS routing exercise was undertaken that examined all mapped routing constraints and opportunities to generate alternative routes. A field reconnaissance was undertaken in 2016 to review whether any of the existing Enbridge Gas pipeline easements could be paralleled.

As a result, two alternative routes were identified (Route A and Route B). The routes follow existing linear infrastructure where available and avoid, to the extent possible, existing environmental and socio-economic features.

Kirkwall-Hamilton Pipeline Project
Information Session



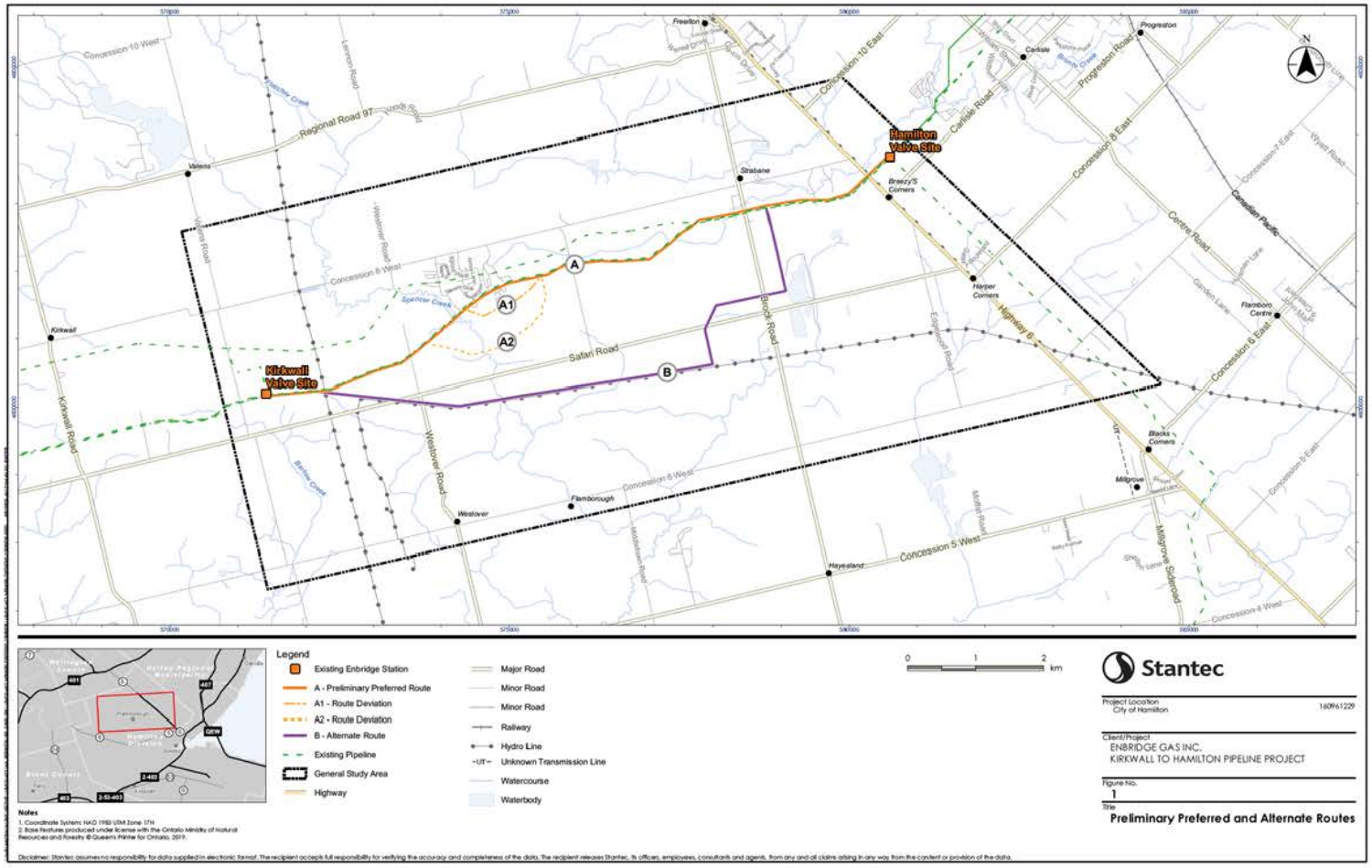
Preliminary preferred route

A quantitative comparative evaluation identified that Routes A and B were both environmentally acceptable, however Route A was preferred for operational efficiencies due to the ability to locate the proposed pipeline parallel and overlapping an existing Enbridge Gas pipeline easement.

For Route A, an existing Enbridge Gas pipeline easement travels through the communities of Antrim Glen and the Ponderosa Nature Resort. To minimize impacts to these communities two route deviations have been identified (Route A1 and Route A2) which will be further evaluated based on landowner input, field investigations, and engineering and construction considerations.

Kirkwall-Hamilton Pipeline Project
Information Session

Preliminary preferred route



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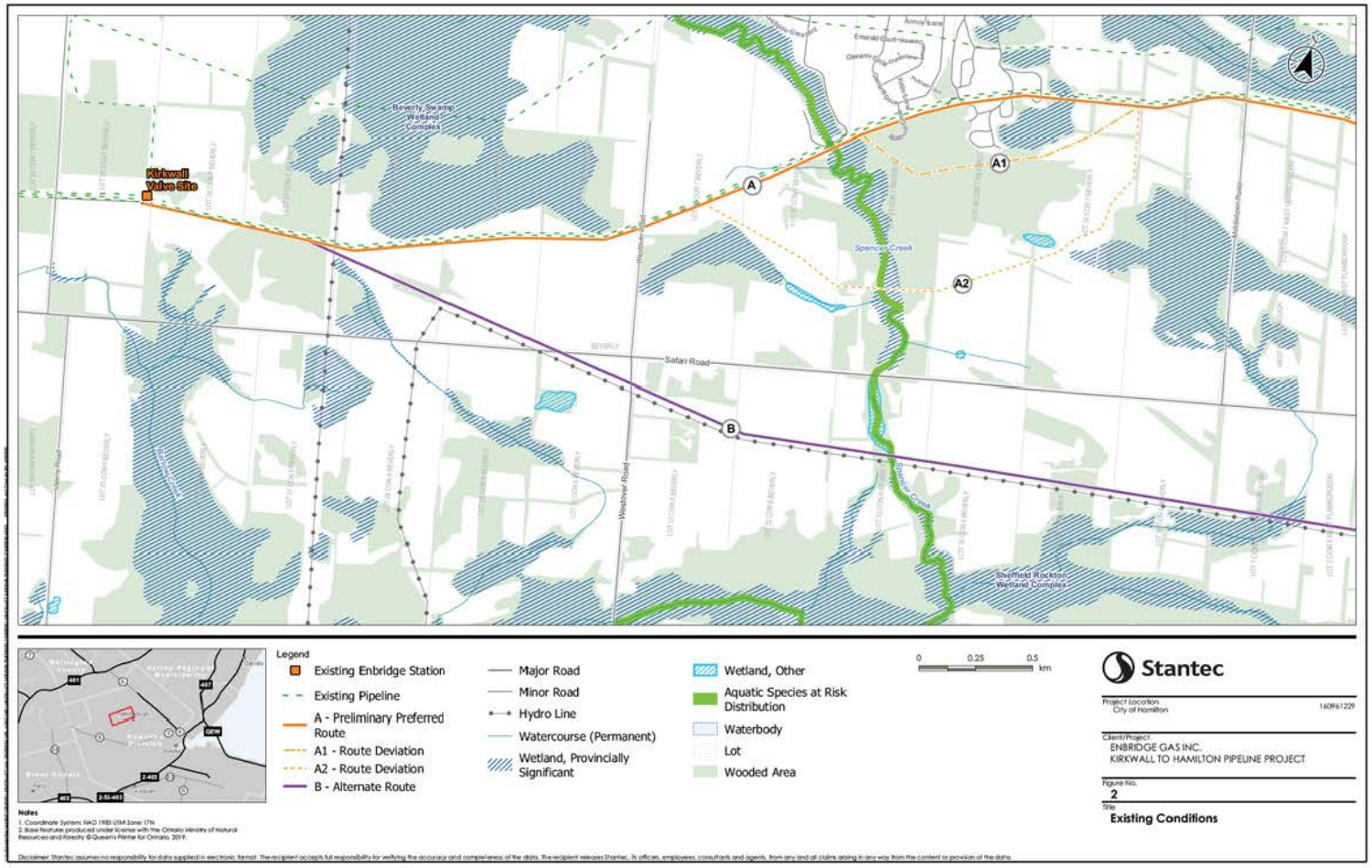
Kirkwall-Hamilton Pipeline Project
Information Session

Existing features



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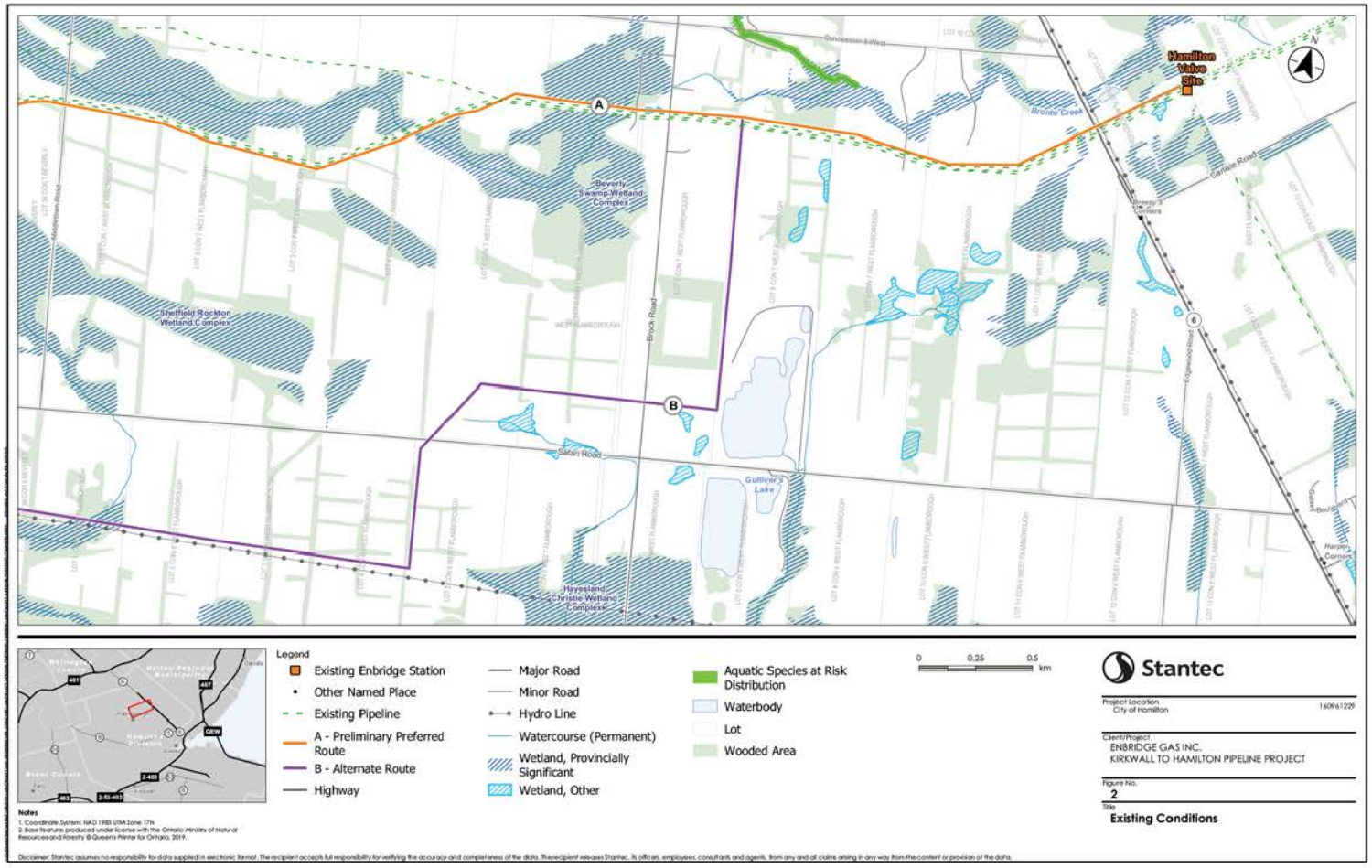
Information Session

Existing features



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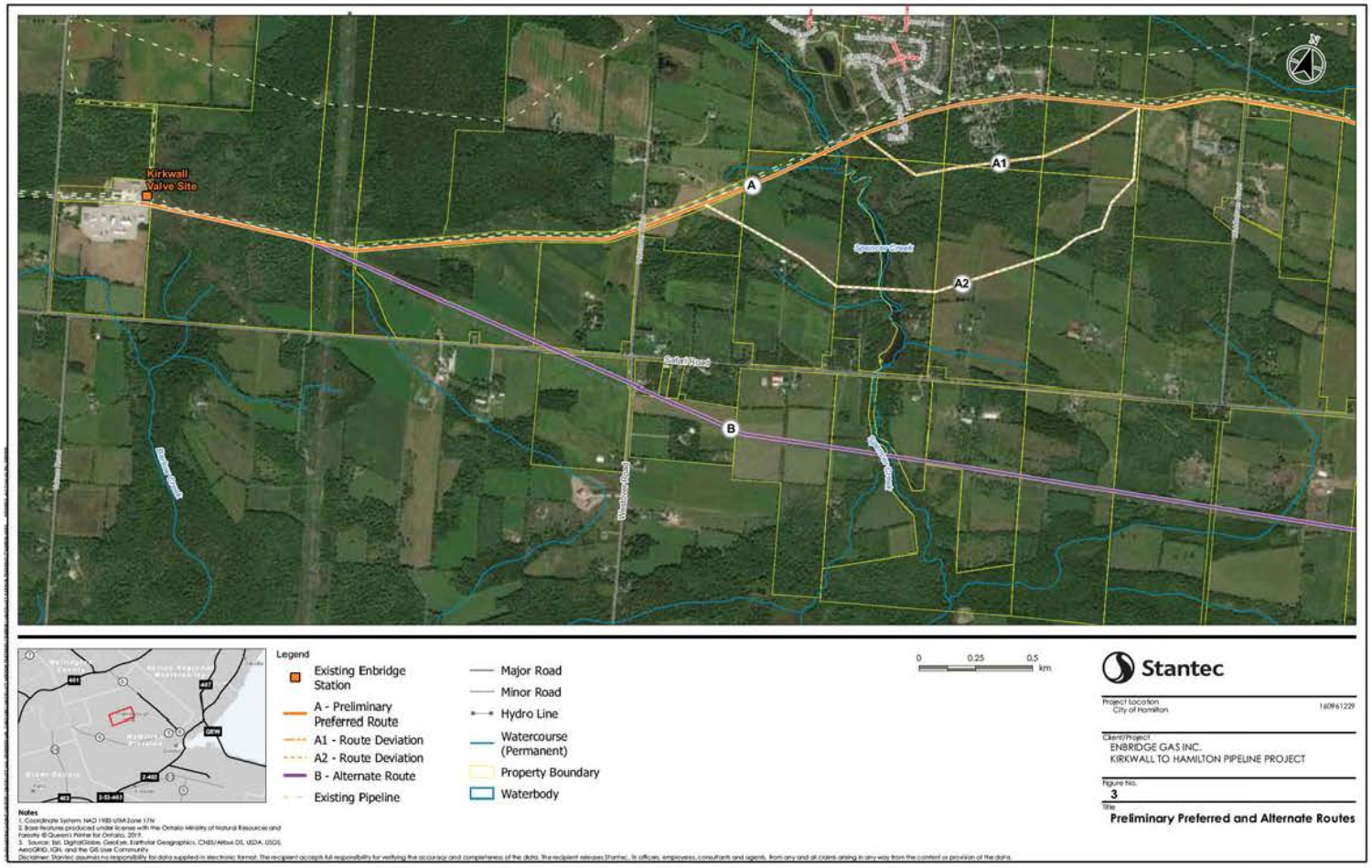
Kirkwall-Hamilton Pipeline Project
Information Session

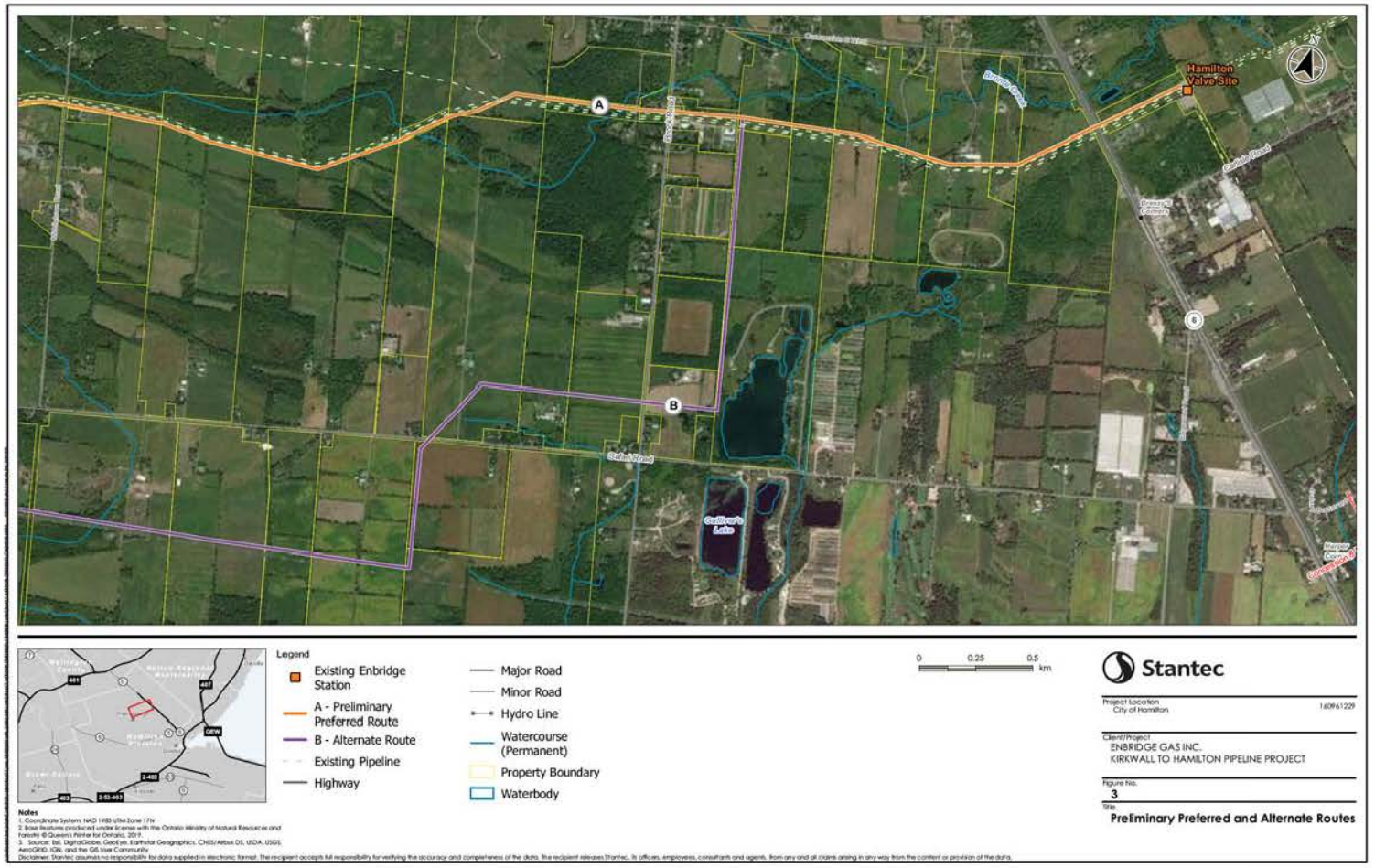
Preliminary preferred route



Stantec

Kirkwall-Hamilton Pipeline Project
Information Session

Preliminary preferred route



Stantec

Kirkwall-Hamilton Pipeline Project
Information Session



Access and land requirements

Once a preferred route is selected, an Enbridge Gas Land Agent will begin discussions with landowners for the appropriate land rights necessary to construct the pipeline. Enbridge Gas is committed to working with all directly affected landowners in anticipation of acquiring early access agreements in order to gather essential information, including but not limited to, land survey data, environmental, archaeological and property site features, along with negotiating the necessary land rights. These land rights will consist of permanent easements and/or temporary land rights. The temporary land rights are only required during project construction activities.

Enbridge Gas will ensure that a Land Agent is available to each landowner during all pipeline construction activities. The Land Agent will keep all landowners informed of the progress of the project and assist with any concerns that may arise as a result of the construction activities.

Kirkwall-Hamilton Pipeline Project Information Session



Agricultural soils

Enbridge Gas has established and tested measures to preserve the integrity of agricultural soils throughout the construction phase:

- A third-party soils specialist will determine topsoil depth prior to stripping and supervise activities so the proper depth of topsoil is removed and replaced.
- Topsoil will be stripped from the right-of-way and other work areas and stockpiled along the right-of-way. A separation will be maintained between topsoil and subsoil.
- Enbridge Gas will implement a wet soil shutdown protocol on agricultural lands to minimize soil structure damage.
- The subsoil on the stripped portion of the right-of-way will be chisel ploughed or sub-soiled during cleanup activities to alleviate compaction.
- Any agricultural drainage systems impacted by construction will be repaired.
- Enbridge Gas will develop and implement a sampling program on agricultural easements along the pipeline route for potential pests and/or diseases that are known to the area, where appropriate.
- The entire outside boundaries of the work space necessary for construction of the project will be staked at regular intervals.
- A post-construction cover crop program will be available to landowners.

Kirkwall-Hamilton Pipeline Project
Information Session



Maintaining agricultural drainage systems

- Landowners will be contacted prior to construction to confirm the location and type of existing drains. Any future drainage plans will also be discussed with the landowner.
- Field tile will be temporarily re-routed during pre-construction activities where required to ensure proper drainage during construction.
- Damaged and severed drains will be repaired following construction. After repair and prior to backfilling, landowners will be invited to inspect and approve the repair. Any on-going field tile issues resulting from pipeline construction will be addressed by Enbridge Gas as required.

Kirkwall-Hamilton Pipeline Project Information Session



Socio-economic features

The project will be constructed through private business areas, agricultural and residential land, along with land owned by Hydro One and Hamilton Region Conservation Authority. Land use designations consist of a variety of uses, including agricultural, rural residential and commercial.

Potential effects

- Temporary increases in noise, dust and air emissions.
- Increased construction traffic volumes.
- Temporary impairment of the use and enjoyment of property.
- Vegetation clearing along the pipeline easement.

Example mitigation measures

- Provide access across the construction area.
- Restrict construction to daylight hours, and adhere to applicable noise by-laws.
- Develop and implement a Traffic Control Plan.
- Place fencing at appropriate locations for safety.
- Implement a water well monitoring program.
- Making contact information for a designated Enbridge Gas representative available prior to and throughout construction.
- Dust control measures.
- Re-vegetation of cleared areas (seeding/planting).

Kirkwall-Hamilton Pipeline Project Information Session



Aquatic resources

Enbridge Gas understands the importance of protecting wildlife during construction and therefore will implement recognized mitigation measures to minimize possible environmental effects.

Potential effects

- Disruption and alteration to aquatic species and habitat and/or nuisance effects.
- Increased erosion, sedimentation, and turbidity resulting from removal of vegetation.

Example mitigation measures

- Conduct surveys of waterbodies.
- Obtain all agency permits and approvals.
- Limit in-channel construction, where possible, and conform to fish timing window guidelines.
- For in-channel construction, protect aquatic species and manage sedimentation and turbidity.
- Restore and seed areas to establish habitat and reduce erosion.
- Replant riparian vegetation.

Kirkwall-Hamilton Pipeline Project
Information Session



Cultural heritage resources

During the course of construction, cultural heritage features such as archaeological finds, buildings, fences and landscapes may be encountered. Detailed field surveys will be conducted by independent, third-party archaeologists and cultural heritage professionals.

Potential effects

- Damage or destruction of archaeological, paleontological or historical resources.

Example mitigation measures

- Archaeological assessment of the construction right-of-way, with review and comment from the Ministry of Tourism, Culture and Sport (MTCS).
- Cultural heritage assessment (for built heritage features and cultural heritage landscapes) of the construction right-of-way, with review and comment from MTCS.
- Reporting of any previously unknown archaeological, paleontological or historical resources uncovered, or suspected of being uncovered, during excavation.

Kirkwall-Hamilton Pipeline Project Information Session



Terrestrial resources

During the course of construction, natural heritage features such as wildlife habitat and vegetated/wooded areas will need to be crossed.

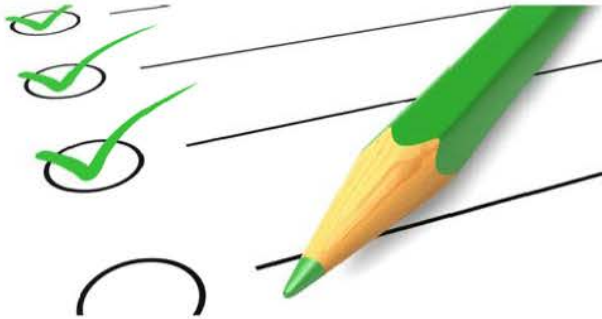
Potential effects

- Damage or removal of vegetation and wildlife habitat adjacent to the construction area.
- Disturbance and/or mortality to local wildlife.

Example mitigation measures

- Conduct surveys (including Species at Risk surveys) in advance of construction to determine opportunities for wildlife habitat to exist.
- Clearly mark the construction area to avoid accidental damage.
- Restore and seed areas to establish habitat and reduce erosion.
- Secure any necessary permits, and follow any conditions of approval.

Kirkwall-Hamilton Pipeline Project Information Session

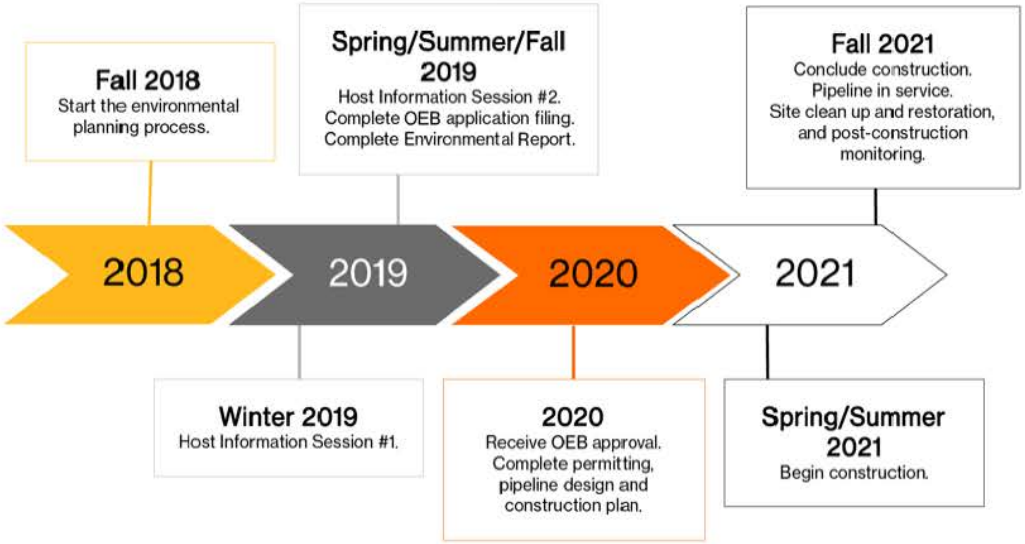


Next steps

Serving hundreds of communities in Ontario, we consider ourselves strong community partners who believe in and are committed to public consultation.

During the planning stages for this Project we have consulted and will continue to consult with local landowners, Indigenous Communities, government agencies and other interested parties that could be impacted by the Project.

After this Information Session, we intend to pursue the following schedule of activities:



Kirkwall-Hamilton Pipeline Project
Information Session

Thank you!

On behalf of the Project Team, thank you for attending this Information Session. We appreciate your involvement in the consultation process, and we would like to hear from you.

Please fill out the exit questionnaire. If you have any further comments or questions, please contact:

Michael Candido, Project Manager
Stantec Consulting Ltd.
Phone: 519-780-8139
Email: michael.candido@stantec.com

Enbridge Gas
Phone: 1-855-381-9138
Email: Projects@uniongas.com

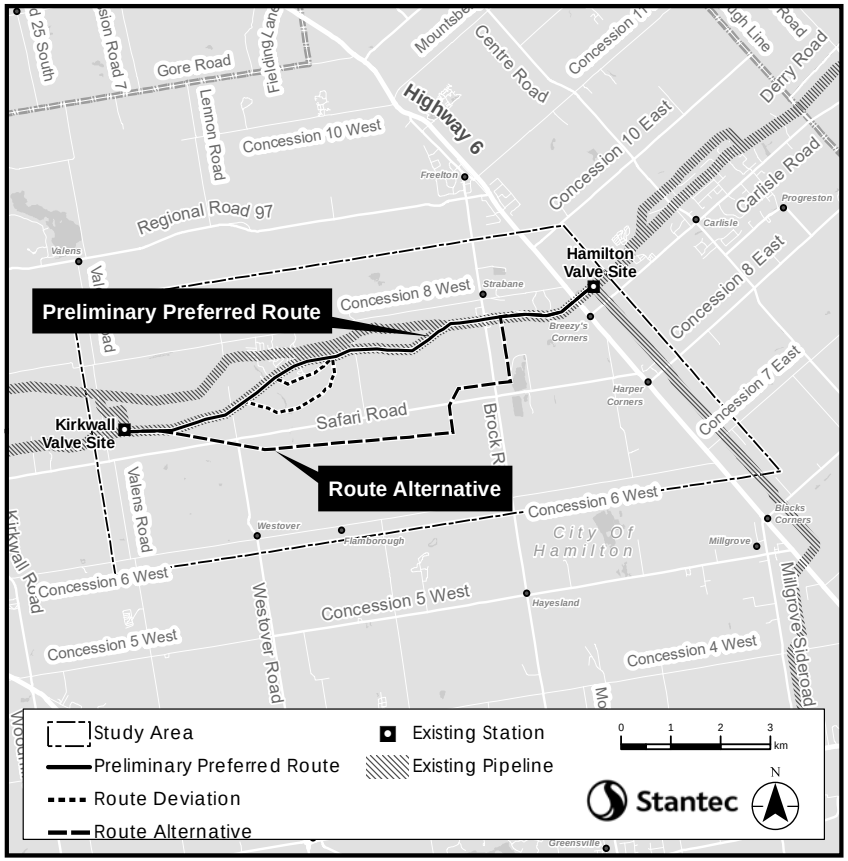
Or visit our project webpage: uniongas.com/Kirkwall-Hamilton

FEBRUARY 2019

Enbridge Gas Inc.
Kirkwall - Hamilton Pipeline Project:
Information Newsletter

Project Overview

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, generally paralleling three existing Enbridge Gas pipelines. The length of the proposed pipeline will be determined by the final route chosen after input from the community but will be approximately 10 – 14 km and will be 48 inches in diameter. If approved, construction of the pipeline could begin as early as spring/ summer 2021 and be complete by the end of 2021.



Why is Enbridge Gas undertaking this Project?

Enbridge Gas is undertaking the proposed project to increase existing capacity and accommodate additional demand for natural gas along its main natural gas transmission system, the Dawn Parkway System.

Note: As of Jan. 1, 2019, Union Gas and Enbridge Gas Distribution have amalgamated into one utility with the legal name Enbridge Gas Inc.

Ontario Energy Board Review and Approval Process

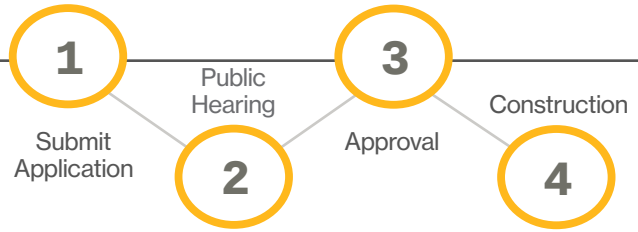
The Ontario Energy Board (OEB) is the body that regulates the natural gas industry in Ontario, in the public's interest. The OEB's approval is required before this pipeline can be constructed.

Enbridge Gas plans to submit an application for this project to the OEB, whose review and approval is needed before this project can proceed. This application will include comprehensive information on the project including: the need for the project, facility alternatives, project costs and economics, pipeline design and construction, environmental mitigation measures, land requirements, and consultation with Indigenous Communities.

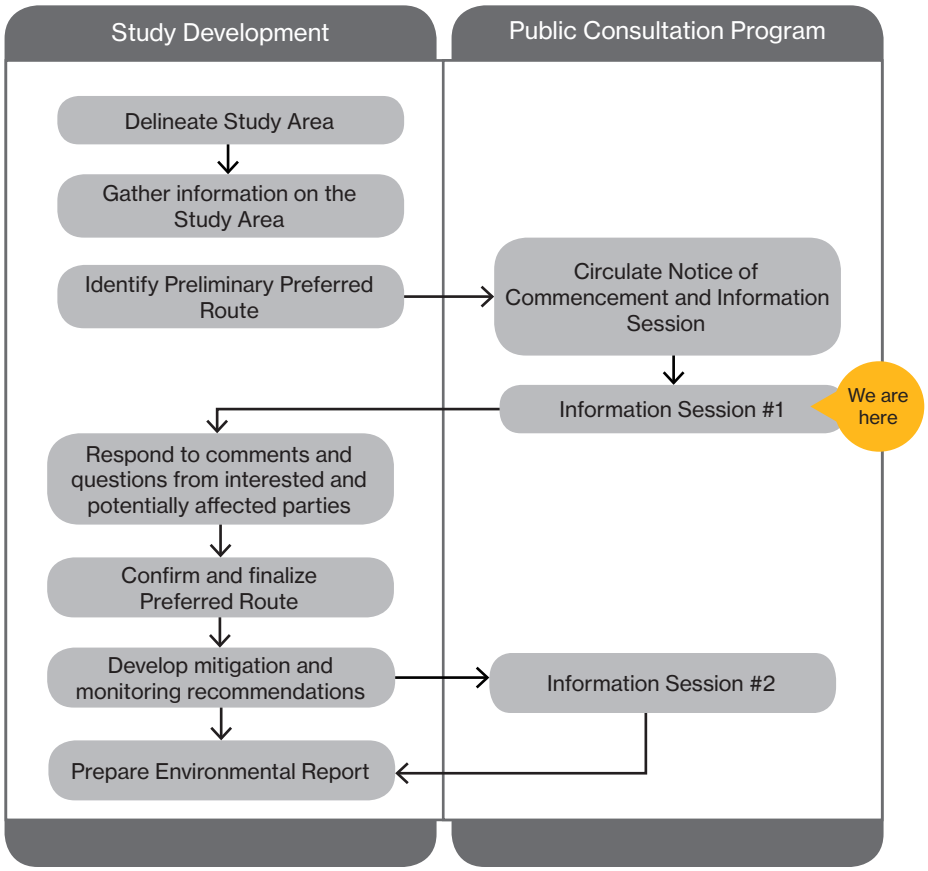
The OEB will then hold a public hearing to review the project. This will include notices in local newspapers, letters to directly affected landowners, the opportunity for the general public and landowners to submit questions regarding the project, a formal hearing, and a written decision regarding the project.

If after this review the OEB determines that the project is in the public's interest it will approve construction of the project. The OEB normally attaches conditions to the approval which Enbridge Gas will comply with during the construction and restoration process.

Additional information about the OEB process and information about how to participate in the OEB hearing process can be found at: www.ontarioenergyboard.ca



Environmental Study Process



Thank You!

On behalf of the Project Team, thank you for your interest in this project. We appreciate your involvement.

If you have any comments or questions please contact:

Michael Candido
Project Manager
Stantec Consulting Ltd.
Phone: (519) 780-8139
Email: michael.candido@stantec.com

Or visit our project webpage: uniongas.com/Kirkwall-Hamilton



Kirkwall-Hamilton Pipeline Project
Information Session Questionnaire – February 27, 2019

Please read the newsletter and look over the displays, and then take a few moments to answer the following questions. Your comments are appreciated. If you require any assistance or clarification while completing the questionnaire please speak with a Stantec or Enbridge Gas representative.

Completed questionnaires can be dropped off at the front table. If you would like additional time to consider your comments, pre-paid envelopes are available at the front table. We request your comments by **March 15, 2019**.

1. **What is your interest in this project?**

   ☐ Directly affected landowner
   ☐ Surrounding landowner
   ☐ Interested citizen
   ☐ Member of interest group
   ☐ Government official
   ☐ Other: _____

2. **Please indicate if the project will have any impacts to you, your property or your business that you would like addressed** (i.e., access, noise, dust, traffic, etc.).

3. **Please identify any features along the Preliminary Preferred Route that you feel are important to consider during the environmental study.**

4. **Do you have any questions or comments about this project that you would like to bring to our attention?**

5. **Did the content provided at this Information Session meet your needs?**

6. **How did you hear about this Information Session? Check all that apply:**

- ☐ Newspaper Advertisement
- ☐ Project Notification Letter
- ☐ Social Media Post(s)
- ☐ Word of Mouth

Thank you for completing this questionnaire. If you have a question about the project that has not been addressed or for which you would like more information, please provide us with your full contact information so that we can respond to you.

Please Print Clearly

Name: _____

Address: _____

Email: _____

Phone: (_____)_____

Information will be collected and used in accordance with the Freedom of Information and Protection of Privacy Act. This information will be used to assist Enbridge Gas in meeting applicable approval requirements. This material will be maintained on file for use during the study and may be included in project documentation. Unless indicated otherwise, personal information and all comments will become part of the public record and may be publicly released as part of project documentation.

Kirkwall-Hamilton Pipeline Project Information Session



Welcome

Please view the display boards, speak to members of Stantec Consulting Ltd. (Stantec) and/or Enbridge Gas Inc. (Enbridge Gas), and complete a questionnaire providing your feedback.

Sign up at the front desk to have your attendance recorded as part of the environmental study and to receive future project updates. (Note: As of Jan. 1, 2019, Union Gas and Enbridge Gas Distribution have amalgamated into one utility with the legal name Enbridge Gas Inc.)

Our commitment

Enbridge Gas is committed to involving community members in this proposed project. We are dedicated to providing you with up-to-date information in an open, honest and respectful manner and will carefully consider your input.

Enbridge Gas provides safe and reliable delivery of natural gas to more than 3.7 million residential, commercial, and industrial customers across Ontario. Enbridge Gas is committed to environmental stewardship and conducts all of its operations in an environmentally responsible manner.

Kirkwall-Hamilton Pipeline Project Information Session





Project overview

The proposed pipeline 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 three existing Enbridge Gas pipelines, will be 10 km in length and 48 inches in diameter.

If approved, construction of the pipeline could begin as early as spring/summer 2021 and be complete by the end of 2021.

Stantec

Kirkwall-Hamilton Pipeline Project Information Session



Why is Enbridge Gas undertaking this project?

Enbridge Gas is undertaking the proposed project to increase existing capacity and accommodate additional demand for natural gas along its main natural gas transmission system, the Dawn Parkway System.

Kirkwall-Hamilton Pipeline Project Information Session



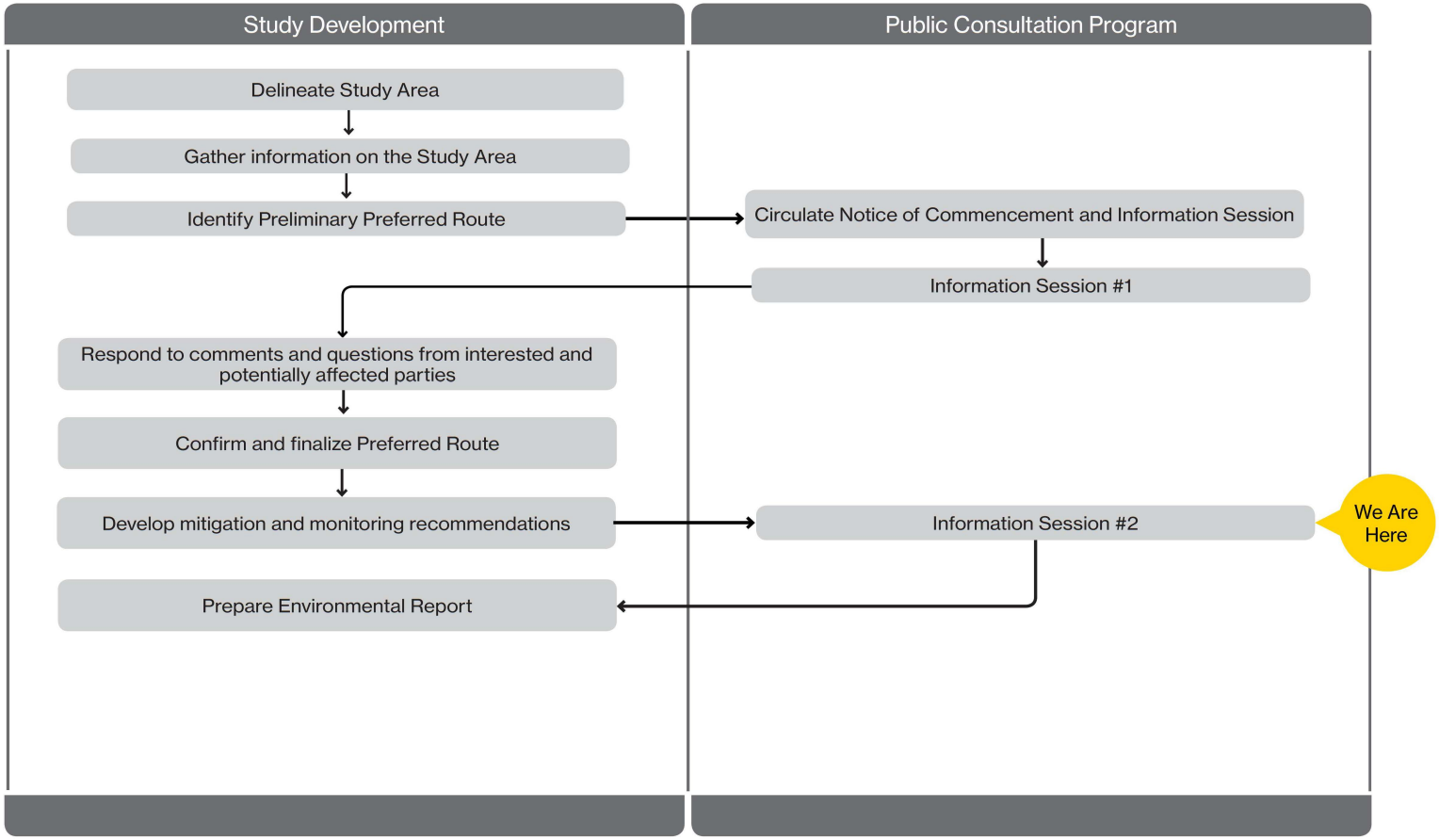
Environmental study process

The environmental study and subsequent Environmental Report for the project will be completed as per the Ontario Energy Board's (OEB) "Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario (2016)."

The study will:

- Undertake consultation to understand the views of interested and potentially affected parties.
- Consult with Indigenous Communities to understand interests and potential impacts.
- Be conducted during the earliest phase of the project.
- Identify potential impacts of the project.
- Develop environmental mitigation and protective measures to avoid or minimize potential impacts.
- Develop an appropriate environmental inspection, monitoring and follow-up program.

Kirkwall-Hamilton Pipeline Project
Information Session



Kirkwall-Hamilton Pipeline Project Information Session



Ontario Energy Board (OEB) review and approval process

The OEB is a body that regulates the natural gas industry in Ontario, in the public interest.

Enbridge Gas plans to submit an application for this project to the OEB. This application will include comprehensive information on the project including:

- The need for the project.
- Facility alternatives.
- Project costs and economics.
- Pipeline design and construction.
- Environmental mitigation measures.
- Land requirements.
- Consultation with Indigenous Communities.
- Consultation with various stakeholders including landowners and government agencies.

The OEB will then hold a public hearing to review the project.

If after this review the OEB determines that the project is in the public interest it will approve construction of the project.

Additional information about the OEB process can be found on the project newsletter and at:
www.ontarioenergyboard.ca

Submit Application → Public Hearing → Approval → Construction

Kirkwall-Hamilton Pipeline Project
Information Session

ENBRIDGE



Route evaluation methodology

The Preferred Route will be selected through a five-step process:

Step 1

Develop Routing Parameters

a. Establish a study area.
b. Establish routing objectives.
   i. Follow a reasonably direct path between start and end points.
   ii. Avoid sensitive environmental and socio-economic features.
   iii. Use existing linear features.
   iv. Follow existing lot and property lines.
c. Create an inventory of environmental and socio-economic features.

Step 2

Identify Alternative Routes in the Study Area

Identify reasonable and feasible routes within the study area in consideration of the routing objectives and environmental and socio-economic opportunities and constraints.

Step 3

Route Evaluation

An evaluation of the Alternative Routes will be conducted based on:

a. A quantitative comparative evaluation of impacts to environmental and socio-economic features.
b. A qualitative comparative evaluation.

Once complete, a Preliminary Preferred Route will be determined.

Step 4

Input on the Preliminary Preferred Route

Gather input on the Preliminary Preferred Route.

Step 5

Confirmation of the Preferred Route

A Preferred Route will be confirmed following consultation with landowners and other affected parties. The location of the Preferred Route may be refined as the project moves forward based on pre-construction field investigations, landowner requests and/or engineering and construction considerations.

We Are Here

Stantec

Kirkwall-Hamilton Pipeline Project
Information Session



Route evaluation methodology

In the study area, a variety of pipeline routing constraints are present: natural heritage features, slope, topography, and socio-economic features and landscapes. After creating a Geographic Information System (GIS) database of opportunities and constraints, a GIS routing exercise was undertaken that examined all mapped routing constraints and opportunities to generate alternative routes. A field reconnaissance was undertaken to review whether any of the existing Enbridge Gas pipeline easements could be paralleled, and to identify potential route alternatives.

Routing follows existing linear infrastructure where available and avoids, to the extent possible, existing environmental and socio-economic features.

Kirkwall-Hamilton Pipeline Project
Information Session



Preferred route

The first Information Session presented a Preliminary Preferred Route that included two route deviations and an Alternate Route. Further quantitative and qualitative evaluation resulted in the selection of a Preferred Route.

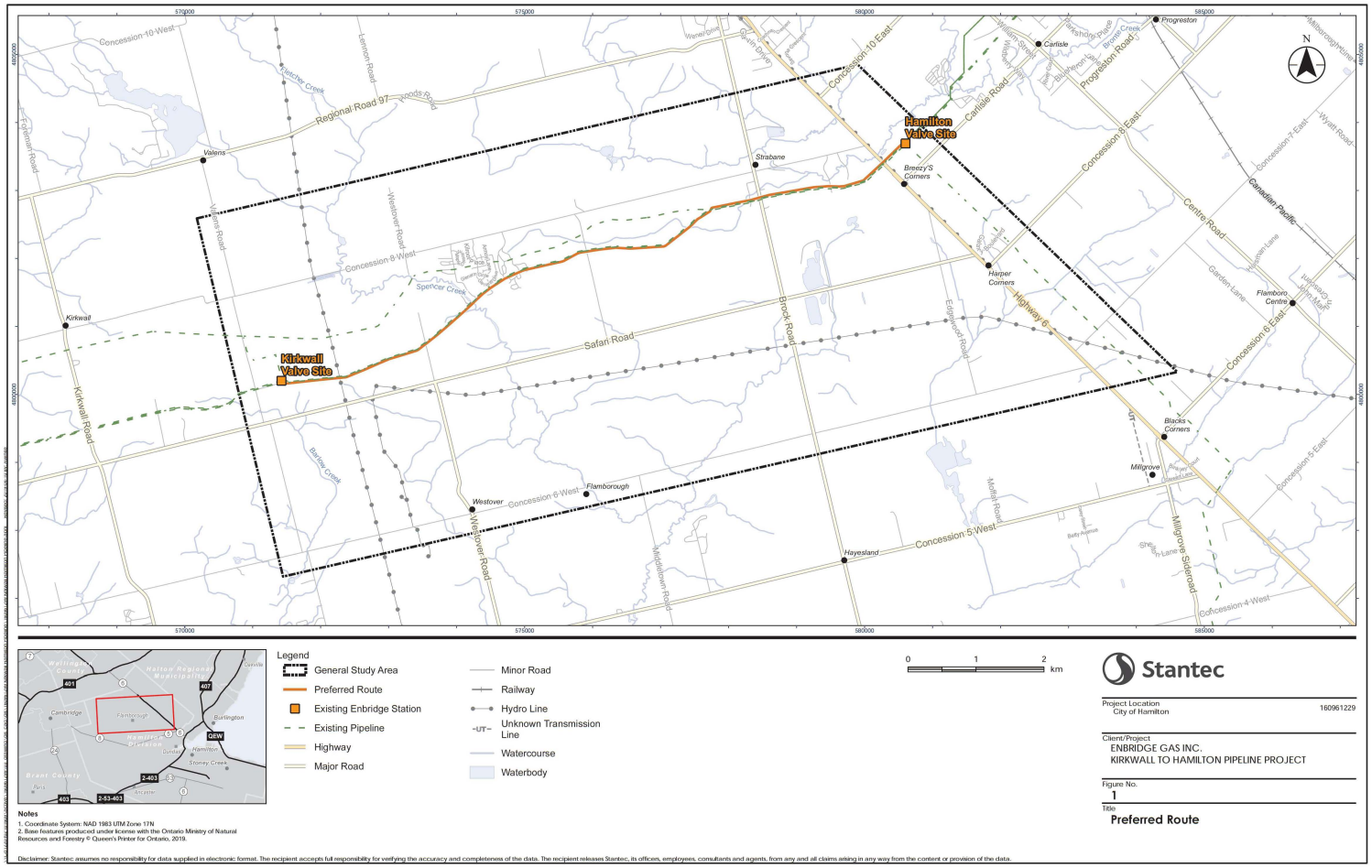
The Preferred Route was selected based on:

- Operational efficiencies due to the ability to locate the proposed pipeline parallel and overlapping an existing Enbridge Gas pipeline easement.
- A review of comments received to date from interested and potentially affected parties.
- The experience of the Project Team in routing linear infrastructure.

Enbridge Gas will undertake detailed design to determine the exact location of the pipeline, permanent easement and temporary land use requirements. Detailed design will be influenced by supplemental studies (including environmental studies) and site-specific requests from landowners and agencies.

Kirkwall-Hamilton Pipeline Project
Information Session

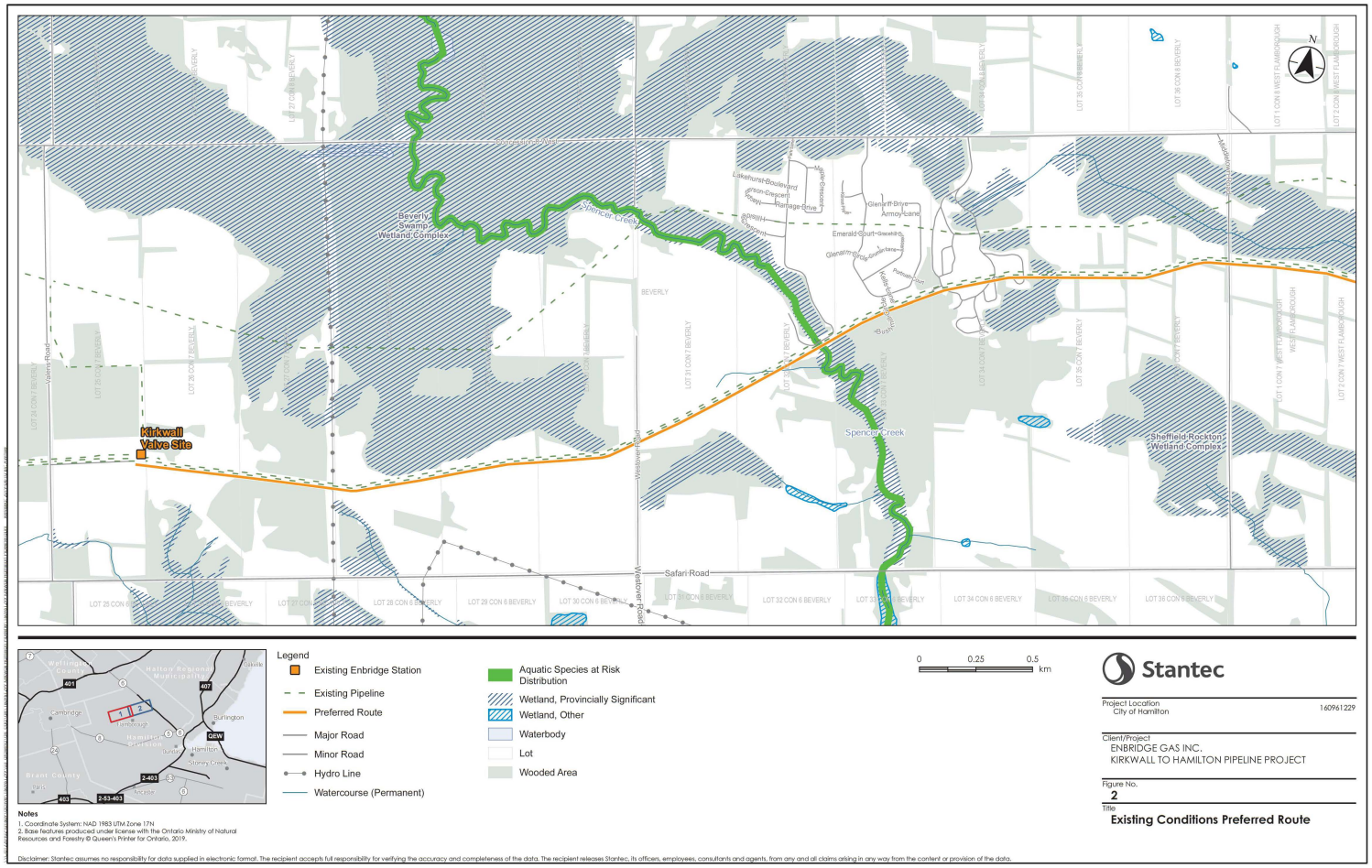
Preferred route



Stantec

Kirkwall-Hamilton Pipeline Project
Information Session

Existing features



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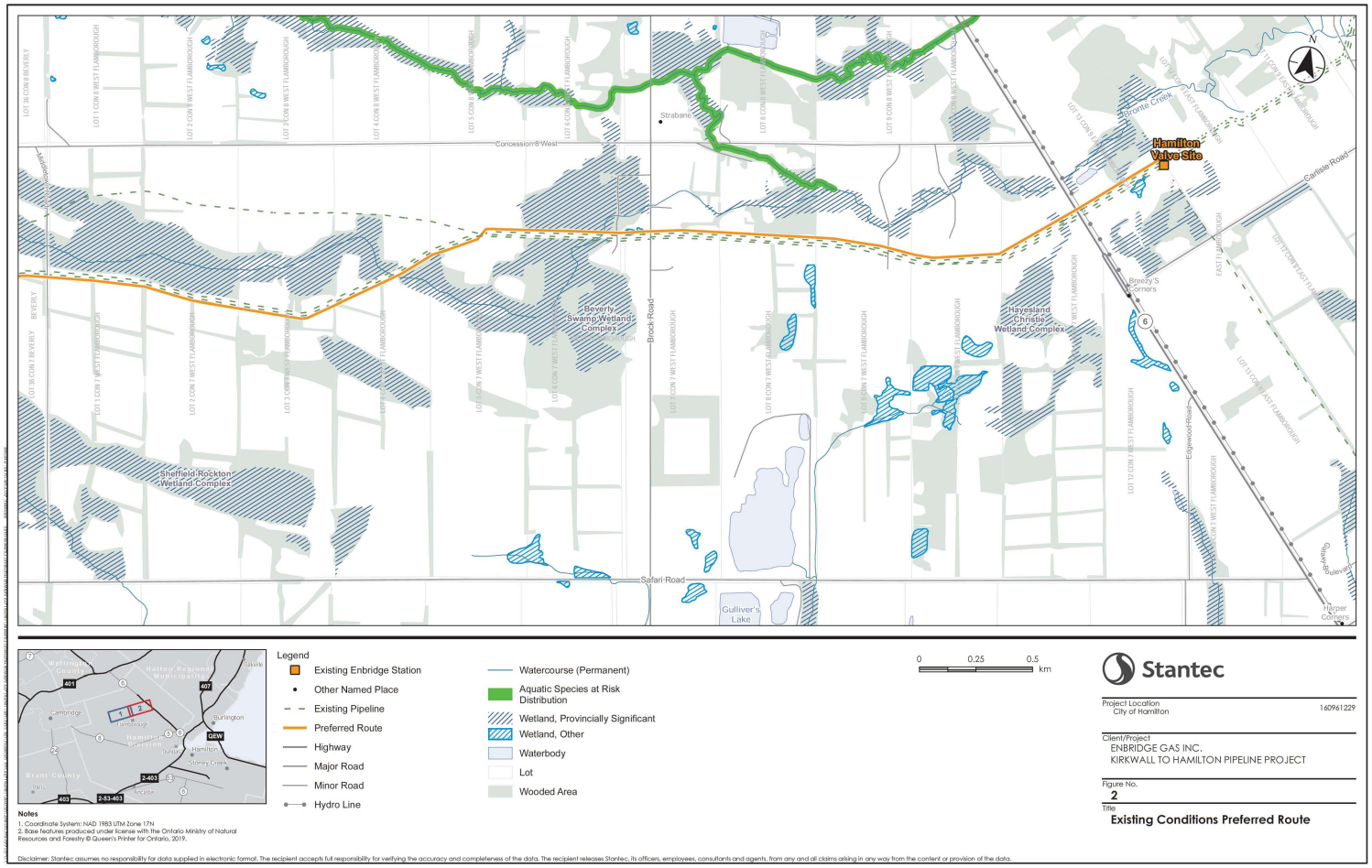
Kirkwall-Hamilton Pipeline Project
Information Session

Existing features



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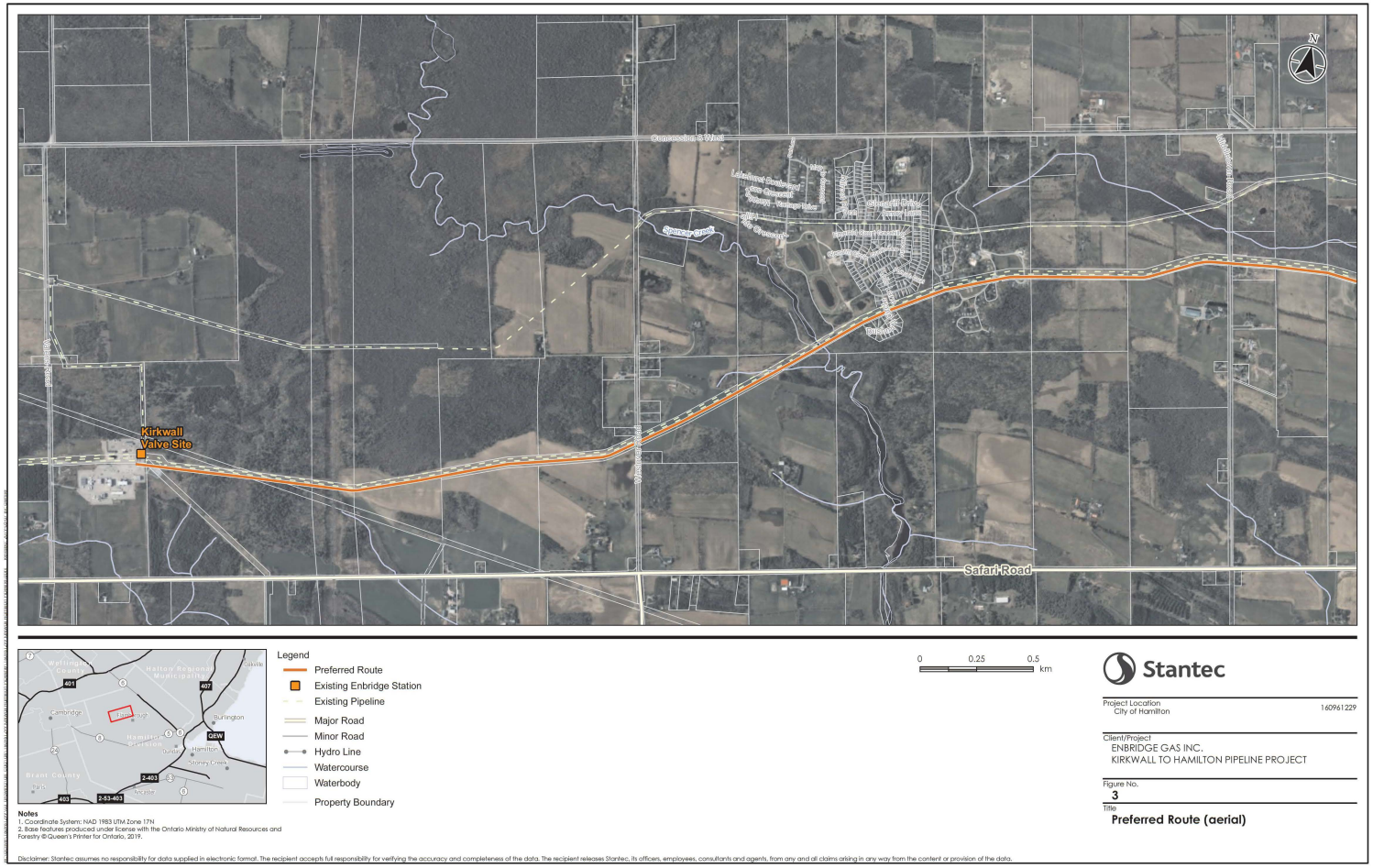
Kirkwall-Hamilton Pipeline Project
Information Session

Preferred route



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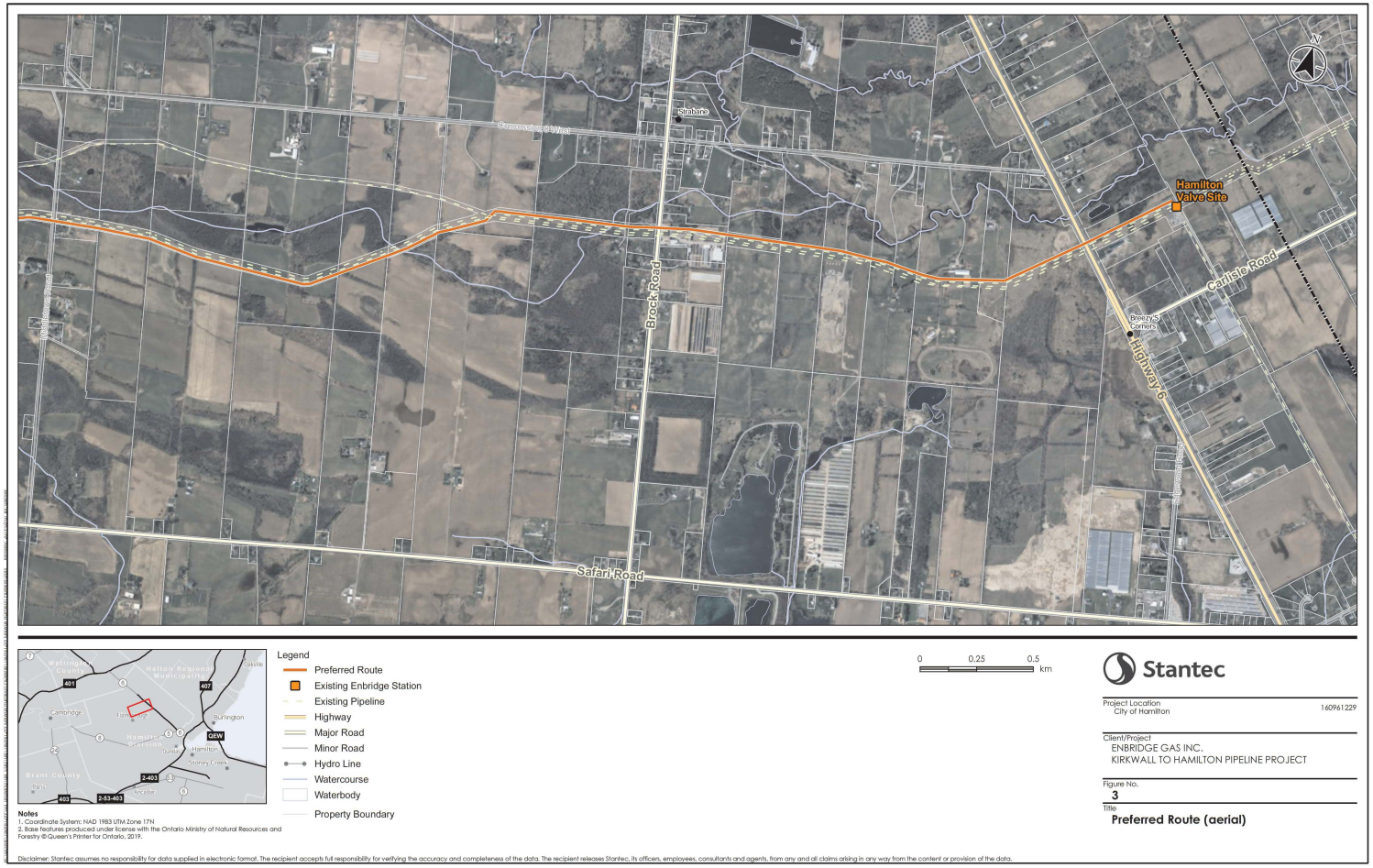
Kirkwall-Hamilton Pipeline Project
Information Session

Preferred route



Stantec

Kirkwall-Hamilton Pipeline Project
Information Session



Access and land requirements

An Enbridge Gas Representive shall begin discussions with landowners along the preferred route following this Information Session for the appropriate land rights necessary to construct the pipeline. Enbridge Gas is committed to working with all directly affected landowners in anticipation of acquiring early access agreements in order to gather essential information, including but not limited to, land survey data, environmental, archaeological and property site features, along with negotiating the necessary land rights. These land rights will consist of permanent easements and/or temporary land rights. The temporary land rights are only required during project construction activities.

Enbridge Gas will ensure that a Land Relations Agent (LRA) is available to each landowner during all pipeline construction activities. The Land Agent will keep all landowners informed of the progress of the project and assist with any concerns that may arise as a result of the construction activities.

Kirkwall-Hamilton Pipeline Project Information Session



Agricultural soils

Enbridge Gas has established and tested measures to preserve the integrity of agricultural soils throughout the construction phase:

- A third-party soils specialist will determine topsoil depth prior to stripping and supervise activities so the proper depth of topsoil is removed and replaced.
- Topsoil will be stripped from the right-of-way and other work areas and stockpiled along the right-of-way. A separation will be maintained between topsoil and subsoil.
- Enbridge Gas will implement a wet soil shutdown protocol on agricultural lands to minimize soil structure damage.
- The subsoil on the stripped portion of the right-of-way will be chisel ploughed or sub-soiled during cleanup activities to alleviate compaction.
- Any agricultural drainage systems impacted by construction will be repaired.
- Enbridge Gas will develop and implement a sampling program on agricultural easements along the pipeline route for potential pests and/or diseases that are known to the area, where appropriate.
- The entire outside boundaries of the work space necessary for construction of the project will be staked at regular intervals.
- A post-construction cover crop program will be available to landowners.

Kirkwall-Hamilton Pipeline Project
Information Session



Maintaining agricultural drainage systems

- Landowners will be contacted prior to construction to confirm the location and type of existing drains. Any future drainage plans will also be discussed with the landowner.
- Field tile will be temporarily re-routed during pre-construction activities where required to ensure proper drainage during construction.
- Damaged and severed drains will be repaired following construction. After repair and prior to backfilling, landowners will be invited to inspect and approve the repair. Any on-going field tile issues resulting from pipeline construction will be addressed by Enbridge Gas as required.

Kirkwall-Hamilton Pipeline Project Information Session

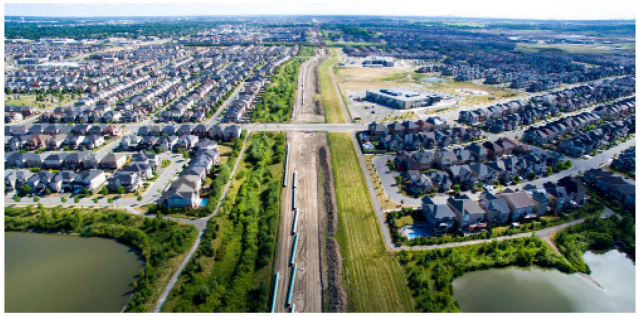


Socio-economic features

The project will be constructed through private business areas, agricultural and residential land, along with land owned by Hydro One and Hamilton Conservation Authority. Land use designations consist of a variety of uses, including agricultural, rural residential and commercial.

Enbridge Gas has extensive experience working in the City of Hamilton on major construction projects, most recently with its Brantford-Kirkwall (2015) and Hamilton-Milton (2016) projects. This project will be constructed to the same standards of care for the local community, working to minimize and mitigate construction impacts.

Kirkwall-Hamilton Pipeline Project Information Session



Socio-economic features

Potential effects

- Temporary increases in noise, dust and air emissions.
- Increased construction traffic volumes.
- Temporary impairment of the use and enjoyment of property.
- Vegetation clearing along the pipeline easement.

Example mitigation measures

- Provide access across the construction area.
- Restrict construction to daylight hours, and adhere to applicable by-laws.
- Develop and implement a Traffic Control Plan.
- Place fencing at appropriate locations for safety.
- Implement a water well monitoring program.
- Making contact information for a designated Enbridge Gas representative available prior to and throughout construction.
- Dust control measures.
- Re-vegetation of cleared areas (seeding/planting).
- Maintain access to properties and work with landowners during temporary access disruptions.
- Regular community updates via newsletter mail-out during construction, and dedicated project web-page with information available prior to and during construction.
- Timing of construction to limit disturbance with consideration for communities and businesses.

Kirkwall-Hamilton Pipeline Project Information Session



Aquatic resources

Enbridge Gas understands the importance of protecting wildlife during construction and therefore will implement recognized mitigation measures to minimize possible environmental effects.

The pipeline crosses 4 known watercourses.

Potential effects

- Disruption and alteration to aquatic species and habitat and/or nuisance effects.
- Increased erosion, sedimentation, and turbidity resulting from removal of vegetation.

Example mitigation measures

- Conduct surveys of waterbodies.
- Obtain all agency permits and approvals.
- Limit in-channel construction, where possible, and conform to fish timing window guidelines.
- For in-channel construction, protect aquatic species and manage sedimentation and turbidity.
- Restore and seed areas to establish habitat and reduce erosion.
- Replant riparian vegetation.

Kirkwall-Hamilton Pipeline Project Information Session



Cultural heritage resources

During the course of construction, cultural heritage features such as archaeological finds, buildings, fences and landscapes may be encountered. Detailed field surveys will be conducted by independent, third-party archaeologists and cultural heritage professionals.

Potential effects

- Damage or destruction of archaeological, paleontological or historical resources.

Example mitigation measures

- Archaeological assessment of the construction right-of-way, with review and comment from the Ministry of Tourism, Culture and Sport (MTCS).
- Cultural heritage assessment (for built heritage features and cultural heritage landscapes) of the construction right-of-way, with review and comment from the MTCS.
- Reporting of any previously unknown archaeological, paleontological or historical resources uncovered, or suspected of being uncovered, during excavation.

Kirkwall-Hamilton Pipeline Project Information Session



Terrestrial resources

During the course of construction, natural heritage features such as wildlife habitat and vegetated/wooded areas will need to be crossed.

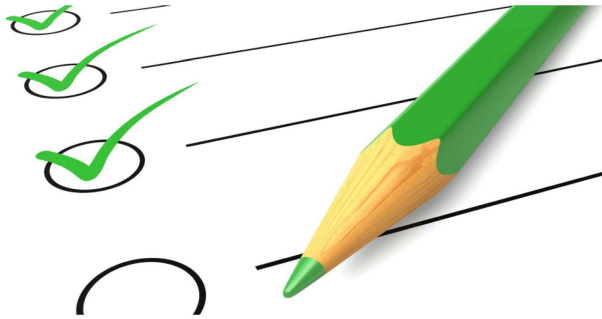
Potential effects

- Damage or removal of vegetation and wildlife habitat adjacent to the construction area.
- Disturbance and/or mortality to local wildlife.

Example mitigation measures

- Conduct surveys (including Species at Risk surveys) in advance of construction to determine opportunities for wildlife habitat to exist.
- Clearly mark the construction area to avoid accidental damage.
- Restore and seed areas to establish habitat and reduce erosion.
- Secure any necessary permits, and follow any conditions of approval.

Kirkwall-Hamilton Pipeline Project Information Session

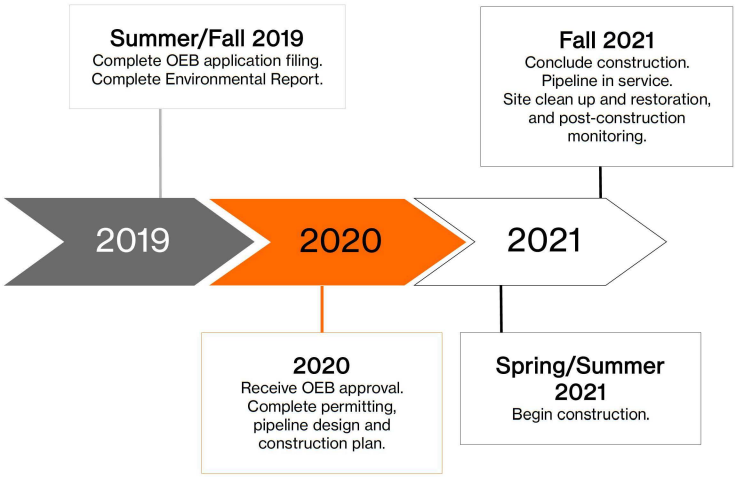


Next steps

Serving hundreds of communities in Ontario, we consider ourselves strong community partners who believe in and are committed to public consultation.

During the planning stages for this Project we have consulted and will continue to consult with local landowners, Indigenous Communities, government agencies and other interested parties that could be impacted by the Project.

After this Information Session, we intend to pursue the following schedule of activities:



Thank you!

On behalf of the Project Team, thank you for attending this Information Session. We appreciate your involvement in the consultation process, and we would like to hear from you.

Please fill out the exit questionnaire. If you have any further comments or questions, please contact:

Michael Candido, Project Manager
Stantec Consulting Ltd.
Phone: 519-780-8139
Email: michael.candido@stantec.com

Enbridge Gas
Phone: 1-855-381-9138
Email: Projects@uniongas.com

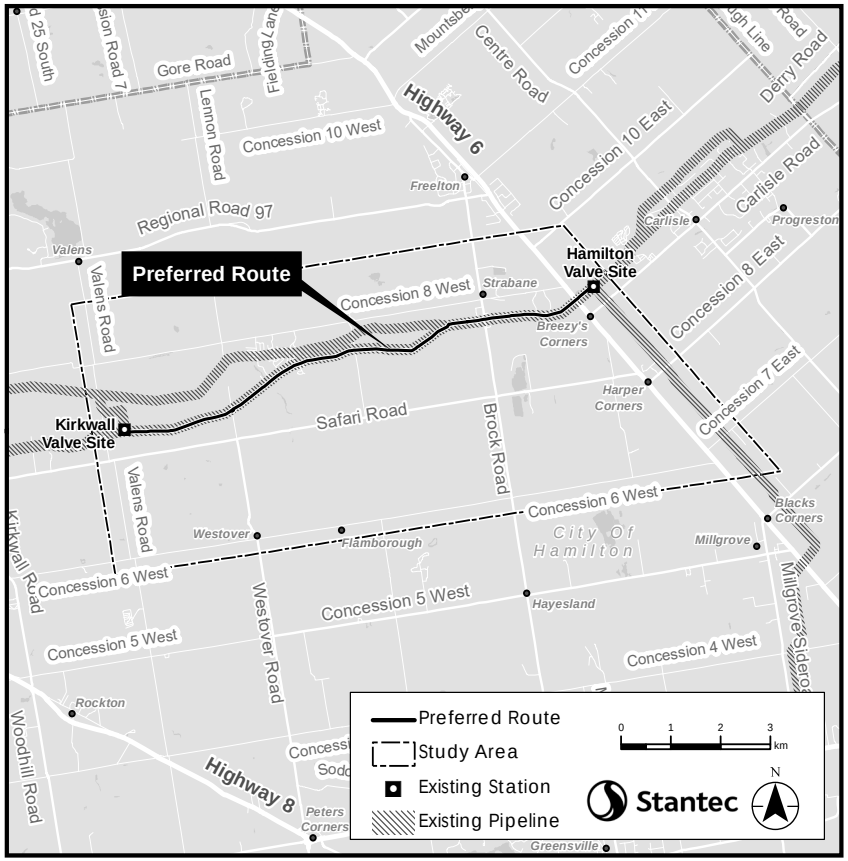
Or visit our project webpage: uniongas.com/Kirkwall-Hamilton

MAY 2019

Enbridge Gas Inc.
Kirkwall - Hamilton Pipeline Project
Information Newsletter

Project Overview

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 preferred route will parallel three existing Enbridge Gas pipelines. The length of the proposed pipeline will be approximately 10 km and will be 48 inches in diameter. If approved, construction of the pipeline could begin as early as spring/summer 2021 and be complete by the end of 2021.



Why is Enbridge Gas undertaking this Project?

Enbridge Gas is undertaking the proposed project to increase existing capacity and accommodate additional demand for natural gas along its main natural gas transmission system, the Dawn Parkway System.

Note: As of Jan. 1, 2019, Union Gas and Enbridge Gas Distribution have amalgamated into one utility with the legal name Enbridge Gas Inc.

Ontario Energy Board Review and Approval Process

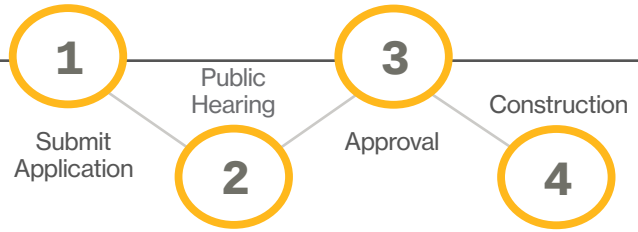
The Ontario Energy Board (OEB) is the body that regulates the natural gas industry in Ontario, in the public's interest. The OEB's approval is required before this pipeline can be constructed.

Enbridge Gas plans to submit an application for this project to the OEB, whose review and approval is needed before this project can proceed. This application will include comprehensive information on the project including: the need for the project, facility alternatives, project costs and economics, pipeline design and construction, environmental mitigation measures, land requirements, and consultation with Indigenous Communities.

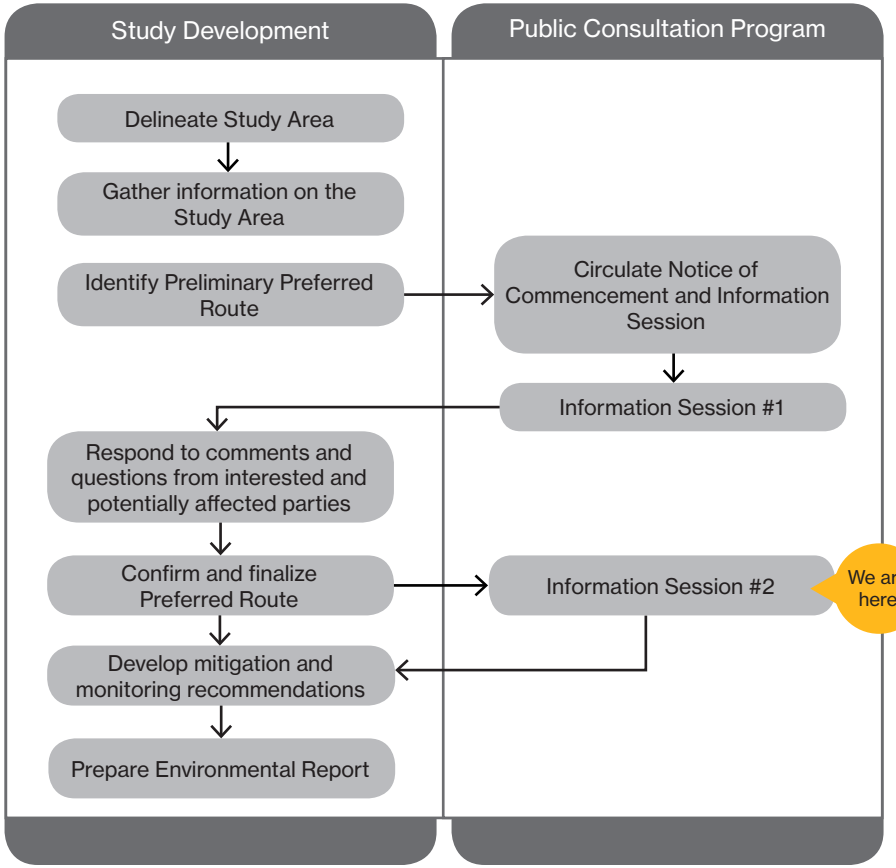
The OEB will then hold a public hearing to review the project. This will include notices in local newspapers, letters to directly affected landowners, the opportunity for the general public and landowners to submit questions regarding the project, a formal hearing, and a written decision regarding the project.

If after this review the OEB determines that the project is in the public's interest it will approve construction of the project. The OEB normally attaches conditions to the approval which Enbridge Gas will comply with during the construction and restoration process.

Additional information about the OEB process and information about how to participate in the OEB hearing process can be found at: www.ontarioenergyboard.ca



Environmental Study Process



Thank You!

On behalf of the Project Team, thank you for your interest in this project. We appreciate your involvement.

If you have any comments or questions please contact:

Michael Candido
Project Manager
Stantec Consulting Ltd.
Phone: (519) 780-8139
Email: michael.candido@stantec.com

Or visit our project webpage: uniongas.com/Kirkwall-Hamilton



Kirkwall-Hamilton Pipeline Project
Information Session Questionnaire – May 9, 2019

Please read the newsletter and look over the displays, and then take a few moments to answer the following questions. Your comments are appreciated. If you require any assistance or clarification while completing the questionnaire please speak with a Stantec or Enbridge Gas representative.

Completed questionnaires can be dropped off at the front table. If you would like additional time to consider your comments, pre-paid envelopes are available at the front table. We request your comments by **May 24, 2019**.

1. **What is your interest in this project?**

   ☐ Directly affected landowner
   ☐ Surrounding landowner
   ☐ Interested citizen
   ☐ Member of interest group
   ☐ Government official
   ☐ Other: _____

2. **Please indicate if the project will have any impacts to you, your property or your business that you would like addressed** (i.e., access, noise, dust, traffic, etc.).

3. **Please identify any features along the Preferred Route that you feel are important to consider during the environmental study.**

4. **Do you have any questions or comments about this project that you would like to bring to our attention?**

5. **Did the content provided at this Information Session meet your needs?**

6. **How did you hear about this Information Session? Check all that apply:**

- ☐ Newspaper Advertisement
- ☐ Project Notification Letter
- ☐ Social Media Post(s)
- ☐ Word of Mouth

Thank you for completing this questionnaire. If you have a question about the project that has not been addressed or for which you would like more information, please provide us with your full contact information so that we can respond to you.

Please Print Clearly

Name: _____

Address: _____

Email: _____

Phone: (_____)_____

Information will be collected and used in accordance with the Freedom of Information and Protection of Privacy Act. This information will be used to assist Enbridge Gas in meeting applicable approval requirements. This material will be maintained on file for use during the study and may be included in project documentation. Unless indicated otherwise, personal information and all comments will become part of the public record and may be publicly released as part of project documentation.

APPENDIX B5:
PROJECT CORRESPONDENCE

Kirkwall-Hamilton Pipeline Project
Correspondence Tracking
Government and Agencies

Comment Number	Stakeholder Group	Stakeholder Representative Name	Method of Communication	Date of Communication	Summary of Comment	Date of Response	Summary of Response
See Appendix B1 and B3	All agencies on contact list		Email	February 12, 2019	Notice of Commencement and Information Session.	N/A	N/A
1	Grand River Conservation Authority (GRCA)	Beth Brown	Email	February 12, 2019	Forwarded the Notice of Commencement and Information Session to Nathan Garland, the planner that covers Hamilton.	February 12 and 13, 2019	Stantec thanked GRCA for the updated contact information.
2	City of Hamilton	Jason Thorne	Email	February 12, 2019	Asking for confirmation on who else at the City of Hamilton the Notice of Commencement and Information Session was sent to and how the public would be notified.	February 13, 2019	Enbridge's District Manager, is conducting the outreach to city staff/council. A message was left with the Mayor's office on Monday. The District Manager has also been attempting to reach the City Manager's office to have a conversation about the project. A letter will be going to Council today. Stantec noted a letter was mailed to all landowners along the pipeline routes on Monday. Letters are being hand delivered today to the residents of Beverly Hills Estates, Antrim Glen and Ponderosa Nature Resort (private communities in proximity to the routes). A Notice of Commencement and Information Session will run in the Hamilton Spectator today and the Flamborough Review tomorrow. A webpage has also been launched www.uniongas.com/Kirkwall-Hamilton
3	Ministry of Transportation (MTO)	Cameron Blaney	Email	February 15, 2019	Indicated he will be point of contact for the project and the project will need an encroachment permit for the Highway 6 section.	February 15, 2019	Stantec thanked MTO for updated contact infomation and noted the project is in the early planning stages and contact will be made once things progress.
4	Conservation Halton (CH)	Cassandra Connolly	Email	February 15, 2019	Unable to attend the February 27, 2019 Information Session. Confirmed a portion of the project will be occurring across lands regulated by CH and a permit will be required. CH would also be involved in the review and comment on the environmental report.	N/A	N/A
5	Hamilton Conservation Authority (HCA)	Darren Kenny	Email	February 22, 2019	In addition to being a landowner of property on and immediately adjacent to the existing and proposed pipeline alignment, the HCA regulates lands within the alignment 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. Written permission will be required from our office for the portions of the new pipeline installation within our regulated area. Enbridge has our regulated area and property mapping available in-house, but you can also access our regulated area mapping from our website at http://conservationhamilton.ca/regulated-areas-map-tool/. Our watershed jurisdiction runs from just east of the Valens Rd valve station to the Beverly Estates/Antrim Glen Park.Requested to be kept updated on the project and consulted for natural heritage and regulatory approval process input as the project develops.	February 25, 2019	Stantec thanked HCA for the information and will keep HCA updated on the project.
6	Grand River Conservation Authority	Nathan Garland	Email	March 18, 2019	Requested the GRCA remains notified of any information pertaining to the EA as it becomes available. Noted that the study area contains natural hazard and natural heritage features including wetland, watercourse, floodplain, slope valley hazards and regulated allowances to these features and are regulated under Ontario Regulation 150/06. Any development may require a Development, Interference with Wetlands and Alterations to Shorelines and Watercourses permit. Advised only a portion of the study area is within GRCA watershed and recommended contacting HCA and CH.		Acknowledged.
See Appendix B1 and B3	All agencies on contact list		Email	April 18, 2019	Notice of Second Information Session	N/A	N/A
7	Hydro One Networks Inc.	Roman Dorfman	Email	May 5, 2019	Tthe proposed pipeline project will effect Hydro One (HONI) distribution line facilities as well as 2 separate transmission line ROW. Attached documents on processes for submitting proposals for review.	May 6, 2019	Stantec thanked HONI for the information and will be in contact in the future.

Kirkwall-Hamilton Pipeline Project
Correspondence Tracking
Indigenous Communities

Comment Number	Community	Community Representative Name	Method of Communication	Date of Communication	Summary of Comment	Date Response Provided	Summary of Response
See Appendix B1	All communities on contact list		Email	February 12, 2019	Notice of Commencement and Information Session	N/A	N/A
1	Haudenosaunee Development Institute (HDI)	Todd Williams	Email	February 13, 2019	Provided updated email address to send future project information to	February 13, 2019	Stantec thanked him for the updated information and will update contact list.
See Appendix B1 and B3	All communities on contact list		Email	April 18, 2019	Notice of Second Information Session	N/A	N/A
2	Haudenosaunee Development Institute (HDI)	Karl Hill	Email	May 3, 2019	The HDI has been legislated by the Haudenosaunee Chiefs Confederacy Council (HCCC) to handle all development issues in Haudenosaunee Treaty Territory. HDI is interested in participating in any archaeological and environmental field work for the project. Enbridge has had initial meeting with HDI/HCCC regarding the project.	May 6, 2019	Stantec requested HDI follow up with Enbridge Gas' Senior Indigenous Affairs Advisor regarding archaeological and environmental field work.

Kirkwall-Hamilton Pipeline Project
Correspondence Tracking
Public, Landowners and Businesses

Comment Number	Stakeholder Group	Method of Communication	Date of Correspondence	Summary of Comment	Date Response Provided	Summary of Response
See Appendix B3	Landowners	Mailout	February 11, 2019	Notice of Commencement and Information Session.	N/A	N/A
See Appendix B3	Residents of Beverly Hills Estates Community, Antrim Glen Community and Ponderosa Nature Resort	Hand delivery	February 13, 2019	Notice of Commencement and Information Session.	N/A	N/A
N/A	Landowner	Phone call	Feburary 19, 2019	Will natural gas distribution to house be available as a result of construction of new pipeline. When will construction start.	February 19, 2019	Stantec responded that Enbridge will be able to answer distribution question at the upcoming Information Session. If the project is approved construction is planned to begin in spring 2021.
1	Member of the public	Email	February 23, 2019	Timing of the start and finish of construction. What other commodity is currently buried in this same property. What other additional safety concerns will this natural gas pipeline present. Re:step down station, what is the unit cost advantage to the consumer of natural gas vs. propane.	February 26, 2019	Stantec responded that if approved, construction of the proposed project could begin in spring/summer 2021 and be completed by the end of 2021. The 3 existing pipelines are carrying natural gas. There will be representatives from Enbridge at the Information Session that can speak to questions regarding safety and cost advantage of natural gas vs. propane. If they cannot attend the Information Session Stantec can gather information on those questions.
2	Resident in nearby community	Email	February 23, 2019	Lives in Antrim Glen community. Currently out of the country, will not be able to attend Feburary 27, 2019 Information Session and requested project details	February 25, 2019	Stantec emailed a letter and map with details regarding the project and noted the display boards from the Information Session would be made available on the project website during the first week of March 2019.
N/A	Landowner	Phone call	Feburary 27, 2019	Spencer Creek expands a lot at crossing location along Route Deviation A2. Wildlife corridor along Alternate Route B through their property. There is a delta on Spencer Creek at the crossing location along Alternate Route B. Offered project team access to property to look at Spencer Creek and flora and fauna.	February 27,2019	Stantec thanked them for the information and documented concerns.
N/A	Landowner	Phone call	February 27,2019	Existing pipeline easement crosses property and they agree with the Preliminray Preferred Route. Route Deviations A1 and A2 look devistating to the environment. Landscape along Route Deviation A2 is very hilly (drumlin). Spencer Creek gets very wide in the spring at the crossing location along Route Deviation A2. Issue with scale and detail of project map provided in letter and on the project website.	February 27,2019	Stantec thanked them for the information about the landscape and Spencer Creek and documented concerns. Encouraged them to attend the Information Session to learn more about the project and inform the project team about property features.

Kirkwall-Hamilton Pipeline Project
Correspondence Tracking
Public, Landowners and Businesses

Comment Number	Stakeholder Group	Method of Communication	Date of Correspondence	Summary of Comment	Date Response Provided	Summary of Response
N/A	Landowner	Phone call	February 28,2019	Route Deviation A2 is very close to their house. Conservation Authority has a vested interest in the property due to due to Spencer Creek drainage. Significant woodlots on property. Archaeological areas on property. Did not receive a Notice of Commencement and Information Session letter.	February 28,2019	Stantec thanked them for the information about property features and documented concerns. Will update the project contact list and add contact information if not already on the list.
N/A	Landowner	Phone call	March 4, 2019	Does not agree with Route Deviations A1 and A2 from an environmental perspective. Would like to meet with Enbridge and Stantec to discuss features on their property with respect to Route Deviation A2.	March 4, 2019	Stantec and Enbridge to discuss potential meeting dates and times and will follow up to set up a meeting. Meeting set for March 15, 2019.
N/A	Resident in nearby community	Phone call	March 5, 2019	Will construction affect road access from Concession Road 8 West to Beverly Hills Community.	March 7, 2019	Stantec responded that based on location of residence, access during construction will not be affected.
N/A	Landowner	Phone call	March 6, 2019	Concerned about affects of Route Deviations A1 and A2 on Christmas Tree farm business, the environment and loss of property enjoyment. Did not receive a Notice of Commencement and Information Session letter.	March 6, 2019	Stantec thanked them for the information and documented concerns. Will update the project contact list and add contact information if not already on the list.
N/A	Landowner	Meeting at Stantec Guelph office	March 13, 2019	Concerned about affects of Route Deviations A1 and A2 on Christmas Tree farm business on property. No herbicides or pesticides are used on the trees. Property has seven fields where Christmas trees are grown. A1 runs through four fields and A2 runs through three fields. Property has other unique features (woodlands, Spencer Creek, ponds, archaeology, walking trails, paddocks). Concerned about loss of property enjoyment. Did not receive a Notice of Commencement and Information Session letter.	March 13, 2019	Stantec thanked them for the information and documented concerns. Confirmed they are on the project contact list however address was incorrect. Address was updated.
N/A	Landowner	Phone call	March 14, 2019	Concerned about Alternate Route B affecting hay production, flora and fauna, artisian springs and livestock. Preference to Preliminary Preferrred Route A. Would like to remain on contact list.	March 14, 2019	Stantec thanked them for the information and documented concerns.
N/A	Landowner	Meeting at landowners residence with Stantec and Enbridge	March 15, 2019	Issues with timing of Information Session notification, scale of map included with notification and location of first Information Session.Would like questionnaire and display boards posted to the project website prior to the second Information Session. With the project in development for over 2 years believes landowners should have been notified sooner. Prefer the Preliminary Preferred Route from an environmental and socio-economic perspective. Route Deviations A1 and A2 are longer in length and would be problematic from an evironmental (Spencer Creek crossing, drumlins, slope, wetlands) and socio-economic perspective (residences, archaeological). Issues with helicopter survey and no ground reconnaissance being completed on the Route Deviations. Provided additional information on the property and associated features.	March 15, 2019	Explained the notification process and will take comments into consideration for second Information Session notification materials. Detailed the general process of how a project is built (geographic need, internal Enbridge project selection process, etc.). Explained the level of detail for data collection during the planning stage regarding environmental/socio economic features (data collected using available data bases) for route selection. As this progresses additional information is received from landowners/stakeholders. Preferred Route is selected and more detailed data is collected on the preferred route. The OEB approvals process was also discussed.

Kirkwall-Hamilton Pipeline Project
Correspondence Tracking
Public, Landowners and Businesses

Comment Number	Stakeholder Group	Method of Communication	Date of Correspondence	Summary of Comment	Date Response Provided	Summary of Response
N/A	Landowner	Phone call	March 28, 2019	Was unable to attend the February 27, 2019 Information Session. Concerned about the affect Alternate Route B would have on a high voltage, underground powerline that runs from the road to his house. Spencer Creek on his property is under Conservation Authority ownership. Asked how the pipeline would cross Spencer Creek. Landowners along Alternate Route B are hiring a lawyer.	March 28, 2019	Stantec thanked them for infomration and documented concerns. Explained the two potential creek crossing methods of open cut crossing and horizontal directional drilling and a crossing method has not been chosen. Based on feedback form the public, Preliminary Preferred Route is preferred by most. Another Information Session will be held in early May.
See Appendix B3	Landowners	Mailout	April 17, 2019	Notice of Second Information Session.	N/A	N/A
See Appendix B3	Residents of Beverly Hills Estates Community, Antrim Glen Community and Ponderosa Nature Resort	Hand delivery	April 22, 2019	Notice of Second Information Session. **Letters were given Ponderosa Nature Resort management to distibute to residents.*	N/A	N/A
N/A	Landowner	Phone call	April 26, 2019	Concerned about access to fields for horses to graze and to harvest hay during construction. Films are shot on property and noted potential loss of income. Noted large size of trench during 1991 construction. Questions regarding timing of construction and compensation. Unable to attend May 9, 2019 Information Session.	April 26, 209	Stantec responded that Enbridge will work with landowner regarding field access during construction. Construction would begin in spring 2021 if the project is approved. Stantec passed along contact information and concerns of landowner to Enbridge regarding compensation.
N/A	Landowner	Phone call	April 26, 2019	Landowner observed paint markings on fields. Was not upset but was curious why they were not contacted prior to survey work.	April 26, 209	Stantec passed along contact information and concerns to Enbridge.
See Appendix B5 for questionnaires received from the first and second Information Sessions.						

From:	Nathan Garland
To:	Candido, Mike; Beth Brown
Subject:	RE: Enbridge Gas Inc. Notice of Commencement and Information Session: Kirkwall-Hamilton Pipeline Project
Date:	Friday, February 15, 2019 9:12:29 AM

Nathan Garland
Resource Planner
Grand River Conservation Authority
400 Clyde Road, Cambridge, ON N1R 5W6

ngarland@grandriver.ca
Direct Line: 519.621.2763 x 2237
Office: 1.866.900.4722
Fax: 519.621.4945

Nathan Garland
519.621.2763 x 2237

From: Candido, Mike [mailto:michael.candido@stantec.com]
Sent: Wednesday, February 13, 2019 9:16 AM
To: Beth Brown
Cc: Nathan Garland
Subject: RE: Enbridge Gas Inc. Notice of Commencement and Information Session: Kirkwall-Hamilton Pipeline Project

Good morning. As a follow up, Beth I will remove you from the contact list.

Nathan I will add you to the list for all future notifications. Can you please send me your contact information and title. 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

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From: Candido, Mike
Sent: Tuesday, February 12, 2019 5:31 PM

To: 'Beth Brown' <bbrown@grandriver.ca>
Cc: Nathan Garland <ngarland@grandriver.ca>
Subject: RE: Enbridge Gas Inc. Notice of Commencement and Information Session: Kirkwall-Hamilton Pipeline Project

Thanks Beth.

Mike

From: Beth Brown <bbrown@grandriver.ca>
Sent: Tuesday, February 12, 2019 4:44 PM
To: Candido, Mike <michael.candido@stantec.com>
Cc: Nathan Garland <ngarland@grandriver.ca>
Subject: RE: Enbridge Gas Inc. Notice of Commencement and Information Session: Kirkwall-Hamilton Pipeline Project

Hello – I have forwarded your message to Nathan Garland, our Planner that covers Hamilton.

Sincerely,
Beth Brown
Supervisor of Resource Planning - Central
Grand River Conservation Authority
P.O. Box 729 (mailing address)
400 Clyde Road, Cambridge, Ontario N1R 5W6
Phone: (519) 621-2763 ext. 2307
Toll Free: 1-866-900-4722
Fax: (519) 621-4945
Website: www.grandriver.ca

From: Candido, Mike [mailto:michael.candido@stantec.com]
Sent: Tuesday, February 12, 2019 4:20 PM
To: Beth Brown
Subject: Enbridge Gas Inc. Notice of Commencement and Information Session: Kirkwall-Hamilton Pipeline Project

Hello. Please find attached the Notice of Commencement and Information Session for the Kirkwall-Hamilton Pipeline Project.

Regards,

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

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From: Candido, Mike
To: "Thorne, Jason"
Subject: RE: Enbridge Gas Inc. Notice of Commencement and Information Session: Kirkwall-Hamilton Pipeline Project
Date: Wednesday, February 13, 2019 9:56:00 AM
Attachments: image001.jpg

Good morning Jason. Enbridge's District Manager, Mark Egbedeyi-Emmanuel, is conducting the outreach to city staff/council. A message was left with the Mayor's office on Monday. Mark has also been attempting to reach the City Manager's office to have a conversation about the project. A letter will be going to Council today.

A letter was mailed to all landowners along the pipeline routes on Monday. Letters are being hand delivered today to the residents of Beverly Hills Estates, Antrim Glen and Ponderosa Nature Resort (private communities in proximity to the routes).

A notice of commencement and information session will run in the Hamilton Spectator today and the Flamborough Review tomorrow. A webpage has also been launched www.uniongas.com/Kirkwall-Hamilton

Please let me know if you have any additional questions.

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

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From: Thorne, Jason <Jason.Thorne@hamilton.ca>
Sent: Wednesday, February 13, 2019 8:50 AM
To: Candido, Mike <michael.candido@stantec.com>
Subject: RE: Enbridge Gas Inc. Notice of Commencement and Information Session: Kirkwall-Hamilton Pipeline Project

Michael, it appears I was the only recipient of this letter. Can you confirm who else at the City of Hamilton you have sent this notification to, and how you will be notifying the public?

From: Candido, Mike [mailto:michael.candido@stantec.com]

Sent: February-12-19 4:19 PM
To: Thorne, Jason
Subject: Enbridge Gas Inc. Notice of Commencement and Information Session: Kirkwall-Hamilton Pipeline Project

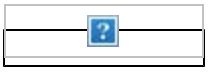
Hello. Please find attached the Notice of Commencement and Information Session for the Kirkwall-Hamilton Pipeline Project.

Regards,

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



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From:	Blaney, Cameron (MTO)
To:	Candido, Mike
Subject:	RE: Enbridge Gas Inc. Notice of Commencement and Information Session: Kirkwall-Hamilton Pipeline Project
Date:	Friday, February 15, 2019 12:09:24 PM
Attachments:	image002.jpg image003.jpg

For this project yes you can remove Tony from the contact list, I can help you going forward.

Cameron Blaney l Corridor Management Officer l Enchroachments Niag/Ham/Halt
Central Region l 159 Sir William Hearst Avenue l Ministry of Transportation
7th Floor, Building D l Downsview, Ontario l M3M 0B7
416-235-4387
Cameron.Blaney@ontario.ca

From: Candido, Mike [mailto:michael.candido@stantec.com]
Sent: February 14, 2019 2:17 PM
To: Blaney, Cameron (MTO) <Cameron.Blaney@ontario.ca>
Subject: RE: Enbridge Gas Inc. Notice of Commencement and Information Session: Kirkwall-Hamilton Pipeline Project

Hi Cameron. I will add you to the contact list. Can you please confirm if Tony Di Fabio should be removed from future project notifications. The project is in the early planning stages and I will reach out to you once things progress. Thanks.

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

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1-70 Southgate Drive
Guelph ON N1G 4P5

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From: Blaney, Cameron (MTO) <Cameron.Blaney@ontario.ca>
Sent: Wednesday, February 13, 2019 4:30 PM
To: Candido, Mike <michael.candido@stantec.com>
Subject: RE: Enbridge Gas Inc. Notice of Commencement and Information Session: Kirkwall-Hamilton

Pipeline Project

Hello Michael,

I received info that you are going to start investigating a 48” pipeline project that is proposed to cross near Hwy 6 and Carlisle Rd as a part of the Kirkwall-Hamilton Pipeline Project. I am working as the Encroachment Permit Officer in the MTO Corridor Management Office and will be your point of contact for the Ministry.

This work will need an encroachment permit and I can help to get the ball rolling to obtain that permit. Let me know if you need any info or have any questions regarding the Hwy 6 section of your project.

Cameron Blaney l Corridor Management Officer l Enchroachments Niag/Ham/Halt
Central Region l 159 Sir William Hearst Avenue l Ministry of Transportation
7th Floor, Building D l Downsview, Ontario l M3M 0B7
416-235-4387
Cameron.Blaney@ontario.ca

From: Della Mora, Dan (MTO)
Sent: February 13, 2019 10:54 AM
To: Blaney, Cameron (MTO) <Cameron.Blaney@ontario.ca>
Subject: FW: Enbridge Gas Inc. Notice of Commencement and Information Session: Kirkwall-Hamilton Pipeline Project

Hi Cameron,

Please take the lead on this one.

Thanks,
Dan

From: Di Fabio, Tony (MTO)
Sent: February 13, 2019 8:15 AM
To: Hewitt, Tom (MTO) <Tom.Hewitt@ontario.ca>; Della Mora, Dan (MTO) <Dan.DellaMora@ontario.ca>
Subject: FW: Enbridge Gas Inc. Notice of Commencement and Information Session: Kirkwall-Hamilton Pipeline Project

FYI

Tony Di Fabio
Team Lead
Highway Corridor Management Section, Head Office
Ministry of Transportation

Tel. (905) 704-2656

email HMCS logo

From: Candido, Mike [mailto:michael.candido@stantec.com]
Sent: February-12-19 4:34 PM
To: Di Fabio, Tony (MTO) <Tony.DiFabio@ontario.ca>
Subject: Enbridge Gas Inc. Notice of Commencement and Information Session: Kirkwall-Hamilton Pipeline Project

Hello. Please find attached the Notice of Commencement and Information Session for the Kirkwall-Hamilton Pipeline Project.

Regards,

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

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From:	Cassandra Connolly
To:	Candido, Mike
Subject:	RE: Enbridge Gas Inc. Notice of Commencement and Information Session: Kirkwall-Hamilton Pipeline Project
Date:	Friday, February 15, 2019 10:44:20 AM

Hi Michael,

Thank you for providing me with the Notice of Commencement and Information Session for the Kirkwall-Hamilton Pipeline Project. While I will not be in attendance for the upcoming Information Session, based on the Route Map provided I can confirm that a portion of the project will be occurring across lands regulated by Conservation Halton and will require a Permit(s) to be issued by our Authority. Conservation Halton would also be involved in the review and comment on the environmental study to be completed.

I look forward to working with you on this project.

Regards,

Cassandra Connolly
Regulations Officer

Conservation Halton
2596 Britannia Road, Burlington, ON L7P 0G3
905-336-1158 ext. 2301 | cconnolly@hrca.on.ca

From: Candido, Mike <michael.candido@stantec.com>
Sent: February 12, 2019 4:19 PM
To: Cassandra Connolly <cconnolly@hrca.on.ca>
Subject: Enbridge Gas Inc. Notice of Commencement and Information Session: Kirkwall-Hamilton Pipeline Project

Hello. Please find attached the Notice of Commencement and Information Session for the Kirkwall-Hamilton Pipeline Project.

Regards,

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

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From:	Candido, Mike
To:	"Kenny, Darren"
Cc:	Hall, Matthew - HCA
Subject:	RE: Notice of Commencement for Kirkwall to Hamilton Pipeline Project
Date:	Monday, February 25, 2019 9:26:00 AM

Good morning Darren. Thanks for the information. I will be sure to keep you updated on the project as things develop. 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

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1-70 Southgate Drive
Guelph ON N1G 4P5

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From: Kenny, Darren <Darren.Kenny@conservationhamilton.ca>
Sent: Friday, February 22, 2019 11:13 AM
To: Candido, Mike <michael.candido@stantec.com>
Cc: Hall, Matthew - HCA <MatthewJames.Hall@conservationhamilton.ca>
Subject: Notice of Commencement for Kirkwall to Hamilton Pipeline Project

Mr. Candido,

Our office has recently received the notice for this project.

Please be advised that in addition to being a landowner of property on and immediately adjacent to the existing and proposed pipeline alignment, the Hamilton Conservation Authority (HCA) regulates lands within the alignment 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.* Written permission will be required from our office for the portions of the new pipeline installation within our regulated area. Enbridge has our regulated area and property mapping available in-house, but you can also access our regulated area mapping from our website at http://conservationhamilton.ca/regulated-areas-map-tool/. Our watershed jurisdiction runs from just east of the Valens Rd valve station to the Beverly Estates/Antrim Glen

Park.

We request that we be kept updated on the project and consulted for natural heritage and regulatory approval process input as the project develops. I would be the main HCA contact for the project going forward.

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

Hamilton Conservation Authority
A Healthy Watershed for Everyone

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From: Jenn Simons
To: Candido, Mike
Subject: Kirkwall-Hamilton Pipeline Project
Date: Monday, March 18, 2019 2:16:03 PM
Attachments: Kirkwall-Hamilton Pipeline Project- scanned comments.pdf

---

Good afternoon,

Please find attached a scanned copy of GRCA comments for the file noted above. A hard copy will follow by regular mail.

Kind regards,

Jenn Simons
Resource Planning Technician
Grand River Conservation Authority
400 Clyde Road
Cambridge, ON N1R5W6
P: (519) 621-2763 x2236
F: (519) 621-4844
www.grandriver.ca

400 Clyde Road, P.O. Box 729 Cambridge, ON N1R 5W6

Phone: 519.621.2761 **Toll free:** 866.900.4722 **Fax:** 519.621.4844 **Online:** www.grandriver.ca

March 18, 2019

Cathy Plosz
Natural Heritage Planner,
Planning and Economic Development Department
City of Hamilton
71 Main St. West, 5th Floor,
Hamilton, ON L8P 4Y5

Mr. Michael Candido
Project Engineer
Stantec Consulting
1-70 Southgate Drive
Guelph ON, N1G 4P5

Dear Ms. Plosz and Mr. Candido

Re: City of Hamilton – Enbridge Gas Inc. Kirkwall-Hamilton Pipeline Project Environmental Assessment
Notice of Commencement and Information Session

Thank-you for circulating our office the Notice of Study Commencement and Information Session for Enbridge Gas Inc. Kirkwall-Hamilton Pipeline Project (EA). We request that our office remains notified of any information pertaining to the EA as it becomes available.

The study area contains natural hazard and natural heritage features including wetland, watercourses, floodplain, slope valley hazards and the regulated allowances to these features.

These features and their allowances are regulated under Ontario Regulation 150/06. Any future development within the regulated areas may require the issuance of a Development, Interference with Wetlands and Alterations to Shorelines and Watercourses permit from GRCA. A copy of our resource mapping is attached for your reference.

Please be advised that only a portion of the study area is within the GRCA watershed and recommend contacting Hamilton Conservation Authority and Halton Conservation Authority.

Should you have any further questions or comments, please contact me ext. 2237.

Yours truly,

Nathan Garland
Resource Planner
Grand River Conservation Authority
NG/js

Member of Conservation Ontario, representing Ontario's 36 Conservation Authorities ■ The Grand – A Canadian Heritage River

From:	Candido, Mike
To:	"Roman.Dorfman@HydroOne.com"
Cc:	Daniel.King-Costa@HydroOne.com
Subject:	RE: Kirkwall-Hamilton Pipeline Project
Date:	Monday, May 6, 2019 2:19:00 PM

Thanks for the information Roman. I will be in touch in the near future.

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

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From: Roman.Dorfman@HydroOne.com <Roman.Dorfman@HydroOne.com>
Sent: Monday, May 6, 2019 8:55 AM
To: Candido, Mike <michael.candido@stantec.com>
Cc: Daniel.King-Costa@HydroOne.com
Subject: Kirkwall-Hamilton Pipeline Project

Michael, based on the attached submission received by our office in April (attached), the proposed pipeline project will effect Hydro One (HONI) distribution line facilities as well as 2 separate transmission line ROW as follows:

- HONI easement ROW - see process for submitting proposals for review
- Provincially owned HONI ROW (Bill 58 lands) - see process for submitting proposals for review

Please forward all requirements c/o me or Daniel King Cost (cc'd) and please note that paper copies of drawings are not required

Thank you

Roman Dorfman
Real Estate Services Supervisor,
Facilities and Real Estate Services

Hydro One Networks Inc.

185 Clegg Road
Markham, ON | L6G 1B7

Tel: 905.946.6243
Cell: 416.433.8777
Fax: 905.946.6242
Email: roman.dorfman@hydroone.com

www.HydroOne.com

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From:	Candido, Mike
To:	"Todd Williams"
Cc:	HDI; HDI Tracy; Ken
Subject:	RE: Enbridge Gas Inc. Notice of Commencement and Information Session: Kirkwall-Hamilton Pipeline Project
Date:	Wednesday, February 13, 2019 10:35:00 AM

Thanks Todd. I will update my contact list.

From: Todd Williams <williams.todde@gmail.com>
Sent: Wednesday, February 13, 2019 10:29 AM
To: Candido, Mike <michael.candido@stantec.com>
Cc: HDI <hdi2@bellnet.ca>; HDI Tracy <traceyghdi@gmail.com>; Ken <kmccorkle@uniongas.com>
Subject: Re: Enbridge Gas Inc. Notice of Commencement and Information Session: Kirkwall-Hamilton Pipeline Project

Good morning Mike,

Thanks for the notice on the upcoming Enbridge Gas project,

Please direct future project information directly to HDI: hdi2@bellnet.ca

Thanks,

Todd E. Williams, P.Eng
Monitoring Program Coordinator
Haudenosaunee Development Institute (HDI)
Haudenosaunee Confederacy Chiefs Council (HCCC)
Six Nations of the Grand River Territory
O: 519-445-4222
M: 519-761-1794
https://www.haudenosauneeconfederacy.com/

On Tue, Feb 12, 2019 at 4:05 PM Candido, Mike <michael.candido@stantec.com> wrote:

> Hello. Please find attached the Notice of Commencement and Information Session for the Kirkwall-Hamilton Pipeline Project.
>
> Regards,
>
> **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

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From: Candido, Mike
To: Karl Hill
Cc: Todd Williams; Ken McCorkle; Ryan Park
Subject: RE: Enbridge Gas Pipeline Project - Notice of Second Information Session - Kirkwall Hamilton Pipeline Project
Date: Monday, May 6, 2019 9:20:00 AM

Good morning Karl. Can you please follow up with Ken McCorkle (cc'd) from Enbridge Gas regarding archaeology and environmental fieldwork. 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

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From: Karl Hill <karl.j.hill@gmail.com>
Sent: Friday, May 3, 2019 1:45 PM
To: Candido, Mike <michael.candido@stantec.com>
Cc: Todd Williams <williams.todde@gmail.com>
Subject: Re: Enbridge Gas Pipeline Project - Notice of Second Information Session - Kirkwall Hamilton Pipeline Project

Good afternoon Mike,

The Haudenosaunee Development Institute (HDI) has been legislated by the Haudenosaunee Chiefs Confederacy Council (HCCC) to handle all development issues in Haudenosaunee Treaty Territory. HDI is interested in participating in any Archaeological field work, as well as any Environmental Field work for the project.
Enbridge Gas Inc. has had initial meeting with HDI/HCCC regarding Kirkwall Hamilton Pipeline project.

Best Regards,

Karl Hill
HDI Environmental
Office: 519-445-4222

Cell: 226-922-1823

On Thu, Apr 18, 2019 at 4:15 PM Candido, Mike <michael.candido@stantec.com> wrote:

> Hello. Please find attached the Notice of Second Information Session - Kirkwall Hamilton Pipeline Project.
>
> Regards,
>
> **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
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> 
>
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From: Candido, Mike
To:
Subject: RE: Potential installation of a Natural Gas Line
Date: Tuesday, February 26, 2019 9:31:00 AM

Hello and thank you for your questions.

A. If approved, construction of the proposed project could begin in spring/summer 2021 and be completed by the end of 2021.
B. The 3 existing pipelines are carrying natural gas.

Will you be attending the information session on February 27? There will be representatives at the information session that you can speak to regarding questions C and D. If you cannot attend please let me know and I will gather information on those 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

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Guelph ON N1G 4P5

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From:
Sent: Saturday, February 23, 2019 10:09 PM
To: Candido, Mike <michael.candido@stantec.com>
Subject: Potential installation of a Natural Gas Line

Thank you for the opportunity to pose the following questions
A) Timing for the start and finish of the project
B) What other commodity is currently buried in this same property
C) What other additional safety concern will this Natural Gas pipeline present
D) RE: step down station, what is the unit cost advantage to the consumer of Natural Gas V.s Propane

Thank you;

From:
To: Candido, Mike
Subject: Re: Gas pipeline through Antrum Glen
Date: Monday, February 25, 2019 10:22:24 AM

Thank you for your response

Sent from iPhone

> On Feb 25, 2019, at 14:42, Candido, Mike <michael.candido@stantec.com> wrote:
>
> Hello Please find attached a letter and map with details regarding the proposed project that was send to residents in proximity to the proposed pipeline routes. The information from the public meeting should be available on the project website during the first week of March. https://www.uniongas.com/Kirkwall-Hamilton
>
> Please let me know if you have any additional questions. My contact information can be found below. 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
>
>
>
>
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>
>
>
> -----Original Message-----
> From:
> Sent: Saturday, February 23, 2019 10:58 AM
> To: Candido, Mike <michael.candido@stantec.com>
> Subject: Gas pipeline through Antrum Glen
>
> Mr Candido
> Sir;
> We are at present out of the country and have just heard of the pipeline. Are you able to give me some details of the proposal? I will not be back for the meeting on February 27.
> Thank you
>
>
> Sent from iPhone

> <let_NoCIS_landowners-generic_20190213_fin.pdf>

Stantec

Kirkwall-Hamilton Pipeline Project
Information Session Questionnaire – February 27, 2019

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Completed questionnaires can be dropped off at the front table. If you would like additional time to consider your comments, pre-paid envelopes are available at the front table. We request your comments by **March 15, 2019**.

1. **What is your interest in this project?**

   ☐ Directly affected landowner
   ☑ Surrounding landowner
   ☐ Interested citizen
   ☐ Member of interest group
   ☐ Government official
   ☐ Other: _____

2. **Please indicate if the project will have any impacts to you, your property or your business that you would like addressed** (i.e., access, noise, dust, traffic, etc.).

   Access to Bushmill Circle
   in Construction Phase

3. **Please identify any features along the Preliminary Preferred Route that you feel are important to consider during the environmental study.**

4. **Do you have any questions or comments about this project that you would like to bring to our attention?**

5. **Did the content provided at this Information Session meet your needs?**

Yes

6. **How did you hear about this Information Session? Check all that apply:**

- [ ] Newspaper Advertisement
- [x] Project Notification Letter
- [ ] Social Media Post(s)
- [ ] Word of Mouth

Thank you for completing this questionnaire. If you have a question about the project that has not been addressed or for which you would like more information, please provide us with your full contact information so that we can respond to you.

Please Print Clearly

Name:

Address:

Email:

Phone:

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Notification and Meeting

Some questions of concern regarding the process.

Why was the project not communicated to affected landowners until a week before the meeting date? My neighbor did not get a notification.

Why was the meeting in Carlisle. The landowners affected live west of Highway six. Valens, Westover, Millgrove, and Beverly Hills all have community halls.

The weather on the day of the meeting was very poor. My most immediate neighbors could not get out of their driveways. Was a second meeting considered?

Why was the route map showing the alternate route loops 1A and 1B not clearly defined in the mailing?

Why wasn't the "Session Questionaire" not mailed with the notification for those who couldn't attend. We had to photo copy ours so the neighbors knew.

Why were the "Storyboards" not posted on the website before the meeting so we could read them in advance and ask more pertinent questions?

Most importantly, since the project has been in the works for 2+ years, and conceivably could directly affect the houses and lives of a number of long term residents, why were we not informed earlier.

Route A The "Preliminary Preferred Route"

Already two pipelines are in the ground on the existing easement (1968,1991).

All technical data on the terrain, depth to bedrock., bedrock topology and characteristics, wetland areas, areas that may need blasting is already known and on file.

Sensitive environmental areas, and woodlots adjacent to the easement are documented.

The important crossing of the Spencer Creek has already been done twice . All data on the difficulties and environmental mitigation measures are known at the crossing point.

The pipeline follows the most direct path possible and avoids geographic features. It is the lowest topographic route.

The easement predates the existence of Antrim Glen. Those who purchased would have been notified of the existing easement.

The historical route was initially selected so that it travelled at the rear of rural farm property lines, away from existing houses and barns.

No substantial new environmental degradation will be necessary. The easement goes through previously disturbed areas.

Route Deviations A1 and A2

These deviations were established as a result of a helicopter survey done 2 years ago. No ground reconnaissance has been undertaken. According to your documents, their stated goal was to minimize the impacts on Antrim Glen and the Ponderosa Nature Resort.

The existing easement predated the construction of Antrim Glen. Ponderosa is supposed to be a "seasonal park".

Since the easement goes through both of these properties, they are fully aware that there may be future work on the pipeline.

A1 or A2 would represent a new route with many more challenges

---

The "Route Evaluation Methodology" has a 5 step process according to your "Story Boards". Step 5 is the "Confirmation of the Route" which is to be done in early May. At that point the route is established. We are now at step 4 "Input of the Preliminary Preferred Route".
However, Step 3 states that "An evaluation of the Alternate Routes will be based on:

a) A **quantitative** comparative evaluation of impacts to environmental and socio-economic features.
b) A qualitative comparison evaluation.

Once complete, a preliminary preferred route will be determined."
Where are these studies?

With either route, new easements will have to be negotiated.

A2 is much longer and extremely problematic from both an environmental and socio-economic point of view.

The route goes through an area of the Butler property that required extensive blasting in 1990-91.

It crosses the southern slope of one of the best examples of a glacial drumlin in Ontario. This has an ANSI designation and would likely obliterate the well preserved Lake Whittlesey wave cut terrace, now so well preserved.

It passes directly behind our residence, an historic Flamborough farm house and barn.

By necessity it would traverse the steeper Stoss slope to the Spencer Creek.
It would cross the Spencer Creek where it is very wide and has extensive wetland, probably the worst place possible to make minimum ecological damage.

It would pass very close to two residences,one on the west and one on the east side of the creek.

It would then have to cross a smaller drumlin to the east.

The amount of environmental and topographic degradation would be very substantial. The social impact would be devastating.

Many indigenous artifacts have been found along the banks of the Spencer Creek in this area. An extensive ossuary was found on lot 34. The area was the site of 'Tinawatawa', a Neutral Iroquois settlement. Artifacts and skeletons were found in digs as recent as 1968, and are part of the Dwyer collection at the ROM. This would necessitate special investigation.

There are other alternate routes , avoiding topographic, environmental, cultural and historical issues.

Stantec

Kirkwall-Hamilton Pipeline Project
Information Session Questionnaire – February 27, 2019

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1. **What is your interest in this project?**

   ☑ Directly affected landowner
   ☐ Surrounding landowner
   ☐ Interested citizen
   ☐ Member of interest group
   ☐ Government official
   ☐ Other: _____

2. **Please indicate if the project will have any impacts to you, your property or your business that you would like addressed** (i.e., access, noise, dust, traffic, etc.).

   - Crossing Spencer Creek
   - Fault problem 100 M from pipeline crossing 1999 or 50 = 2 M depth rock
   - Wildlife Corridor
   - Drumlins
   - Conservation Land

3. **Please identify any features along the Preliminary Preferred Route that you feel are important to consider during the environmental study.**

   Present line has already changed the environment why make another disturbance

4. **Do you have any questions or comments about this project that you would like to bring to our attention?**

   Use the pipeline route
   Increase wall thickness
   Reduce impacts on Spencer Creek
   Stay on right of way
   Our concern is not as a NIMBY but why do more disturbing of the environment by changing the course of the pipeline

5. **Did the content provided at this Information Session meet your needs?**

Well done

6. **How did you hear about this Information Session? Check all that apply:**

- [x] Newspaper Advertisement
- [x] Project Notification Letter
- [ ] Social Media Post(s)
- [ ] Word of Mouth

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Address: _____

Email: _____

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   ☐ Interested citizen
   ☐ Member of interest group
   ☐ Government official
   ☐ Other: _____

2. **Please indicate if the project will have any impacts to you, your property or your business that you would like addressed** (i.e., access, noise, dust, traffic, etc.).

   DUST & DIRT FROM BLASTING AND DIGGING

3. **Please identify any features along the Preliminary Preferred Route that you feel are important to consider during the environmental study.**

   IF AT ALL WE COULD GET A REDUCTION STATION SO WE COULD GET NATURAL GAS SERVICE. THERE ARE ABOUT 500 HOMES IN THIS AREA

4. **Do you have any questions or comments about this project that you would like to bring to our attention?**

5. **Did the content provided at this Information Session meet your needs?**

6. **How did you hear about this Information Session? Check all that apply:**

- ☐ Newspaper Advertisement
- ☑ Project Notification Letter
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   ☒ Directly affected landowner
   ☐ Surrounding landowner
   ☐ Interested citizen
   ☐ Member of interest group
   ☐ Government official
   ☐ Other: _____

2. **Please indicate if the project will have any impacts to you, your property or your business That you would like addressed (i.e. access, noise, dust, traffic, etc.)**

The project, if either the A1 or the A2 deviations were selected, would have a definite detrimental impact resulting in the immediate loss of our revenue to a point where we would no longer qualify for a "farm classification" which in turn would result in a fourfold increase in our property tax. We operate a Christmas tree growth business. We grow spruce, pine and fir trees without the use of herbicides or any other chemicals. One of the major reasons for our customers returning year after year is because of the natural conservation type of setting of our Christmas tree farm. Both route deviations, but especially A2 would go through some of our main fields and destroy all trees there. Also one of the paddocks, used to collect and burn roots, branches and other farm residue is in the very area identified as part of the A2 route.**(SEE ATTACHED LETTER)**
In addition all of the noted nuisances such as noise, dust, traffic etc. will disturb the farm's tranquility.

3. **Please identify any features along the Preliminary Preferred Route that you feel are important to consider during the environmental study.**

It bears to be kept in mind that any suggested deviation of the identified preferred A route will encounter serious soil condition difficulties, as the area is extremely rocky.
The only possible farming activity in this area is the growing of certain tree species, as there is very little topsoil for other activities. It takes 10 to 15 years of growth before our Christmas trees are ready to be harvested.

4. **Do you have any questions or comments about this project that you would like to bring to our attention?**

Please refer to the attached letter which explains in more detail the impact to us, our farm and our customers if either the A1 or the A2 route deviations were chosen instead of the preferred route A. It is our opinion that the identified preferred A Route is the route that appears the most economical and ecologically appropriate one. It has a definite advantage in that it is a route already used for three pipelines, and therefore least damaging to the environment.
We would appreciate to have an opportunity to meet with you at our farm for a site visit and to discuss any additional matters related to the Kirkwall-Hamilton Pipeline Project.

5. Did the content provided at this information session meet your needs?

Both Mr. Michael Candido as well as Mr. Brian Lenny we were informed of our inabilty to attend the information session on Wednesday February 27th, due to the sheet of ice having formed on our driveway making it impossible to negotiate its incline.

---

6. **How did you hear about this Information Session? Check all that apply:**

- [ ] Newspaper Advertisement
- [ ] Project Notification Letter
- [ ] Social Media Post(s)
- [x] Word of Mouth

Thank you for completing this questionnaire. If you have a question about the project that has not been addressed or for which you would like more information, please provide us with your full contact information so that we can respond to you.

Please Print Clearly

Name: _____

Address: _____

Email: _____

Phone: (_ _____

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MEMORANDUM
Date: March 10, 2019
To.: Michael Candido, Project Manager, Stantec Consulting Ltd
Brian Lenny, Enbridge Gas
Gord Costie, Director Conservation Area Services, Hamilton Conservation Authority
From:

Re: Kirkwall – Hamilton Pipeline Project

Dear Mr. Candido,

This is further to our recent telephone call concerning the above noted project and the possible implications it might have on our Christmas Tree Farm, home, business, property and life.

This matter is of extreme importance to us. We were taken aback, in fact stunned, that we had not been informed or consulted and had to be told by one of our neighbours from the south side of Safari Road, via an urgent phone call informing us of the proposed development in our back yard and on our property. We were immediately in touch with Mr Brian Lenny as well as with you and appreciated your response.

The proposed deviations A1 and A2 are intrusive to our living and our life style and will immensely impact our tranquil life, the very reason we bought this property, which had natural boundaries as such provides us with safety and privacy which we deeply value.

Our property apart from the agricultural and conservation designation of some of its parts, is zoned for a health care practice affording me to carry out my practice from the comfort of my home in this safe and tranquil setting. There is a single access to our property and that is from Safari Road which is a great safety feature and which sold us this home and farm.

Any intrusion will adversely impact the value of our property and our daily life.

Our land is very rocky. From past personal experience when Antrim Glenn was blasting rocks to build basements which we learnt much later was the reason why we would experience and hear from time to time an unexplained bomb like explosion that caused the house to shake and extreme vibration forcing us to run outside. The visible adverse impact on the structure of our home took time to show up. We know that sand blasting the rocks to create brand new pathways will adversely impact the structure of our home and existing structure as vibrations in due time will cause the home to settle, in turn causing further expensive repairs, besides impacting our peace of mind.

Please note we live, work and run a farm
We are a working Christmas Tree Farm with 7 fields of Christmas trees of various species and sizes grown without the use of herbicides or pesticides in a natural conservation type of setting for our customers to select and cut during the Christmas season.
There are 3 fields immediately behind the barn and paddocks with a pathway going through the tall trees by the Spencer creek leading to 4 more fields of trees close to the back of the property where the farm adjoins the Antrim Glen Property.

Spencer Creek runs literally throughout the length of our property. We have been very diligent in ensuring that even though operating a Christmas tree farm without the use of herbicides is an ongoing challenge as it exclusively requires manual labour to maintain it. Our love of the land and commitment to the environment has kept us ecologically conscious and committed to do our best to maintain a green environment that honours the ecology of the area entrusted to us.

We have been very conscious of maintaining our farm free of the use of herbicides to avoid any leaching of harmful chemicals into Spencer Creek. We have worked in close concert with the conservation authority to keep intact the natural foliage, wild life and integrity of the land and water flowing through this property. We are watershed stewards.

2019 is our 25th season operating this farm. The previous owners had also run it as a Christmas tree farm at least since 1983. We are dependent on the income we earn from the sale of the trees; it affords us the opportunity to stay in this pristine calm natural setting.

It is also economically important for us to continue to maintain the tree farm and earn enough income on an ongoing basis to retain our "farm designation". As a grower it takes 10 to 15 years and a lot of help from Nature to grow a Christmas tree before it can be harvested. We sell Christmas trees ranging from 5 to 30 feet in size of various species such as traditional Scots pine, White pine, Balsam fir and White spruce.

If we are unable to qualify on an ongoing basis as a farm we not only lose an important source of revenue we depend upon, but there are additional consequences for us, the mere thought of which is creating stress, especially when we have done our best to be responsible citizens. For example, our yearly property taxes will go up by 75 % on an ongoing basis and for years to come if there is any disruption. **It can adversely impact value and the future sale of our property.**

Given what we see in particular in deviation A1 and A2 any tampering of the land would interfere with our operation as a tree farm, traversing some of our main growth sections. It could put our ability to continue to operate our business at peril and adversely impact our living at many levels for years to come!

As a working farm and in particular a Christmas Tree farm without the use of chemicals there is an ongoing need for cleanup of harmful, dead and excessive brush and disposing of dead trees, stumps etc. We have to use an open area for burning with ready access to water and where we can safely adhere to issues such as prevailing winds, etc. Deviation A2 from what we can determine will actually run right through the area where we normally carry out this activity. Additionaly it would subject us to almost all the factors you have listed, access, noise, dust, traffic etc. It would also destroy our privacy, adversely impact our driveway and our paths to access our tree fields not to speak of vibrations affecting the home we live in.

Given the options you have suggested the preferred Route A makes the best sense as it already has the existing pipelines. We look forward to meet with you at your office or at our farm for a site visit, which may also be an opportunity to share any additional information.

Thank you.

Stantec

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   ☒ Directly affected landowner
   ☐ Surrounding landowner
   ☐ Interested citizen
   ☐ Member of interest group
   ☐ Government official
   ☐ Other: _____

2. **Please indicate if the project will have any impacts to you, your property or your business that you would like addressed** (i.e., access, noise, dust, traffic, etc.).

   Yes, the project would have direct impact on our property on the Southern diversion.

3. **Please identify any features along the Preliminary Preferred Route that you feel are important to consider during the environmental study.**

   The forest south of the Preferred Route would be an environmental mistake.

4. **Do you have any questions or comments about this project that you would like to bring to our attention?**

   Please stick to the original preferred Route. You have the right of way already - why change it?

5. **Did the content provided at this Information Session meet your needs?**

Yes, it was what I expected. Lots of info. Lots of help with suggestions.

6. **How did you hear about this Information Session? Check all that apply:**

- [x] Newspaper Advertisement
- [x] Project Notification Letter
- [ ] Social Media Post(s)
- [ ] Word of Mouth

Thank you for completing this questionnaire. If you have a question about the project that has not been addressed or for which you would like more information, please provide us with your full contact information so that we can respond to you.

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Information Session Questionnaire – February 27, 2019

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Completed questionnaires can be dropped off at the front table. If you would like additional time to consider your comments, pre-paid envelopes are available at the front table. We request your comments by **March 15, 2019**.

1. **What is your interest in this project?**

   ☐ Directly affected landowner
   ☐ Surrounding landowner
   ☐ Interested citizen
   ☐ Member of interest group
   ☐ Government official
   ☐ Other: _____

2. **Please indicate if the project will have any impacts to you, your property or your business that you would like addressed** (i.e., access, noise, dust, traffic, etc.).

3. **Please identify any features along the Preliminary Preferred Route that you feel are important to consider during the environmental study.**

   Seems less disruptive to environment to build along the existing route rather than disrupt new land

4. **Do you have any questions or comments about this project that you would like to bring to our attention?**

   Best to build along the existing pipelines: Route "A" makes a lot more sense.

5. **Did the content provided at this Information Session meet your needs?**

6. **How did you hear about this Information Session? Check all that apply:**

- ☐ Newspaper Advertisement
- ☑ Project Notification Letter
- ☐ Social Media Post(s)
- ☐ Word of Mouth

Thank you for completing this questionnaire. If you have a question about the project that has not been addressed or for which you would like more information, please provide us with your full contact information so that we can respond to you.

Please Print Clearly

Name: _____ _____

Address: _____

Email: _____

Phone: (_____) _____

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Stantec

Kirkwall-Hamilton Pipeline Project
Information Session Questionnaire – February 27, 2019

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   - ☐ Surrounding landowner
   - ☐ Interested citizen
   - ☐ Member of interest group
   - ☐ Government official
   - ☐ Other: _____

2. **Please indicate if the project will have any impacts to you, your property or your business that you would like addressed** (i.e., access, noise, dust, traffic, etc.).

   PREFERRED ROUTE A, A1, OR B WOULD HAVE LITTLE TO NO IMPACT
   ALTERNATE A2 WOULD DESTROY MATURE TREES, EXISTNG LANDSCAPING & BEDS
   IT WOULD CUT ACROSS MY DRIVEWAY CAUSING A PROBLEM WITH ACCESS TO MY HOME. I HAVE A CONCERN WITH CREWS ACCESSING THE PROPERTY AND THE IMPACT TO THE GROUNDS AND DRIVEWAY. THERE ARE 100 RED OAK SEEDLINGS IN THE POTENTIAL PATH ALONG WITH 50 PAPER BIRCH

3. **Please identify any features along the Preliminary Preferred Route that you feel are important to consider during the environmental study.**

   *A2 TRIBUTARY/DRAINAGE STREAM TO SPENCER CREEK
   NO CONCERNS RE: PRELIMINARY PREFERRED ROUTE A

4. **Do you have any questions or comments about this project that you would like to bring to our attention?**

   A2 IS AN AREA OF SIGNIFICANT ARCHEOLOGICAL INTEREST
   SPENCER CREEK IS QUITE WIDE AT POINT OF CROSSING
   SPENCER CREEK IN THE AREA OF A2 HAS SIGNIFICANT WILDLIFE INCLUDING FISH & AQUATIC LIFE AND IS A MIGRATORY PATH FOR BIRDS

5. **Did the content provided at this Information Session meet your needs?**

SOME

6. **How did you hear about this Information Session? Check all that apply:**

- [x] Newspaper Advertisement
- [x] Project Notification Letter
- [ ] Social Media Post(s)
- [ ] Word of Mouth

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Address: _____

Email: _____

Phone: (_____ __

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   ☒ Surrounding landowner
   ☐ Interested citizen
   ☐ Member of interest group
   ☐ Government official
   ☐ Other: _____

2. **Please indicate if the project will have any impacts to you, your property or your business that you would like addressed** (i.e., access, noise, dust, traffic, etc.).

   Not in its current format.

3. **Please identify any features along the Preliminary Preferred Route that you feel are important to consider during the environmental study.**

   Going with the preferred route means the least environmental impact.

4. **Do you have any questions or comments about this project that you would like to bring to our attention?**

   None at this time, but we strongly support the preferred route.

5. **Did the content provided at this Information Session meet your needs?**

Yes.

6. **How did you hear about this Information Session? Check all that apply:**

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- ☐ Word of Mouth

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Please Print Clearly

Name: Owner of nearby acreage

Address: _____

Email: _____

Phone: (_____) _____

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1. **What is your interest in this project?**

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   ☐ Surrounding landowner
   ☐ Interested citizen
   ☐ Member of interest group
   ☐ Government official
   ☐ Other: _____

2. **Please indicate if the project will have any impacts to you, your property or your business that you would like addressed** (i.e., access, noise, dust, traffic, etc.).

   We keep a commercial apiary + queen breeding operation on our farm. We would need to be informed well ahead if the project is going to go ahead. We would need to access the back of our property at all times.

3. **Please identify any features along the Preliminary Preferred Route that you feel are important to consider during the environmental study.**

4. **Do you have any questions or comments about this project that you would like to bring to our attention?**

5. **Did the content provided at this Information Session meet your needs?**

yes.

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Answers supplied in accompanying document.

Stantec

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   ☐ Interested citizen
   ☐ Member of interest group
   ☐ Government official
   ☐ Other: _____

2. **Please indicate if the project will have any impacts to you, your property or your business that you would like addressed** (i.e., access, noise, dust, traffic, etc.).

3. **Please identify any features along the Preliminary Preferred Route that you feel are important to consider during the environmental study.**

4. **Do you have any questions or comments about this project that you would like to bring to our attention?**

5. **Did the content provided at this Information Session meet your needs?**

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Kirkwall-Hamilton Pipeline Project
Information Session Questionnaire – Feb 27, 2019

Response from:

Answers to Questions:

1. Interest in this project:
    - Directly Affected Landowner
2. Impacts to our property and business:
    a. We will lose several of our production areas during the installation and we will need to establish alternate sites for growing for that time. Alternate production growing sites will need to be built in 2020 in preparation for growing on them in 2021.
    b. Our pond and well are directly in line of the pipeline. These are our two main water sources for irrigating most of the plants we grow. There will need to be a plan that will ensure we have access to water and ability to distribute it to our plants. Efforts implement this plan may need to begin in 2020.
    c. This well is a strong and valuable water supply for us. It will need it to be protected from any damage or water flow disruption.
    d. Vehicle access and nursery production workflow will be disrupted by the activities of the pipeline project. Means of managing this will need to be considered.
    e. The activities of the project will affect the storm water run off system at the nursery. Without appropriate direction, storm runoff water may bring damage to our other growing areas.
    f. have 4 children currently under the age of 8 living at their residence
    g. We want to be sure that there are appropriate safety measures taken to protect them from areas and equipment that are dangerous.

    This is by no means an exhaustive list. The mentioned concerns are what first comes to mind. We will need to examine the implications more thoroughly when the time is appropriate.
    It would be best to meet with a Stantec or Enbridge Gas representative as soon as possible to start discussions.

3. Environmental Considerations:
    - We don't have any suggestions of environmental considerations at this point.
4. Questions or comments about the project:
    - When will the decision be made on which route is chosen?
5. Information session comments:

- Yes, the information session was helpful. It is understandable that much still has to be figured out. The information was a good start.

6. How did we hear about the information session:
    - Project notification letter received by
7. Contact information:

Stantec

Kirkwall-Hamilton Pipeline Project
Information Session Questionnaire – February 27, 2019

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1. **What is your interest in this project?**

   - [x] Directly affected landowner
   - [ ] Surrounding landowner
   - [ ] Interested citizen
   - [ ] Member of interest group
   - [ ] Government official
   - [ ] Other: _____

2. **Please indicate if the project will have any impacts to you, your property or your business that you would like addressed** (i.e., access, noise, dust, traffic, etc.).

   MY PROPERTY HAS THE PIPELINE RUNNING @ THE BACK OF MY PROPERTY WE ARE CONCERNED ABOUT DAMAGE TO OUR HOME NOISE DUST & ACCESS TO OUR PROPERTY & DAMAGE TO THE SURROUNDING AREAS

3. **Please identify any features along the Preliminary Preferred Route that you feel are important to consider during the environmental study.**

   KEEPING NATURAL HABITATS SAFE ,

4. **Do you have any questions or comments about this project that you would like to bring to our attention?**

   WHEN UPGRADING A NETWORK OF GASLINES IT WOULD BENIFIT THE LOCAL COMMUNITIES IF STEP-DOWN STATIONS COULD BE INSTALLED SO THAT THEY MAY BENIFIT BY BEING ABLE TO USE GAS THAT IS RUNNING THROUGH THERE COMMUNITIES .

5. **Did the content provided at this Information Session meet your needs?**

YES

6. **How did you hear about this Information Session? Check all that apply:**

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To ;- Emily Hartwig, Bsc., EP(f)

Environmental Consultant

Stantec Consulting Ltd.

1-70 Southgate Drive

Guelph

Canada

Ontario

04-03-19

N1G 4P5

Dear Emily,

We are writing about the proposed new gas pipeline that is to be installed between the Kirkwall valve site and to the Hamilton valve site located at Highway 6 north of Carlisle Road. We live in the Antrim Glen community that has three gas-lines already going through the community, the proposed new one to go alongside one of the existing ones.

We have no problem with new gas-lines as expanding the infrastructure is necessary for all businesses to grow, our concern is that although the gas lines go through our community we have no access to it as there are no step down stations close to us. In all expanded services it is far easier to install things as new equipment is being installed rather than trying to add after it is completed.

Antrim Glen has 289 properties, Beverly Hills 168 properties and the Ponderosa has approximately 100 properties making over 550 properties that would benefit from being able to access natural gas. The cost of the new pipe-line must be in the hundreds of million dollars to install and the cost of a step down station and piping to the communities would be negligible with the cost of it recoverable with the selling of the natural gas to these communities in a short period of time.

Government bodies are always asking for companies to expand to provide better infrastructure for local communities and profit is very necessary for this to happen but it is also necessary for everyone to feel it is a win win situation for everyone concerned. Natural gas is far cheaper to heat homes and water than either Propane or oil and is also a lot cleaner and environmentally a better proposition. Having to endure an upset for approximately six months when the pipe-line is installed would be a lot easier to accept if the local communities felt that they would be getting something in return.

We will be sending a copy of this letter to the Chairman of our Homeowners Association. We would welcome any replies that would assist everyone in coming to a satisfactory conclusion for all parties.

Yours Faithfully

Stantec

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   ☐ Member of interest group
   ☐ Government official
   ☐ Other: _____

2. **Please indicate if the project will have any impacts to you, your property or your business that you would like addressed** (i.e., access, noise, dust, traffic, etc.).

   Presumably you will access the project from our property

3. **Please identify any features along the Preliminary Preferred Route that you feel are important to consider during the environmental study.**

4. **Do you have any questions or comments about this project that you would like to bring to our attention?**

   What are you doing with those big maps?
   I would take an extra one when you are done with it.

5. **Did the content provided at this Information Session meet your needs?**

Reasonable
the ... e display was good
- I am curious about the long term impact on capillary transport of moisture in the soil above the pipeline compared to the surrounding area

6. **How did you hear about this Information Session? Check all that apply:**

- ☐ Newspaper Advertisement
- ☒ Project Notification Letter
- ☐ Social Media Post(s)
- ☐ Word of Mouth

Thank you for completing this questionnaire. If you have a question about the project that has not been addressed or for which you would like more information, please provide us with your full contact information so that we can respond to you.

Please Print Clearly

Name: [redacted]

Address:

Phone: (_____

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Kirkwall-Hamilton Pipeline Project
Information Session Questionnaire – May 9, 2019

Please read the newsletter and look over the displays, and then take a few moments to answer the following questions. Your comments are appreciated. If you require any assistance or clarification while completing the questionnaire please speak with a Stantec or Enbridge Gas representative.

Completed questionnaires can be dropped off at the front table. If you would like additional time to consider your comments, pre-paid envelopes are available at the front table. We request your comments by **May 24, 2019**.

1. **What is your interest in this project?**

   ☐ Directly affected landowner
   ☐ Surrounding landowner
   ☑ Interested citizen
   ☐ Member of interest group
   ☐ Government official
   ☐ Other: _____

2. **Please indicate if the project will have any impacts to you, your property or your business that you would like addressed** (i.e., access, noise, dust, traffic, etc.).

   None

3. **Please identify any features along the Preferred Route that you feel are important to consider during the environmental study.**

4. **Do you have any questions or comments about this project that you would like to bring to our attention?**

   restoration after project is completed is most important

5. **Did the content provided at this Information Session meet your needs?**

Yes

6. **How did you hear about this Information Session? Check all that apply:**

- [x] Newspaper Advertisement
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Address: _____

Email: _____

Phone: (_____)_____

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1. **What is your interest in this project?**

   ☐ Directly affected landowner
   ☐ Surrounding landowner
   ☒ Interested citizen
   ☐ Member of interest group
   ☐ Government official
   ☐ Other: _____

2. **Please indicate if the project will have any impacts to you, your property or your business that you would like addressed** (i.e., access, noise, dust, traffic, etc.).

   Risk to my local watershed

3. **Please identify any features along the Preferred Route that you feel are important to consider during the environmental study.**

   Waterways

4. **Do you have any questions or comments about this project that you would like to bring to our attention?**

   I feel that this project should have independant risk assessment on behalf of taxpayers given the embodied risk of the fuel, industry, and changing policy.

5. **Did the content provided at this Information Session meet your needs?**

I believe that the information provided adequate. Friendly and helpful staff

6. **How did you hear about this Information Session? Check all that apply:**

- ☐ Newspaper Advertisement
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- ☒ Word of Mouth

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   ☑ Interested citizen
   ☐ Member of interest group
   ☐ Government official
   ☐ Other: _____

2. **Please indicate if the project will have any impacts to you, your property or your business that you would like addressed** (i.e., access, noise, dust, traffic, etc.).

   None.

3. **Please identify any features along the Preferred Route that you feel are important to consider during the environmental study.**

   everything you are addressing

4. **Do you have any questions or comments about this project that you would like to bring to our attention?**

   I didn't know about the first inf. session
   Thank you sooo much for this one May 9/2019.
   ☺ nice to be included.
   Please let me know if anything changes
   & comes to my house ☺.

5. **Did the content provided at this Information Session meet your needs?**

yes.

6. **How did you hear about this Information Session? Check all that apply:**

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   ☑ Surrounding landowner
   ☑ Interested citizen
   ☐ Member of interest group
   ☐ Government official
   ☐ Other: Immediate Neighbour

2. **Please indicate if the project will have any impacts to you, your property or your business that you would like addressed** (i.e., access, noise, dust, traffic, etc.).

   See Attached letters

3. **Please identify any features along the Preferred Route that you feel are important to consider during the environmental study.**

   Blasting & its Impact on our property. See Attached letters

4. **Do you have any questions or comments about this project that you would like to bring to our attention?**

   See Attached letters

5. **Did the content provided at this Information Session meet your needs?**

See the attached letters

6. **How did you hear about this Information Session? Check all that apply:**

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We appreciated once again the opportunity to meet with Michael Candido of StanTec, and also to personally connect with Brian Lenny, the representative of Enbridge with whom we had corresponded and spoken to via phone at the meeting held at the Valens Community Centre on Thursday May 12, 2019. We shared with them as we had previously shared that we fully understand that progress has to continue but must be managed with the least impact on the environment and neighbouring land as it has negative consequences at many levels and often very expensive ones to the owners of properties that are impacted adversely.

We have appreciated Michael Candido taking time to hear our concern regarding the variations which would have had a grave negative impact on us, our life, our business, the land, our property and our home in every sense of the manner with whom we personally met on March 12, 2019. The mere thought of it had created undue emotional stress which by all standards of common consideration was unacceptable and would have been cruel and also impacted adversely the value of our property. It is a great relief that those options are off the table.

It is understood whenever there is construction in the neighbourhood there is increased dust and noise. Our area is very rocky and even widening the pipelines will require the blasting of the rocks that can impact negatively on the buildings on the property that may not be close but are impacted being on similar grid! Our concern was shared with both Brian and Michael.

Michael made notes of the following concerns we expressed based of our previous experience when there was blasting occurring at the Antrim Glen to make basements etc, something we were told would not be happening when we bought the property in early 1995. There were going to be homes built for seniors and sold on a 90 year lease basis but without basements was our understanding from the open house. We were neither consulted about the changes to the plans nor given any notice of the impending dates of blasting of the rocks even though our property backs to the Antrim Glenn Property. We were simply left to deal with its negative impact as we witnessed its gradual impact on our home and the creek. The Spencer creek runs the entire length of our property on the west side.

It is our understanding that now as part of the process to install the planned 48" pipeline extension there will be a need for blasting through the rocks that are part of the area, adjoining our property. We have shared with Michael Candido and Brian Lenny our personal experience and its negative impact on our home when blasting took place at Antrim Glen in order to build basements in the later additions to the community. At that time the blasting took place, usually mid afternoon for a short period of time, the noise was penetrating and felt as if bombs had fallen in the area. We were, as well as our immediate neighbours were impacted.

As a direct result of this activity our home which had been built in 1981/82 and had already settled, settled again about one year after the blasting had taken place with the ceilings separating from the walls, and in one location the floor separating from the wall. The resulting repairs to rectify these matters ran into a few thousand dollars.

We have requested that representatives of Enbridge make a site visit to our home before any blasting related to the installation of the new pipeline extension takes place, and then it is followed up with a site visit approximately one year or later to determine whether any negative impact on our home has taken place as a result.

REFLECTIONS ON PAST EXPERIENCE

From experience we know that any construction close to where one lives creates excessive dust and at times, depending upon the type of construction and activity, there is varying level of noise. It increasingly demands more work to keep a home clean. Apart from the noise what concerns us most is the possibility of vibrations due to construction and any blasting that may impact adversely one's living structure that is both stressful and costly.

We bought our farm and home in early 1995. At that time we were told the Antrim Glenn properties would not be having any basements. Years later a number of times when by chance we happened to be home in the afternoon a noise as if a bomb was being discharged would shake the house and extreme vibration was felt all over forcing us out of the home to see what had happened but nothing was visible when we went out to check if a plane had fallen on our roof. This disturbance was repeated on several days around 3-4 PM, when generally we and the neighbours would be at work.

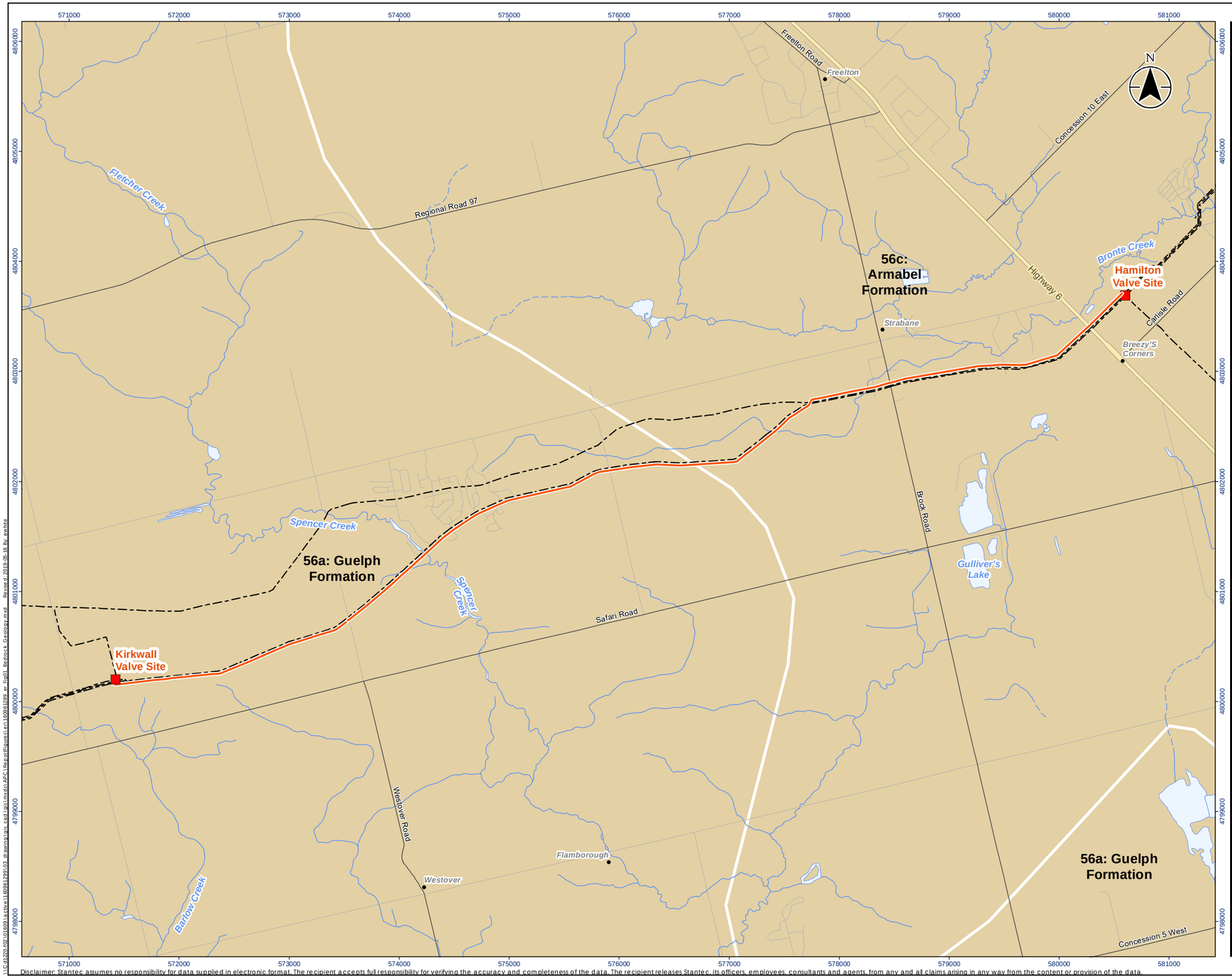
On inquiry we discovered that at Antrim Glen rocks was being blasted in order to built basements and a water reservoir. Eventually this action resulted in visible damage to our home, a solid construction built in 1982. It had remained in excellent shape, but after we had lived here for a few years began to show cracks and settlement. We had to have repairs done to correct the unusual settlement and had the entire house repainted.

After being here for a few years we also began to notice changes in the Spencer creek for the worse. On inquiry we learnt that Antrim Glenn waste was being discharged in the Spencer creek after treatment. We were told that the water disposed off was good enough to drink, however the changes to the water spoke a different story.

It is sad to say farm work is literally a 24/7 day affair with little tangible rewards and requires hard work dedication and then farmers pray that Nature is kind. Sometime it feels that as a culture we have very little regard for our citizens working the land!

APPENDIX C:
EXISTING CONDITIONS FIGURES





Stantec

Legend

- Enbridge Existing Station
- Preferred Route
- Enbridge Existing Pipeline

Bedrock Geology

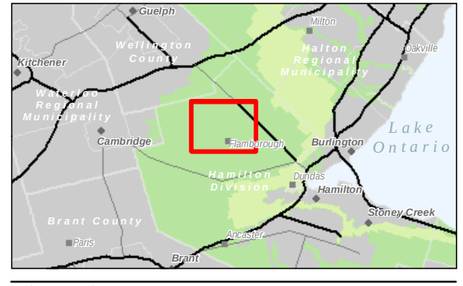
- 56a: Guelph Fm. (also present in the Upper Silurian)
- 56c: Amabel Fm.
- Watercourse (Intermittent)
- Watercourse (Permanent)
- Waterbody

0 1 2 km

1:35,000 (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, 2019.
3. Bedrock geology data source: Ontario Geological Survey 2011. 1:250 000 scale bedrock geology of Ontario; Ontario Geological Survey, Miscellaneous Release-Data 126-Revision 1. ISBN 978-1-4435-5704-7 (CD) ISBN 978-1-4435-5705-4



Project Location
City of Hamilton

160961299 REVA
Prepared by AW on 2019-05-16
Technical Review by ST on 2019-05-06

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
1

Title
Bedrock Geology

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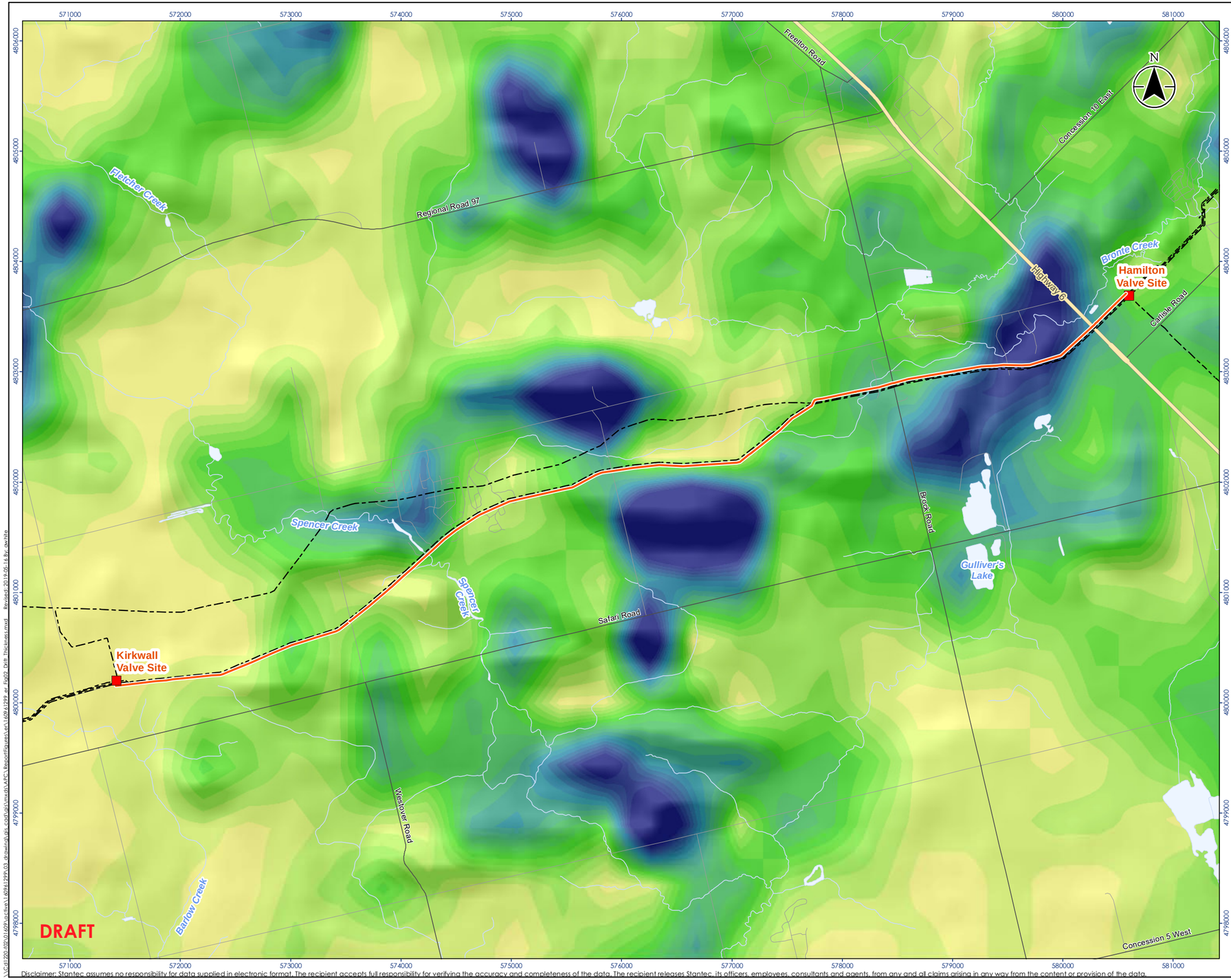
\\ca1220-f05\01609\active\160961299\03_drawing\gis_cad\gis\mxds\APC\ReportFigures\e01609961299_rpt_Fig01_Bedrock_Geology.mxd Revised: 2019-05-16 By: awhite



Stantec

Legend

- Preferred Route
- Enbridge Existing Station
- Enbridge Existing Pipeline
- Expressway / Highway
- Major Road
- Minor Road
- Watercourse
- Waterbody

Drift Thickness

(m)

- High : 35
- Low : 0

0 1 2 km

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Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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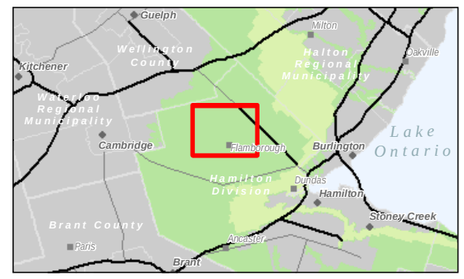
3. Drift thickness data source: Gao, C., Shirota, J., Kelly, R.I., Brunton, F.R. and van Haaften, S. 2006. Bedrock topography and overburden thickness mapping, Southern Ontario; Ontario Geological Survey, Miscellaneous Release—Data 207.



Project Location
City of Hamilton

160961299 REVA
Prepared by AW on 2019-05-16
Technical Review by ABC on YYYY-MM-DD

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
2

Title
Drift Thickness

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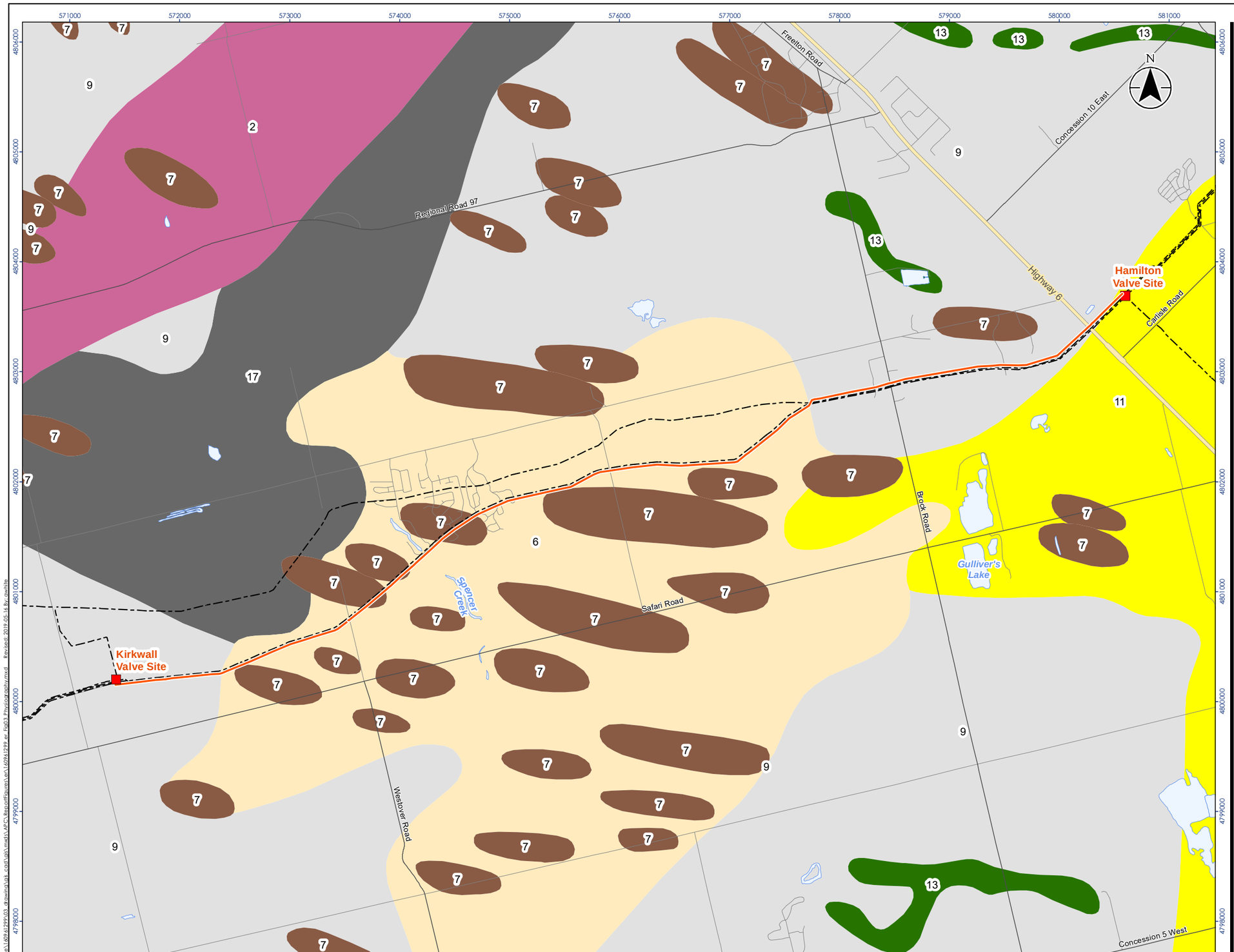

Stantec

Legend

- Preferred Route
- Enbridge Existing Station
- Enbridge Existing Pipeline
- Expressway / Highway
- Major Road
- Minor Road
- Waterbody

Physiography

- 2: Till Moraines
- 6: Till Plains (Drumlinized)
- 7: Drumlins
- 9: Limestone Plains
- 11: Sand Plains
- 13: Eskers
- 17: Peat And Muck

0 1 2 km

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Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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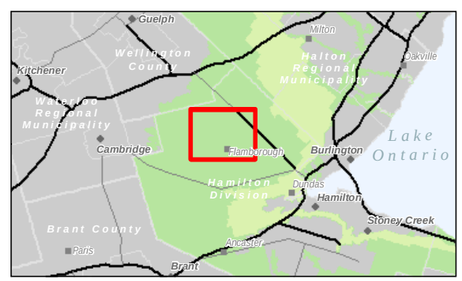
3. Physiography data source: Chapman, L.J. and Putnam, D.F. 2007. Physiography of southern Ontario; Ontario Geological Survey, Miscellaneous Release—Data 228.



Project Location
City of Hamilton

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Prepared by AW on 2019-05-16
Technical Review by ABC on YYYY-MM-DD

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
3

Title
Physiography

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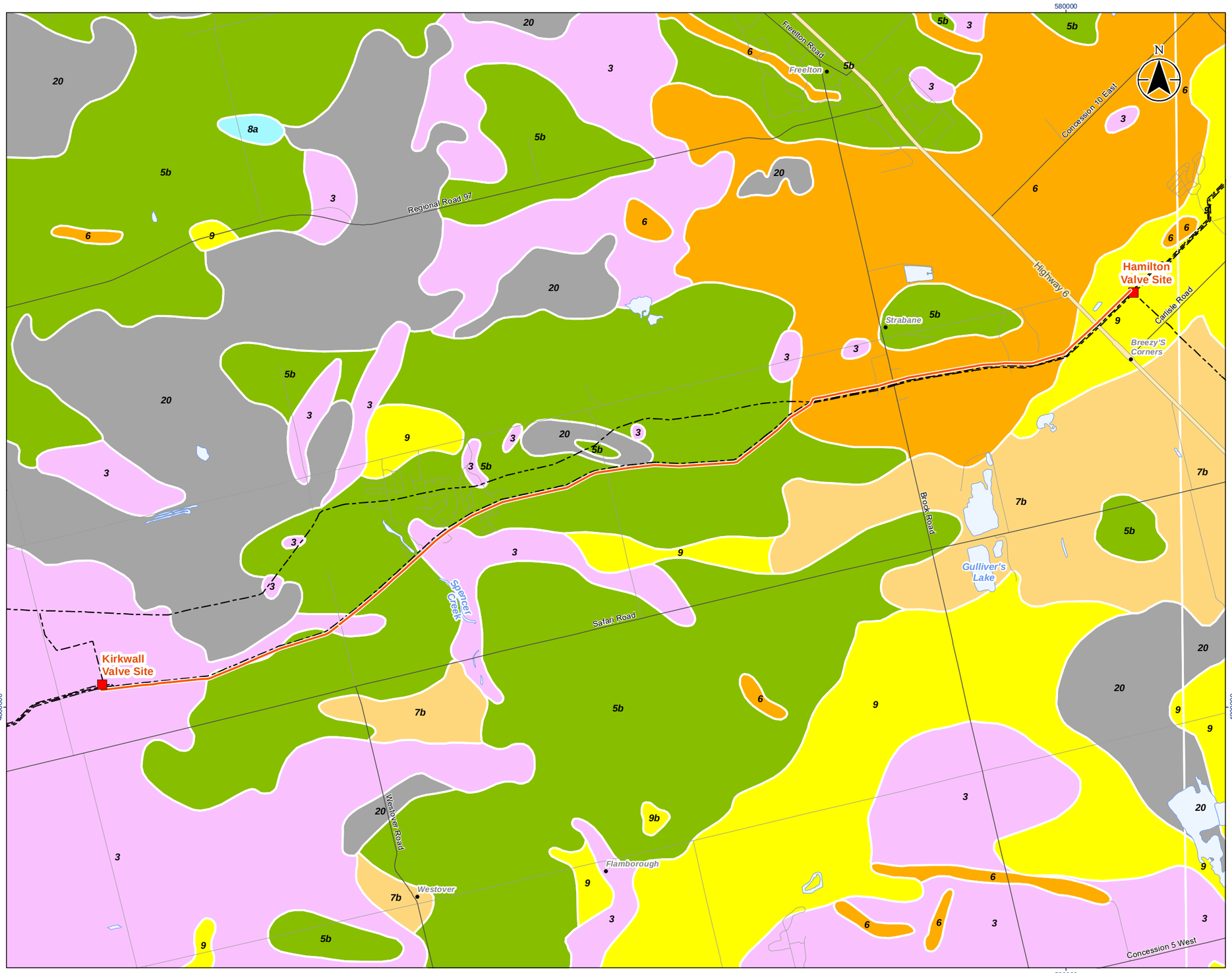

Stantec

Legend

- Preferred Route
- Enbridge Existing Station
- Enbridge Existing Pipeline
- Expressway / Highway
- Major Road
- Minor Road
- Waterbody

Surficial Geology

- 3: Paleozoic bedrock
- 5b: Stone-poor, carbonate-derived silty to sandy till
- 6: Ice-contact stratified deposits
- 7b: Glaciofluvial deposits (Gravelly deposits)
- 8a: Fine-textured glaciolacustrine deposits (Massive-well laminated)
- 9: Coarse-textured glaciolacustrine deposits
- 9b: Coarse-textured glaciolacustrine deposits (Littoral-foreshore deposits)
- 20: Organic deposits

0 1 2 km

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Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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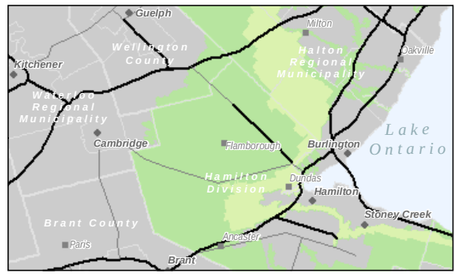
3. Surficial geology data source: Ontario Geological Survey 2010. Surficial geology of Southern Ontario; Ontario Geological Survey, Miscellaneous Release--Data 128-REV ISBN 978-1-4435-2483-4.



Project Location
City of Hamilton

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Technical Review by ABC on YYYY-MM-DD

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
4

Title
Surficial Geology

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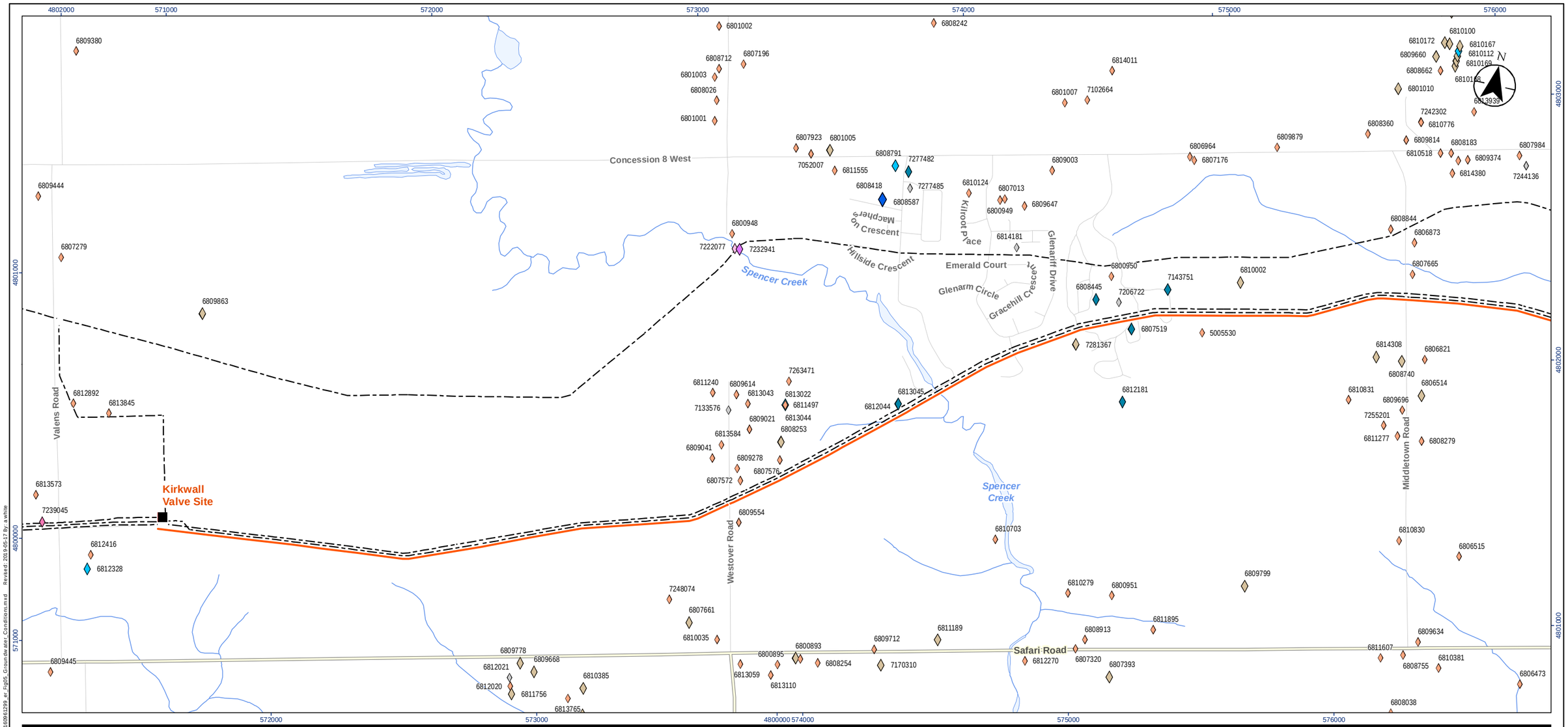

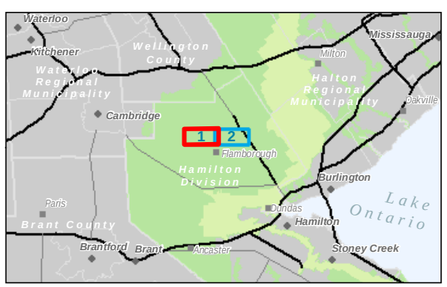

Legend

- Enbridge Existing Station
- Preferred Route
- Enbridge Existing Pipeline
- Domestic
- No Data
- Livestock
- Commerical
- Monitoring
- Public
- Monitoring and Test Hole
- Test Hole
- Municipal
- Major Road
- Minor Road
- Watercourse (Permanent)
- Waterbody

0 250 500 metres

1:15,000 (At original document size of 11x17)

Notes

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City of Hamilton

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Prepared by AW on 2019-05-17
Technical Review by ABC on yyyy-mm-dd

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
5

Title
Groundwater Conditions

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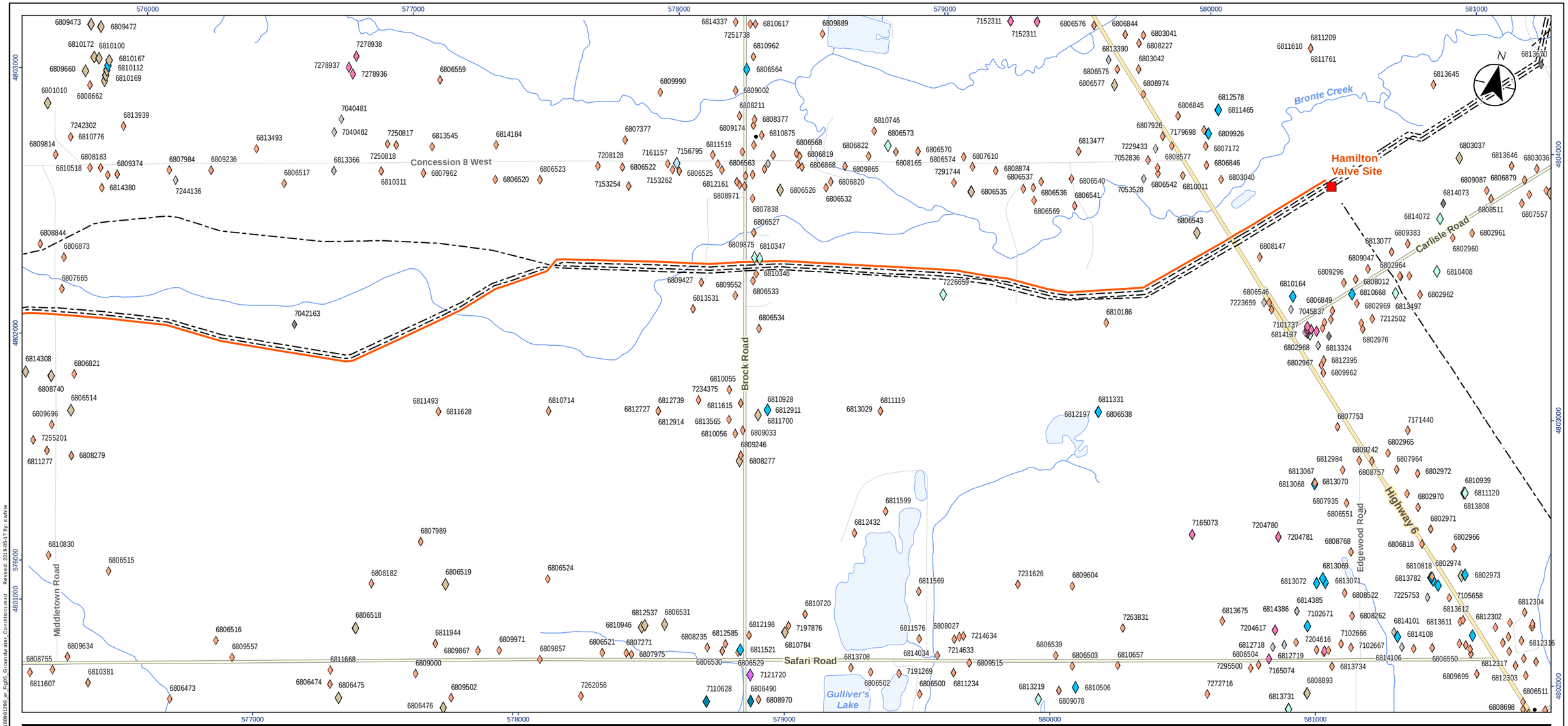

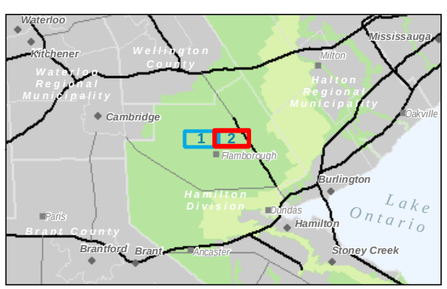

Legend

- Enbridge Existing Station
- Preferred Route
- Enbridge Existing Pipeline
- Domestic
- No Data
- Livestock
- Commerical
- Monitoring
- Not Used
- Public
- Irrigation
- Test Hole
- Cooling And A/C
- Other Named Place
- Expressway / Highway
- Major Road
- Minor Road
- Watercourse (Intermittent)
- Watercourse (Permanent)
- Waterbody

0 250 500 metres

1:15,000 (At original document size of 11x17)

Notes

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Technical Review by ABC on yyyy-mm-dd

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
5

Title
Groundwater Conditions

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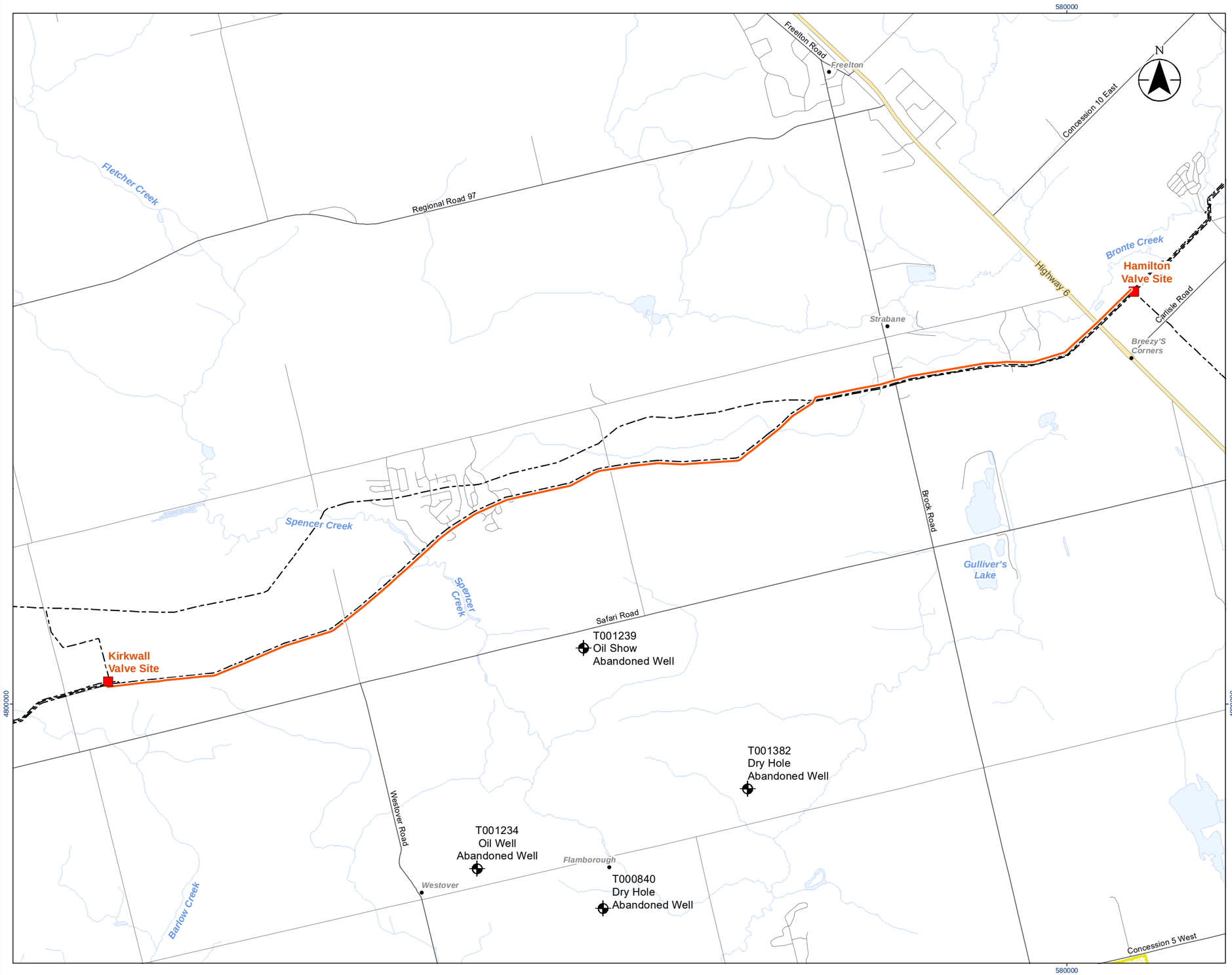

Stantec

Legend

- Petroleum Well
- Aggregate Site - Active
- Expressway / Highway
- Major Road
- Minor Road
- Watercourse
- Waterbody

0 1 2 km

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Notes

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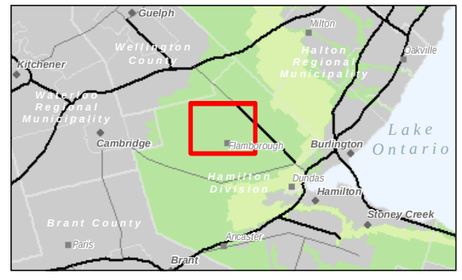

Project Location
City of Hamilton

160961299 REVA
Prepared by AW on 2019-05-17
Technical Review by ABC on 2019-MM-DD

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
6

Title
Aggregate and Petroleum Resources

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Legend Text

- BRT. BRANT SILT LOAM - SHALLOW PHASE
- BUF. BURFORD LOAM
- CWO. COLWOOD SILT LOAM
- DUF. DUMFRIES LOAM
- DUF. DUMFRIES LOAM - ROCKY PHASE
- DYK. DONNYBROOK GRAVELLY LOAM
- FMB. FLAMBORO SANDY LOAM
- FMB. FLAMBORO SANDY LOAM - SHALLOW PHASE
- FRM. FARMINGTON LOAM
- GMY. GRIMSBY SANDY LOAM
- GMY. GRIMSBY SANDY LOAM - SHALLOW PHASE
- GUP. GUELPH LOAM
- GUP. GUELPH LOAM - SHALLOW PHASE
- KIL. KILLEAN LOAM
- LIY. LILY LOAM
- LOD. LONDON LOAM
- LOD. LONDON LOAM - SHALLOW PHASE
- PLL. PARKHILL LOAM
- PLL. PARKHILL LOAM - SHALLOW PHASE
- SRI. SPRINGVALE SANDY LOAM
- TLD. TOLEDO SILT LOAM - SHALLOW PHASE
- TUC. TUSCOLA SILT LOAM - SHALLOW PHASE
- VLD. VINELAND SANDY LOAM
- VLD. VINELAND SANDY LOAM - SHALLOW PHASE
- ZBU. BUILT UP AREA
- ZMK. MUCK
- ZST. STREAM COURSE

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Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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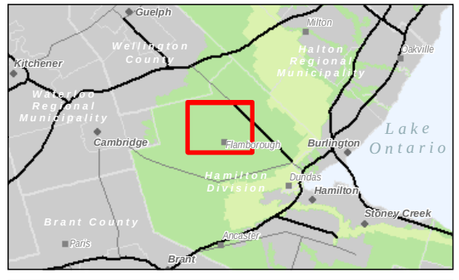

Project Location
City of Hamilton

160961299 REVA
Prepared by AW on 2019-05-27
Technical Review by ABC on 2019-MM-DD

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
7

Title
Soil Types

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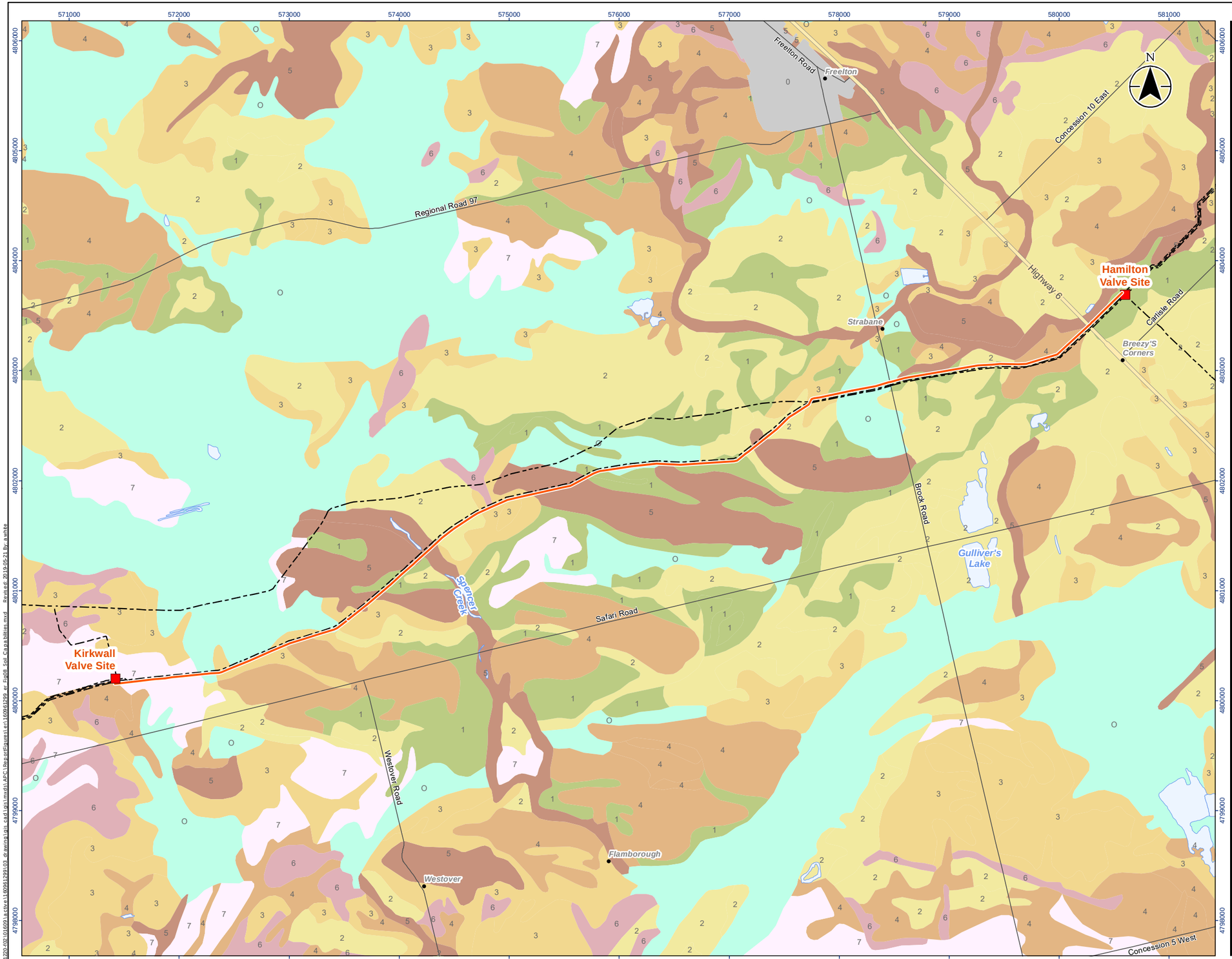

Stantec

Legend

- Enbridge Existing Station
- Preferred Route
- Enbridge Existing Pipeline
- Waterbody

Soil Capability Classification of Agriculture

- 1: Soils in this class have no significant limitations in use for crops
- 2: Soils in this class have moderate limitations that restrict the range of crops or require moderate conservation practices
- 3: Soils in this class have moderately severe limitations that restrict the range of crops or require special conservation practices
- 4: Soils in this class have severe limitations that restrict the range of crops or require special conservation practices
- 5: Soils in this class gave very severe limitations that restrict their capability in producing perennial forage crops, and improvement practices are feasible
- 6: Soils in this class are capable only of producing perennial forage crops, and improvement practices are not feasible
- 7: Soils in this class have no capacity for arable culture or permanent pasture
- Organic Soils (not placed in capability classes)
- CLI Unavailable

0 1 2 km

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Notes

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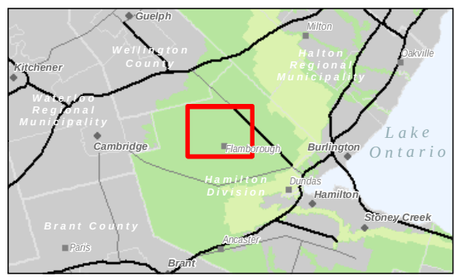

Project Location
City of Hamilton

160961299 REVA
Prepared by AW on 2019-05-21
Technical Review by ABC on 2019-MM-DD

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
8

Title
Soil Capability

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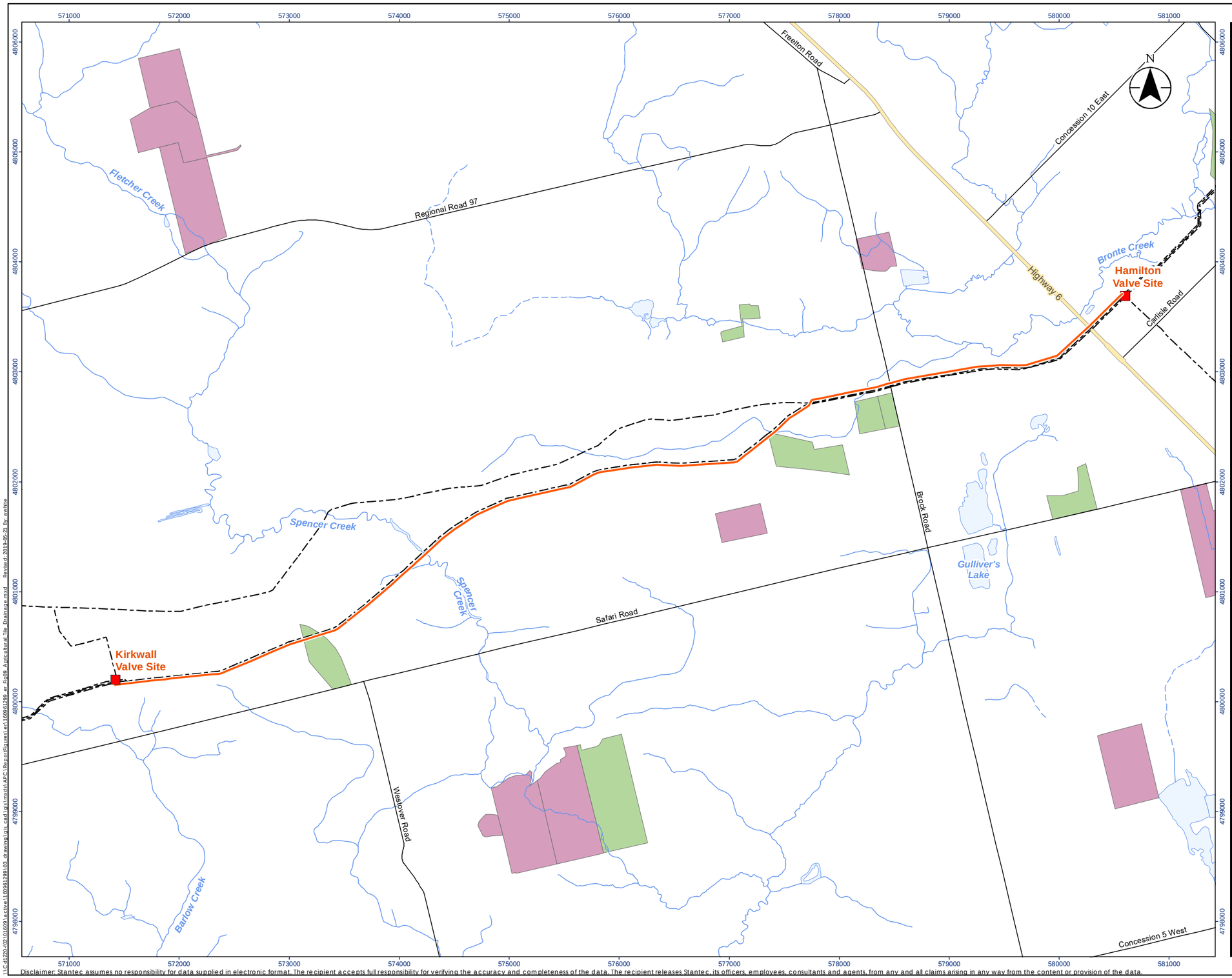

Stantec

Legend

- Railway
- Expressway / Highway
- Major Road
- Minor Road
- Watercourse (Intermittent)
- Watercourse (Permanent)
- Waterbody

Tile System Type

- Random
- Systematic

0 1 2 km

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Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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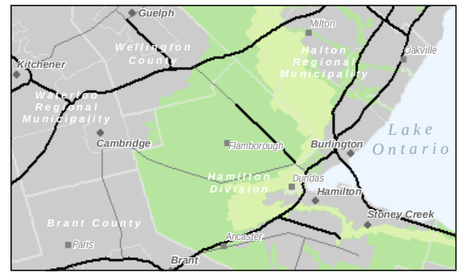

Project Location
City of Hamilton

160961299 REVA
Prepared by AW on 2019-05-21
Technical Review by ABC on 2019-MM-DD

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
9

Title
Known Agricultural Tile Drainage

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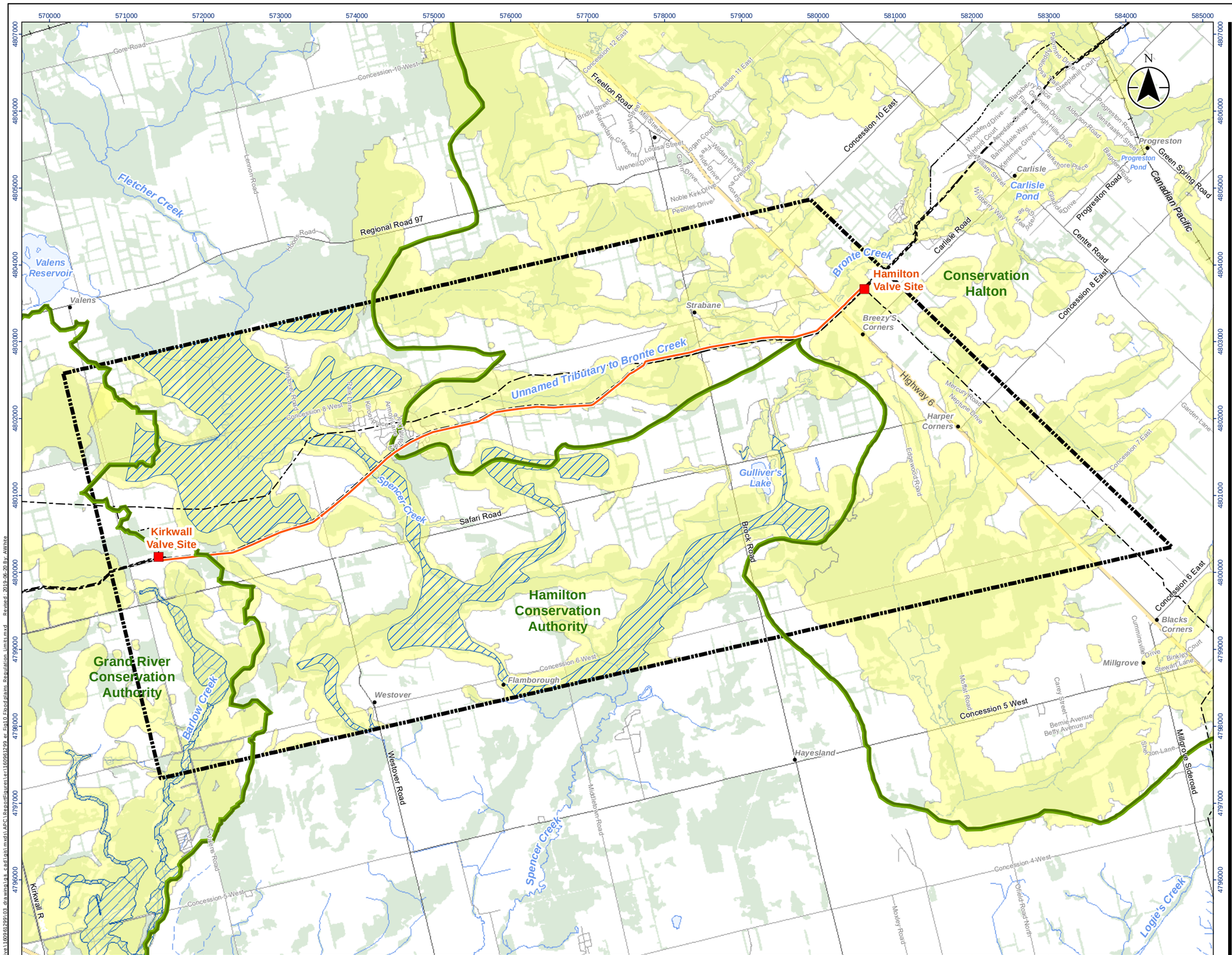

Stantec

Legend

- Study Area
- Preferred Route
- Enbridge Existing Station
- Enbridge Existing Pipeline
- Railway
- Expressway / Highway
- Major Road
- Minor Road
- Waterbody
- Regulated Area
- Floodplain

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Notes

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Prepared by AW on 2019-06-20
Technical Review by ABC on YYYY-MM-DD

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
10

Title
Floodplains and Regulation Limits

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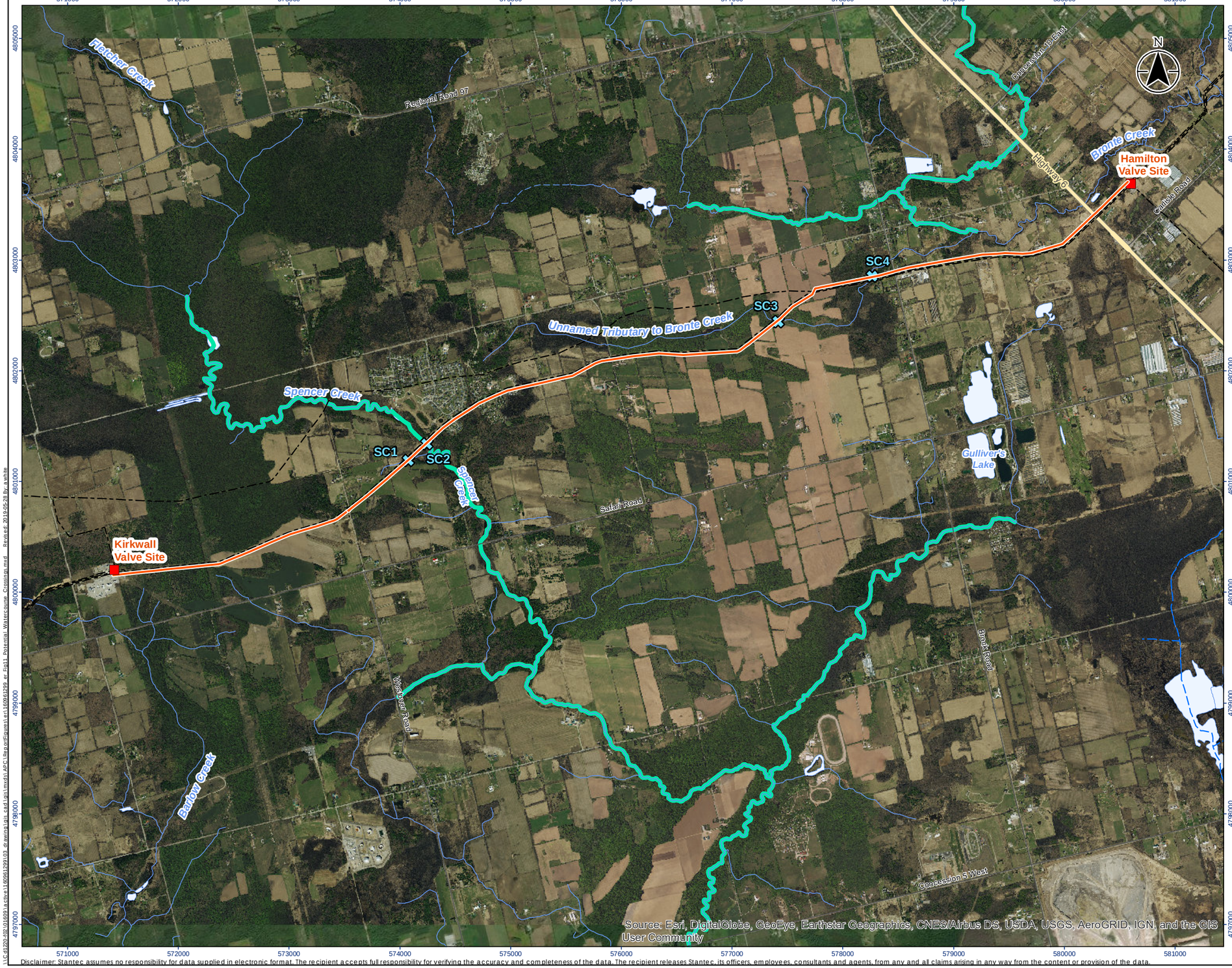

Stantec

N

Legend

- Watercourse Crossing
- Watercourse (Intermittent)
- Watercourse (Permanent)
- DFO Aquatic Species at Risk - Fish
- Waterbody

DFO Drain Class

- E

0 500 1,000 m

1:35,000 (At original document size of 11x17)

Notes

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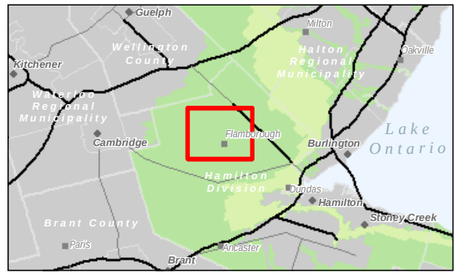
3. Watersheds within ERCA boundaries produced under license with © Essex Region Conservation Authority, 2019. Watersheds within LTVCA boundaries produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2019.



Project Location
City of Hamilton

160961299 REVA
Prepared by AW on 2019-05-28
Technical Review by ABC on 2019-mm-dd

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
11

Title
Potential Watercourse Crossings

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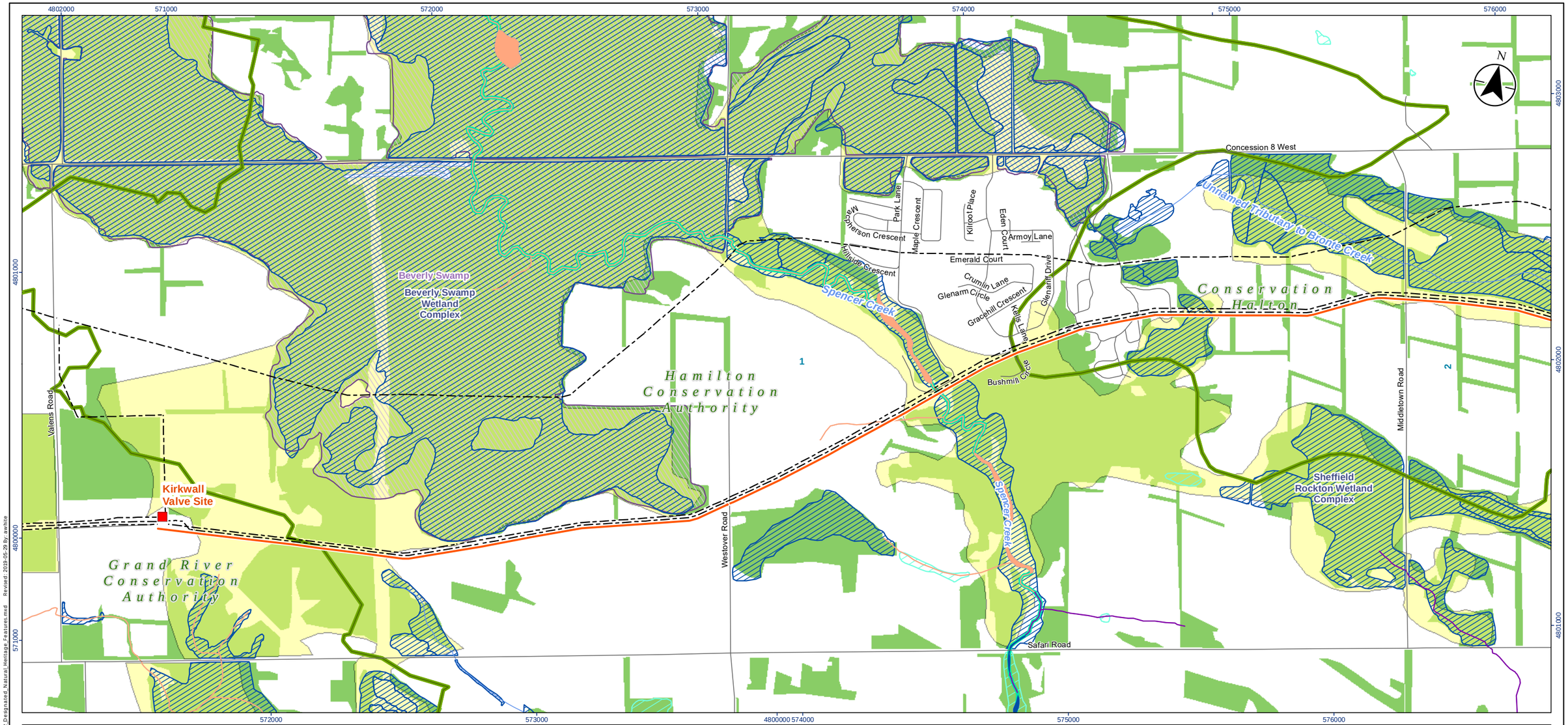



Legend

- Thermal Regime, Cold
- Thermal Regime, Warm
- Watercourse (Permanent)
- ANSI, Life Science
- Conservation Area Administrative Boundary
- City of Hamilton Environmentally Sensitive Areas
- DFO Aquatic Species at Risk - Fish
- Waterbody
- Wetland, Provincially Significant
- Wetland, Not evaluated per OWES
- Wooded Area

0 250 500 metres

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Project Location
City of Hamilton

160961299 REVA
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Technical Review by ABC on yyyy-mm-dd

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
12

Title
Designated Natural Heritage Features

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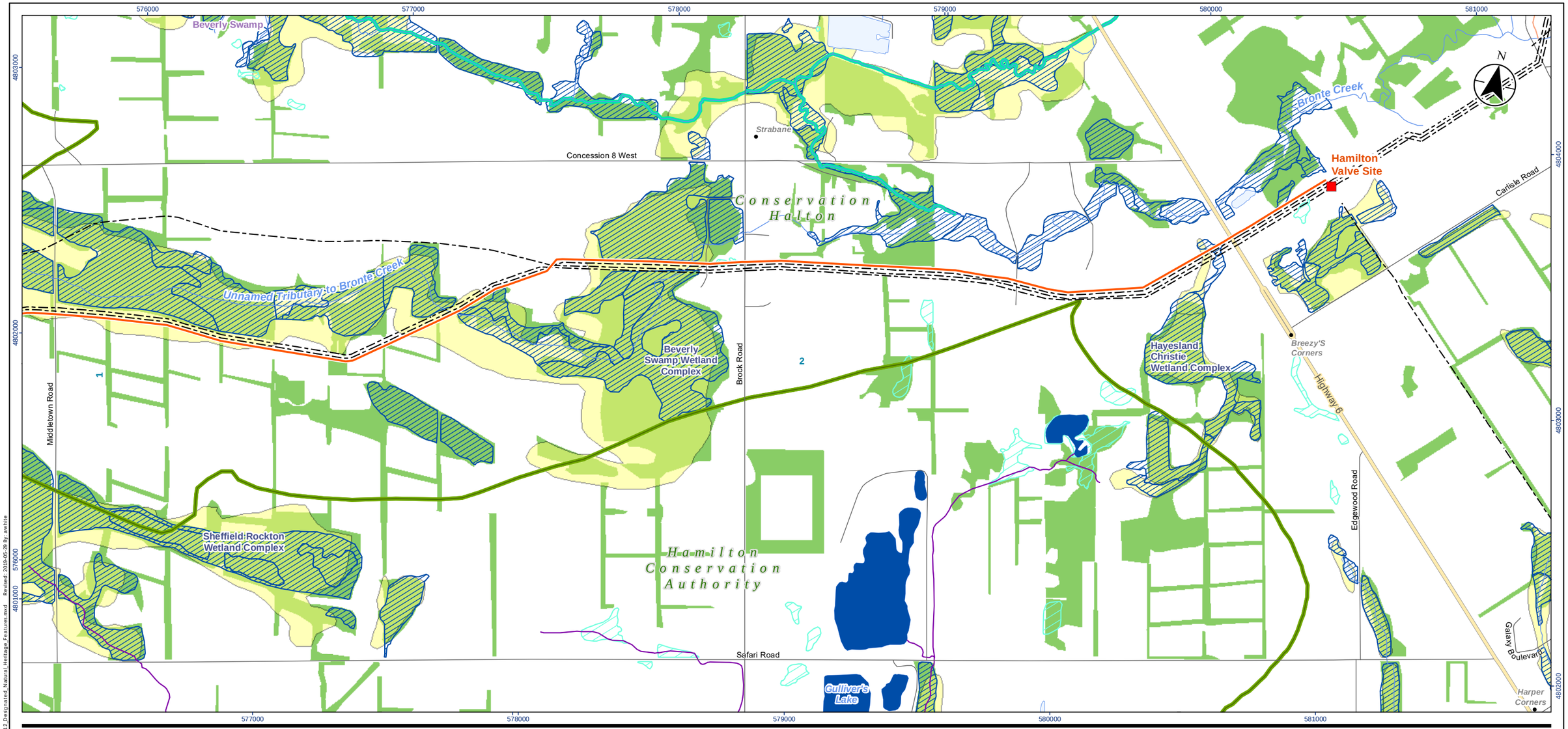



Legend

- Thermal Regime, Cold
- Thermal Regime, Warm
- Watercourse (Intermittent)
- Watercourse (Permanent)
- ANSI, Life Science
- Conservation Area Administrative Boundary
- City of Hamilton Environmentally Sensitive Areas
- DFO Aquatic Species at Risk - Fish
- Waterbody
- Wetland, Provincially Significant
- Wetland, Not evaluated per OWES
- Wooded Area

0 250 500 metres

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Notes

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Project Location
City of Hamilton

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Technical Review by ABC on yyyy-mm-dd

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
12

Title
Designated Natural Heritage Features

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Legend

- Enbridge Existing Station
- Preferred Route
- Enbridge Existing Pipeline
- Hydro Line
- Major Road
- Minor Road
- Watercourse
- Municipal Boundary, Lower
- Waterbody
- Community Centre
- Stormwater Management Pond
- Other Linear Feature
- Industrial
- Residential Complex

0 250 500 metres

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Notes

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City of Hamilton

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Independent Review by ABC on yyyy-mm-dd

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
13.1

Title
Infrastructure and Socio-Economic Features

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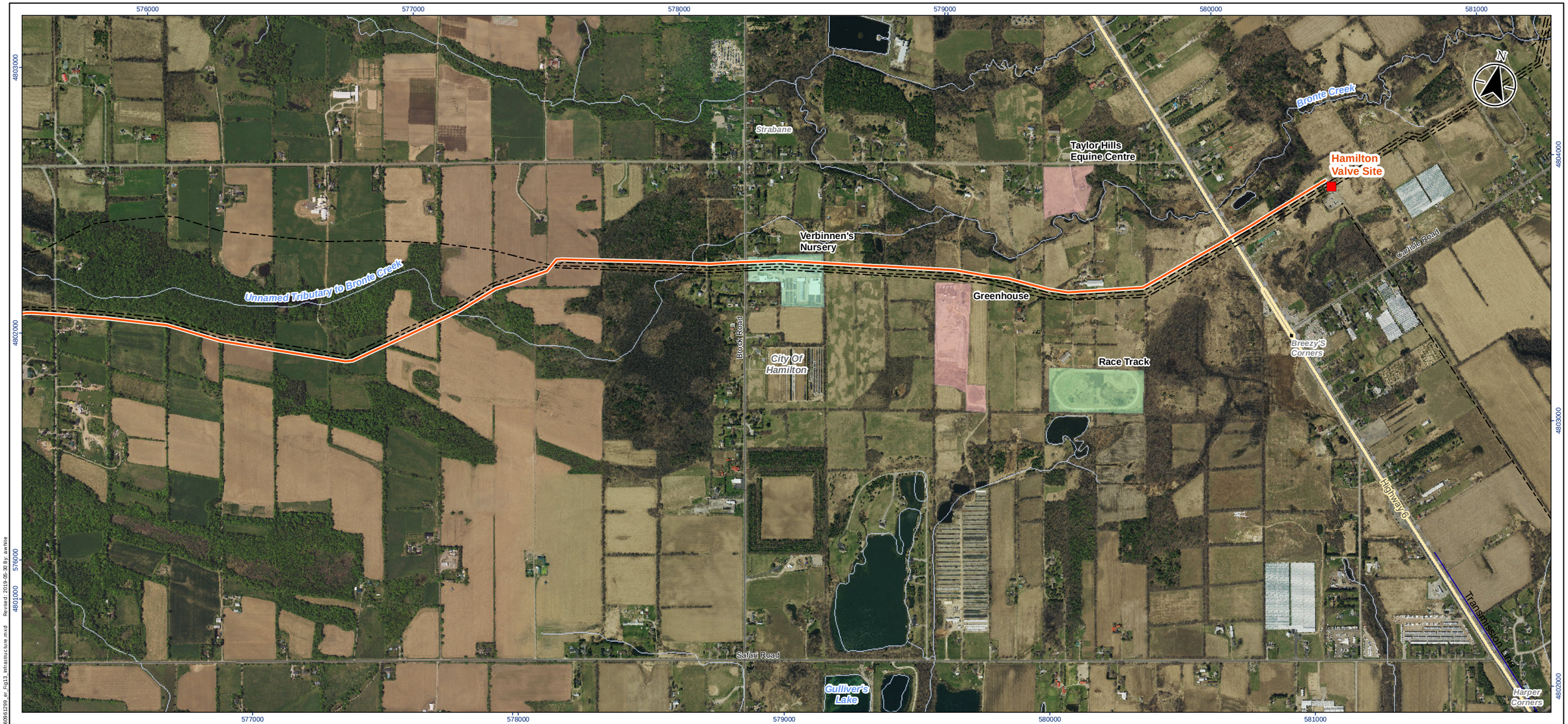



Legend

- Enbridge Existing Station
- Preferred Route
- Enbridge Existing Pipeline
- Hydro Line
- Expressway / Highway
- Major Road
- Minor Road
- Watercourse
- Municipal Boundary, Lower
- Waterbody
- Other Linear Feature
- Greenhouses/Nursery
- Race Track
- Speciality Farm

0 250 500 metres

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Notes

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Project Location
City of Hamilton

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Technical Review by ABC on yyyy-mm-dd
Independent Review by ABC on yyyy-mm-dd

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
13.2

Title
Infrastructure and Socio-Economic Features

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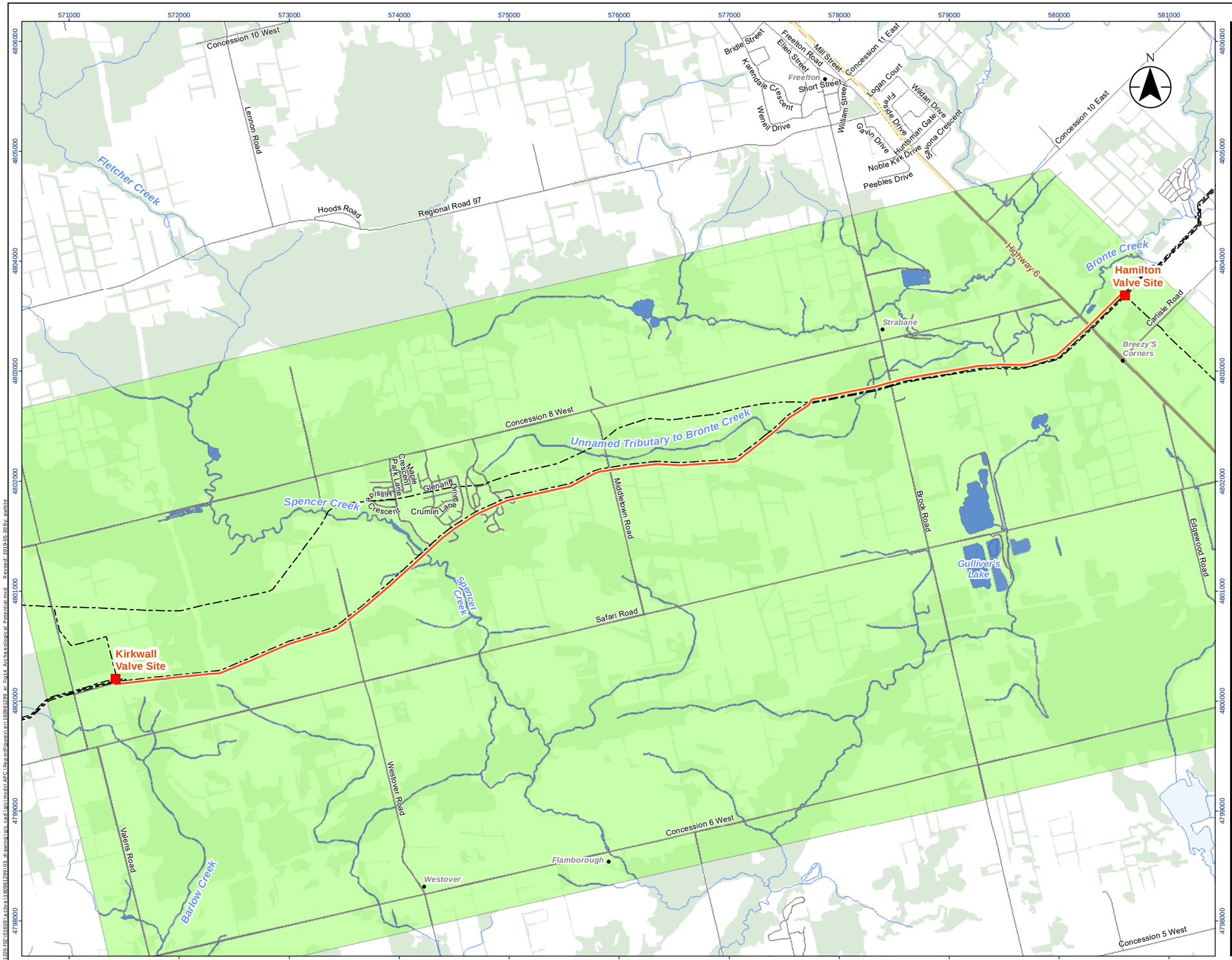

Stantec

Legend

Potential_Type

- Retains Archaeological Potential; Stage 2 Assessment Required
- Municipal/Provincial Road ROW, May Retain Archaeological Potential; Stage 2 Assessment Required to Confirm Disturbance
- Low and Permanently Wet Areas, Low to No Archaeological Potential; Stage 2 Assessment Required to Confirm Presence
- Watercourse (Intermittent)
- Watercourse (Permanent)
- Waterbody
- Wooded Area

0 500 1,000 m

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Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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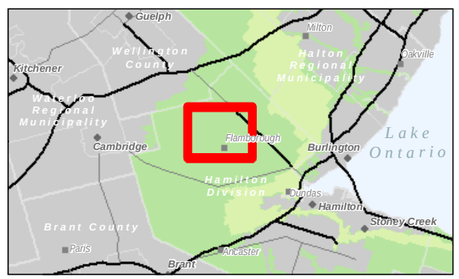
3. Knonw Archaeological Sites from MTCS as of March 1, 2019.



Project Location
County of Essex and the Municipality Of Chatham-Kent

160961299 REVA
Prepared by AW on 2019-05-30
Technical Review by ST on 2019-05-06

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
14

Title
Archaeological Potential

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Notes

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Legend

- Identified Heritage Resource
- Inventoried Heritage Property
- Enbridge Existing Station
- Preferred Route
- Enbridge Existing Pipeline
- Hydro Line
- Major Road
- Minor Road
- Watercourse
- Municipal Boundary, Lower
- Waterbody

0 250 500 metres

1:15,000 (At original document size of 11x17)

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Project Location
City of Hamilton

160961299 REVA
Prepared by AW on 2019-05-28
Technical Review by ABC on yyyy-mm-dd
Independent Review by ABC on yyyy-mm-dd

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
15.1

Title
Cultural Heritage Features

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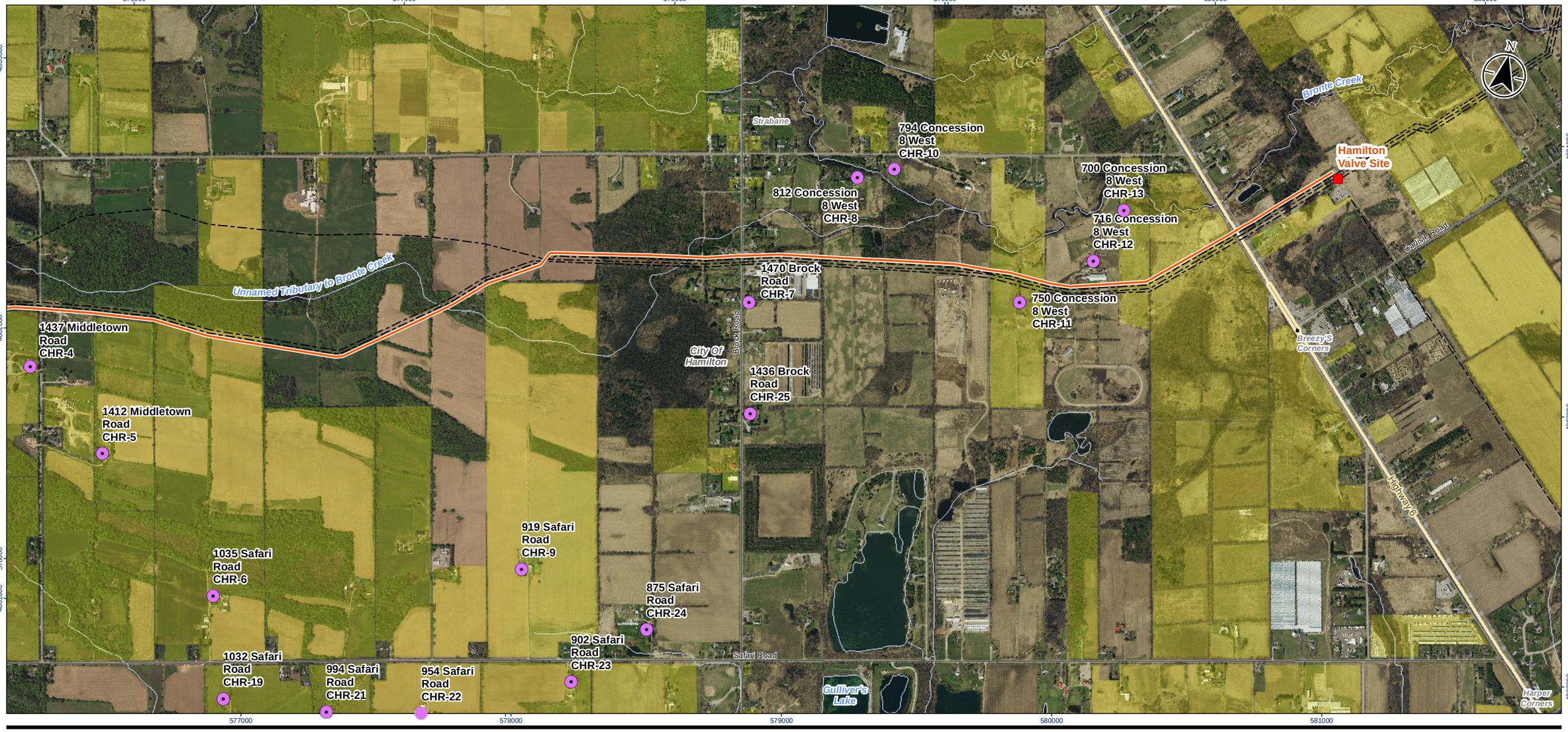



Legend

- Identified Heritage Resource
- Inventoried Heritage Property
- Enbridge Existing Station
- Preferred Route
- Enbridge Existing Pipeline
- Hydro Line
- Expressway / Highway
- Major Road
- Minor Road
- Watercourse
- Municipal Boundary, Lower
- Waterbody

0 250 500 metres

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Notes

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City of Hamilton

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Technical Review by ABC on yyyy-mm-dd
Independent Review by ABC on yyyy-mm-dd

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
15.2

Title
Cultural Heritage Features

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Legend

- Preferred Route
- Enbridge Existing Station
- Enbridge Existing Pipeline
- Expressway / Highway
- Major Road
- Minor Road
- Watercourse (Permanent)
- Watercourse (Intermittent)
- Waterbody

Slope

- 0 - 5 degrees
- 6 - 10 degrees
- 10 - 80 degrees

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Notes

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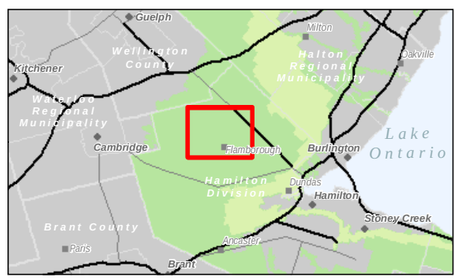

Project Location
City of Hamilton

160961299 REVA
Prepared by AW on 2019-05-27
Technical Review by ABC on 2019-MM-DD

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
16

Title
Slope

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APPENDIX D:
TERRESTRIAL HABITAT



Appendix D-1 Wildlife Habitat Assessment in Proximity to Proposed Pipeline Route (Ecoregion 6E)

Wildlife Habitat Type	Criteria	Methods	Habitat Assessment
SEASONAL CONCENTRATION AREAS			
Waterfowl Stopover and Staging Area (Terrestrial and Aquatic)	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.	ELC surveys, wildlife habitat assessments, and air photo interpretation will be used to assess features in proximity to the proposed pipeline route that may support waterfowl stopover and staging areas.	Ponds present in proximity to the proposed pipeline route and spring flooding may occur at Westover Road based on spring aerial photography. Habitat assessment to be completed during 2020 field investigations.
Shorebird Migratory Stopover Area	Beaches and un-vegetated shorelines of lakes, rivers, and wetlands.	ELC surveys and air photo interpretation will be used to assess features in proximity to the proposed pipeline route that may support migratory shorebirds.	Natural unvegetated shoreline habitat is absent in proximity to the proposed pipeline route.
Raptor Wintering Area	Combination of fields and woodland (>20 ha).	ELC surveys and air photo interpretation will be used to assess features in proximity to the proposed pipeline route that may support wintering raptors.	Suitable upland habitat (>15 ha, pasture) may occur west of Middletown Road adjacent to forested areas. Assessment of upland habitat suitability to be completed during 2019-2020 field investigations.
Bat Hibernacula	Hibernacula may be found in caves, mine shafts, underground foundations and karsts.	ELC surveys, wildlife habitat assessments, and air photo interpretation will be used to assess features in proximity to the proposed pipeline route that may support bat hibernacula.	Crevices, caves or abandoned mines are absent in proximity to the proposed pipeline route.
Bat Maternity Colonies	Maternity colonies considered significant wildlife habitat are found in forested ecosites.	ELC surveys, wildlife habitat assessments, and air photo interpretation will be used to assess features in proximity to the proposed pipeline route that may support bat maternity colonies.	Forest habitat is present in proximity to the proposed pipeline route. which may support bat maternity colonies.
Turtle Wintering Areas	Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate dissolved oxygen. Water has to be deep enough not to freeze and have soft mud substrate.	ELC surveys, wildlife habitat assessments and air photo interpretation will be used to assess features in proximity to the proposed pipeline route that may support areas of permanent standing water but not deep enough to freeze.	Wetlands and waterbodies present in proximity to the proposed pipeline route. Habitat assessment to be completed during 2019-2020 field investigations.

Appendix D-1 Wildlife Habitat Assessment in Proximity to Proposed Pipeline Route (Ecoregion 6E)

Wildlife Habitat Type	Criteria	Methods	Habitat Assessment
Reptile Hibernaculum	Rock piles or slopes, stone fences, crumbling foundations	ELC surveys and wildlife habitat assessments will be used to document features in proximity to the proposed pipeline route that may support snake hibernacula.	To be determined during 2019 field investigations.
Colonial-Nesting Bird Breeding Habitat (Bank and Cliff)	Eroding banks, sandy hills, steep slopes, rock faces or piles	ELC surveys, wildlife habitat assessments, and air photo interpretation will be used to assess features in proximity to the proposed pipeline route that may support colonial bird breeding habitat.	To be determined during 2019-2020 field investigations.
Colonial-Nesting Bird Breeding Habitat (Tree/Shrubs)	Dead trees in large marshes and lakes, flooded timber, and shrubs, with nests of colonially nesting heron species.	ELC surveys and wildlife habitat assessments will be used to assess features in proximity to the proposed pipeline route that may support colonial bird breeding habitat (Trees/Shrubs).	LIO identified the presence of mixed wader nesting colonies. To be confirmed during 2019-2020 field investigations.
Colonial-Nesting Bird Breeding Habitat (Ground)	Rock islands and peninsulas in a lake or large river.	ELC surveys and air photo interpretation will be used to assess features in proximity to the proposed pipeline route that may support colonial bird breeding habitat (Ground).	LIO identified the presence of colonial waterbird nesting area. To be confirmed during 2019-2020 field investigations.
Migratory Butterfly Stopover Areas	Meadows and forests that are a minimum of 10 ha and are located within 5km of Lake Ontario.	GIS analysis was used to measure distance from the Lake Ontario shoreline.	Not located within 5 km of Lake Ontario.
Landbird Migratory Stopover Areas	Woodlands of a minimum size located within 5 km of Lake Ontario.	GIS analysis was used to measure distance from the Lake Ontario shoreline.	Not located within 5 km of Lake Ontario.
Deer Winter Congregation Areas	Deer winter congregation’s areas are mapped by MNRF and species use surveys are not required.	The LIO database and MNRF consultation were used to identify deer winter congregation areas.	Large deer wintering area associated with the Beverly Swamp and adjacent woodlands identified within proximity to the proposed pipeline route.
RARE VEGETATION COMMUNITIES			

Appendix D-1 Wildlife Habitat Assessment in Proximity to Proposed Pipeline Route (Ecoregion 6E)

Wildlife Habitat Type	Criteria	Methods	Habitat Assessment
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.	ELC surveys and air photo interpretation were used to assess vegetation communities in proximity to the proposed pipeline route.	To be determined during 2019-2020 field investigations.
Old-growth Forest	Relatively undisturbed, structurally complex; dominant trees > 100 years' old.	ELC surveys and air photo interpretation were used to assess vegetation communities in proximity to the proposed pipeline route.	To be determined during 2019-2020 field investigations.
Tallgrass Prairie and Savannah	Open canopy habitats (tree cover < 60%) dominated by prairie species.	ELC surveys and air photo interpretation were used to assess vegetation communities in proximity to the proposed pipeline route.	To be determined during 2019-2020 field investigations.
Other Rare Vegetation Communities	Provincially Rare S1, S2 and S3 vegetation communities listed by the NHIC.	ELC surveys and air photo interpretation will be used to assess vegetation communities in proximity to the proposed pipeline route.	To be determined during 2019-2020 field investigations.
SPECIALIZED HABITAT FOR WILDLIFE			
Waterfowl Nesting Area	Upland habitats adjacent to wetlands (within 120m).	ELC surveys, wildlife habitat assessment, and air photo interpretation will be used to assess features in proximity to the proposed pipeline route that may support nesting waterfowl.	To be determined during 2019-2020 field investigations.
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.	ELC surveys, air photo interpretation and wildlife habitat assessment will be used to assess features in proximity to the proposed pipeline route that may support nesting, foraging and perching habitat for large raptors.	To be determined during 2019-2020 field investigations.
Woodland Raptor Nesting Habitat	Forested ELC communities >30 ha with 10 ha of interior habitat.	ELC surveys, wildlife habitat assessment, and GIS analysis were used to assess features in proximity to the proposed pipeline route that may support nesting habitat for woodland raptors.	Suitable forests (i.e., >10 ha of interior habitat) present within proximity to the proposed pipeline route. .

Appendix D-1 Wildlife Habitat Assessment in Proximity to Proposed Pipeline Route (Ecoregion 6E)

Wildlife Habitat Type	Criteria	Methods	Habitat Assessment
Turtle Nesting Areas	Exposed soil, including sand and gravel in open sunny areas near wetlands.	ELC surveys, wildlife habitat assessment and air photo interpretation will be used to assess features in proximity to the proposed pipeline route that may support turtle nesting areas.	To be determined during 2019-2020 field investigations.
Seeps and Springs	Any forested area with groundwater at surface within the headwaters of a stream or river system	Surveys and air photo interpretation will be used to assess areas/features of groundwater upwelling, including seeps and springs.	To be determined during 2019-2020 field investigations.
Amphibian Breeding Habitat (Woodland and Wetland)	Treed uplands with vernal pools, and wetland ecosites	ELC surveys will be used to assess features in proximity to the proposed pipeline route that may support woodland breeding amphibians.	To be determined during 2019-2020 field investigations.
Woodland Area-sensitive Bird Breeding Habitat	Large mature forest stands, woodlots >30ha and >200m from the forest edge.	ELC surveys, air photo interpretation, and GIS analysis were used to determine whether woodlots that occurred in proximity to the proposed pipeline route that were >30 ha with interior habitat present (>200 m from edge).	Suitable forests (i.e., >30 ha with interior habitat) present in proximity to the proposed pipeline route.
HABITAT FOR SPECIES OF CONSERVATION CONCERN			
Marsh Bird Breeding Habitat	Wetlands with shallow water and emergent aquatic vegetation.	ELC surveys and air photo interpretation were used to identify marshes with shallow water and emergent vegetation in proximity to the proposed pipeline route that may support marsh breeding birds.	To be determined during 2019-2020 field investigations.
Open Country Bird Breeding Habitat	Large grasslands and fields (>30ha).	ELC surveys, air photo interpretation, and GIS analysis were used to identify grassland communities in proximity to the proposed pipeline route that may support area-sensitive breeding birds.	To be determined during 2019-2020 field investigations.
Shrub/Early Successional Bird Breeding Habitat	Large shrub and thicket habitats (>10ha).	ELC surveys, air photo interpretation and GIS analysis were used to identify large communities that may support shrub/early successional breeding birds.	To be determined during 2019-2020 field investigations.

Appendix D-1 Wildlife Habitat Assessment in Proximity to Proposed Pipeline Route (Ecoregion 6E)

Wildlife Habitat Type	Criteria	Methods	Habitat Assessment
Terrestrial Crayfish	Wet meadows and edges of shallow marshes.	ELC surveys were used to identify shallow marsh and meadow marsh communities that occurred in proximity to the proposed pipeline route; searches for crayfish chimneys will be conducted during wildlife habitat assessments.	To be determined during 2019-2020 field investigations.
SPECIES OF CONSERVATION CONCERN			
Candidate habitat for Species of Conservation Concern to be assessed during 2019-2020 field investigations			
ANIMAL MOVEMENT CORRIDORS			
Amphibian Movement Corridor	Corridors may be found in all ecosites associated with water. Determined based on identifying significant amphibian breeding habitat (wetland).	Identified after Amphibian Breeding Habitat - Wetland is confirmed. Movement corridors should be considered when amphibian breeding habitat is confirmed as SWH from Amphibian Breeding Habitat (Wetland).	Amphibian movement corridors are likely present along watercourses in proximity to the proposed pipeline route.
Deer Movement Corridor	Corridors may be found in all forested ecosites. Determined based on MNRF identifying Deer Wintering Areas.	Movement corridors should be considered when Deer Wintering Areas are identified.	Deer movement corridor anticipated to/from the Deer Wintering Area to the west along hedgerows, east along Spencer Creek, and south along riparian vegetation.

REFERENCES

MNRF. 2015. Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E. January, 2015. 41 pp.

Appendix D-2: Habitat Potential for Threatened or Endangered Species in Proximity to the Proposed Pipeline Route

Species	Habitat Preference	Habitat Potential
PLANTS		
American Chestnut	Grows in rich mixed and deciduous forests, frequently with oak; most populations have been decimated by chestnut blight (Nixon, 1997). Typical habitat is upland deciduous forest on acid to neutral, sandy soil (COSEWIC, 2004a).	Suitable habitat for the species may be present in proximity to the proposed pipeline route where deciduous forests occur. A botanical inventory will be completed in 2019-2020 to confirm species presence or absence.
American Columbo	Occurs in a variety of habitats but is most commonly associated with dry open forested slopes but can be found in clearings and thickets as well as swampy areas; Its long-life span may allow for persistence in sub-optimal habitats (COSEWIC, 2006). Grows in dry to moist deciduous forests and openings (Reznicek et al., 2011).	Suitable habitat for the species may be present in proximity to the proposed pipeline route where openings occur in thickets or deciduous forests. A botanical inventory will be completed in 2019-2020 to confirm species presence or absence.
Bashful Clubrush	Bashful Bulrush requires open-canopied forest with little shrub cover and excellent drainage (Crins 1986). It is found on semi-open south- or west-facing slopes in deciduous and mixed woods. It is only known to occur in southern Ontario in the valley of the Rouge River in the eastern region of Metropolitan Toronto and in Hamilton (COSEWIC 2000).	Suitable habitat for the species may be present in proximity to the proposed pipeline route. A botanical inventory will be completed in 2019-2020 to confirm species presence or absence.
Butternut	Found in a variety of habitats throughout Southern Ontario, including woodlands and hedgerows (Farrar, 1995).	Suitable habitat exists for this species may be present in proximity to the proposed pipeline route within any deciduous or mixed woodlands and hedgerows. A botanical inventory will be completed in 2019-2020 to confirm species presence or absence.
Eastern Flowering Dogwood	Eastern flowering dogwood is an understory plant of dry to fresh deciduous and mixed forests, which frequently grows on the tops of slopes or other dry microsites, and occasionally in moister areas where no flooding occurs; preferred soils range from sand to sandy loam and clay loam (COSEWIC, 2007)	Suitable habitat exists for this species may be present in proximity to the proposed pipeline route within any deciduous or mixed woodlands. A botanical inventory will be completed in 2019-2020 to confirm species presence or absence.
Red Mulberry	Red Mulberry occurs in moist forests habitats including river valleys, floodplains, swales, sandspits, and slopes of the Niagara Escarpment (COSEWIC 2014).	Suitable habitat exists for this species may be present in proximity to the proposed pipeline route within moist forests and thickets. A botanical inventory will be completed in 2019-2020 to confirm species presence or absence.
Spotted Wintergreen	Occurs in a variety of forested habitats including coniferous, mixed, and deciduous forests, as well as dry sand communities (Freeman, 2009).	Suitable habitat for the species may be present in proximity to the proposed pipeline route. A botanical inventory will be completed in 2019-2020 to confirm species presence or absence.

Appendix D-2: Habitat Potential for Threatened or Endangered Species in Proximity to the Proposed Pipeline Route

Species	Habitat Preference	Habitat Potential
REPTILES		
Blanding's Turtle	Lakes, ponds, and marshes; prefers shallow water with abundant aquatic vegetation and a soft bottom (MacCulloch, 2002).	Suitable habitat for this species may be present in proximity to the proposed pipeline route within the PSWs. A habitat assessment and surveys will be completed in 2019-2020.
Eastern Spiny Softshell	Found along lakes and large rivers. Requires sandy beaches or riverbanks for nesting, shallow soft-bottomed water bodies to function as nurseries or refugia, basking areas and deep pools for thermoregulation, and riffle areas for foraging (COSEWIC 2002).	This species is associated with the Syndenham and Thames Rivers and not known to occur in proximity to the proposed pipeline route. Suitable habitat for this species is considered absent in proximity to the proposed pipeline route.
Amphibians		
Jefferson Salamander	The Jefferson Salamander is terrestrial during the adult stage and inhabits upland deciduous forests with suitable breeding areas including limestone sinkhole ponds, kettle ponds, vernal pools and other natural basins. Breeding areas are often ephemeral and are fed by spring runoff, groundwater, or springs. In Canada, the species is associated with mature, Carolinian forests. Suitable habitat is often only available in fragmented deciduous woodlots of marginal agricultural land (COSEWIC, 2010).	This species is not known to occur in proximity to the proposed pipeline route (Ontario Nature 2017). Suitable habitat for this species is considered absent in proximity to the proposed pipeline route.
BIRDS		
Bank Swallow	Bank Swallows excavate nests in exposed earth banks along watercourses and lakeshores, roadsides, stockpiles of soil, and the sides of sand and gravel pits (Falconer et al., 2016). Any suitable habitat may be present if stockpiles of soil are present or in areas of sand/gravel extraction.	Potential habitat will be identified, and habitat use determined through breeding bird surveys conducted in June 2020.
Barn Swallow	Nest on walls or ledges of barns and other human-made structures such as bridges, culverts or other buildings; forages in open areas for flying insects (COSEWIC 2011).	Suitable nesting habitat is available in barns and old structures; however, no structures are proposed for removal.
Bobolink	Nests primarily in forage crops with a mixture of grasses and broad-leaved forbs, predominantly hayfields and pastures (COSEWIC 2010).	Suitable habitat is present within proximity to the proposed pipeline route. Habitat use will be determined through breeding bird surveys conducted in June 2020.

Appendix D-2: Habitat Potential for Threatened or Endangered Species in Proximity to the Proposed Pipeline Route

Species	Habitat Preference	Habitat Potential
Cerulean Warbler	Breeds mainly in mature deciduous or swamp forest. The species generally prefers tracts over 100 ha in size but it has been found to breed in woodlots as small as 10 ha (Hamel, 2000).	Suitable habitat is present within proximity to the proposed pipeline route. Habitat use will be determined through breeding bird surveys conducted in June 2020.
Chimney Swift	Chimney Swifts primarily use chimneys for roosting and nesting, and only rarely nest in large hollow trees (Fitzgerald et al., 2014; Zanchetta et al., 2014).	There may be available chimneys along the proposed route, but no structures are proposed for removal.
Eastern Meadowlark	Meadows, hayfields and pastures; also, other open habitat types including mown lawn (COSEWIC 2011). Prefers large (~5 ha), low-lying wet grasslands with abundant litter (COSEWIC 2011).	Suitable habitat is present within proximity to the proposed pipeline route. Habitat use will be determined through breeding bird surveys conducted in June 2020.
Eastern Whip-poor-will	Whip-poor-will favour open woodlands with frequent clearings. Its preferred nesting sites contain shaded leaf litter or pine needles and generally occur along wooded edges or in clearings without any herbaceous growth (Cadman et al. 1987). The species is considered to be area-sensitive, preferring 100 hectares of suitable habitat for breeding.	Potential habitat will be identified during studies undertaken in 2019-2020.
Least Bittern	Nests in freshwater marshes where dense aquatic vegetation occurs with woody vegetation and open water. They are found most commonly in marshes greater than 5 ha in size (Gibbs et al., 1992).	Suitable large marshes may occur within proximity to the proposed pipeline route. Habitat use will be determined if required in May/June 2020.
Loggerhead Shrike	This species prefers early successional shrubland, including unimproved pastured areas. It utilizes open country with short vegetation, including pastures with fence rows, old orchards, mowed roadsides, cemeteries, golf courses, agricultural fields, riparian areas and open woodlands (Reuven, 1996).	Suitable pastureland may occur within proximity to the proposed pipeline route. Habitat use will be determined if required in June 2020.
Louisiana Waterthrush	In Ontario, this species prefers deciduous and mixed forests with a strong Eastern Hemlock component, in deeply incised ravines (Cadman et al. 2007). It will also inhabit large flooded tracts of mature deciduous swamp forest. It shows a preference for nesting along pristine headwater streams and associated wetlands occurring in large expanses of mature forest and less frequently inhabits wooded swamps (COSEWIC, 2006).	Suitable habitat for the species may be present in proximity to the proposed pipeline route. Habitat use will be determined through breeding bird surveys conducted in June 2020.

Appendix D-2: Habitat Potential for Threatened or Endangered Species in Proximity to the Proposed Pipeline Route

Species	Habitat Preference	Habitat Potential
Yellow-breasted Chat	Prefers scrubby, early successional habitat; recorded in shrub thickets, woodland edges, hedgerows, regenerating abandoned fields and young coniferous plantations, and in hydro and rail rights-of-way (Cadman et al. 2007).	Suitable habitat for the species may be present in proximity to the proposed pipeline route. Habitat use will be determined through breeding bird surveys conducted in June 2020.
MAMMALS		
Little Brown Myotis	Trees, buildings and bridges for roosting; trees for nesting; caves and mines for hibernation (COSEWIC 2013).	Suitable roosting habitat is available in barns and old structures; however, no structures are proposed for removal. Candidate maternity roost trees will be identified within suitable ELC communities. Limits of clearing to be determined in 2019-2020.
Northern Myotis	Caves provide overwintering habitat (COSEWIC 2013). Rarely uses human-made structures for roosting (COSEWIC 2013).	Candidate maternity roost trees will be identified within suitable ELC communities. Limits of clearing to be determined in 2019-2020.
Small-footed Myotis	Small-footed myotis hibernate in the fall in caves and abandoned mines after mating occurs near these communal sites. During summer months, this bat typically roosts in crevices and cracks associated with rocky sites (e.g. rip rap, rock piles, bluffs, bedrock outcrops) but also have also been found in old buildings (e.g., barns, and houses).	Suitable roosting habitat is available in barns and old structures; however, no structures are proposed for removal.
Tri-colored Bat	Found in a variety of habitats; caves provide overwintering habitat (COSEWIC 2013).	Candidate maternity roost trees will be identified within suitable ELC communities. Limits of clearing to be determined in 2019-2020.

APPENDIX E:
CONTAMINATION OVERVIEW STUDY



Kirkwall-Hamilton Pipeline Project: Contamination Overview Study

FINAL REPORT

June 18, 2019

Prepared for:

Enbridge Gas Inc.

Prepared by:

Stantec Consulting Ltd.
100-300 Hagey Boulevard
Waterloo ON N2L 0A4

Project No.: 160961299

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Executive Summary

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, Enbridge Gas is proposing to construct a new 48-inch diameter natural gas pipeline located within the City of Hamilton. The proposed pipeline 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 retained Stantec Consulting Ltd. (Stantec) to complete a Contamination Overview Study (COS) for the proposed project. The proposed pipeline generally runs north of Safari Road and south of Concession 8 West between Valens Road and just east of Highway 6. This length of proposed pipeline will be referred to herein as the "Site" (**Figure 1**, **Appendix A**). The specific purpose of the COS was to assess if evidence of potential and actual environmental contamination exists at the Site as a result of current and past activities on the Site or adjacent/neighbouring properties.

To fulfill the objective of the COS, historical records and documentation available for the Site and the surrounding areas were reviewed and a site reconnaissance was completed on January 4, 2019. Following the review of historical records and the site reconnaissance, potential sources of contamination (PSOC) for the Site were identified, as summarized below. PSOC were ranked as either high, moderate, or low depending on the distance of the potential source from the Site and the activity associated with the potential source. The following is a summary of the identified PSOC associated with the Site:

Table 1: Summary of Potential Sources of Contamination

PSOC ID No.	Description of Potential Source	Location	Approximate Distance from the Site	Contaminant of Concern	Potential for Concern	Explanation of Potential for Concern
1	Enbridge Gas Kirkwall Valve Site	1374 Valens Road	Adjacent property to the west	Petroleum Hydrocarbons (PHCs), Polycyclic Aromatic Hydrocarbons (PAHs), and Volatile Organic Compounds (VOCs)	Low	Presence of metering equipment. No evidence of soil or groundwater contamination identified through Site observation and historical records review process.
2	Trans Canada Kirkwall Compressor Station	1376 Valens Road	Adjacent property to the west	PHCs, PAHs, and VOCs	Low	Presence of metering equipment. No evidence of soil or groundwater contamination identified through Site observation and historical records review process.
3	Imported Fill Material	Entire Site	On Site	PHCs, PAHs, VOCs, Metals and Inorganics	Moderate	It is expected that fill materials of unknown quality were imported onto the Site for the purposes of construction within the easement Therefore, the PSOC associated with imported fill along the Site is considered to be moderate.

Table 1: Summary of Potential Sources of Contamination

PSOC ID No.	Description of Potential Source	Location	Approximate Distance from the Site	Contaminant of Concern	Potential for Concern	Explanation of Potential for Concern
4	Pad-Mounted Transformers	Off Glenariff Drive	Within Study Area	PHCs and PCBs	Low	A pad-mounted transformer was identified off Glenariff Drive associated with the residential communities off Concession 8 West. Given the potential for this transformer to contain PCBs and/or transformer oil, it is considered to represent a PSOC with low potential concern.
5	Scrap Cars, Debris, and Stockpiles	1454 Middletown Road	Approximately 75 m south of the Site	PHCs, PAHs, and VOCs	Low	Stockpiles of unknown origin/quality and several cars in varying states of disrepair were observed at this property, in addition to several piles of debris. The potential for migration of contaminants from these materials onto the Site represents a potential concern. This PSOC is considered to be low due to the distance of the property from the Site.

Table 1: Summary of Potential Sources of Contamination

PSOC ID No.	Description of Potential Source	Location	Approximate Distance from the Site	Contaminant of Concern	Potential for Concern	Explanation of Potential for Concern
6	Historical Spills	Portions of Brock Road and Highway 6 within Study Area	On Site and within Study Area	PHCs, PAHs, and VOCs	Low	A few unplottable records existed for spills (≤100 L) of diesel, gasoline, and oil along Brock Road and Highway 6 between 1990 and 1997. These spills may have occurred within the Study Area. The PSOC associated with these spills is considered to be low due to the age and size of the spills.
7	Verbinnen's Tree Nursery	1504 Brock Road	Adjacent property to the south	Pesticides and Herbicides	Low	During the site reconnaissance, a tree nursery was identified adjacent to the south of the Site. It is possible that bulk storage of pesticides and herbicides may be present given their likely use at the tree nursery to protect against disease and pests. Based on the nature of the activities at this property, the PSOC is considered to be low.
8	Hamilton Valve Site	43 Carlisle Road	Adjacent property to the southeast	PHCs, PAHs, and VOCs	Low	Presence of metering equipment. No evidence of soil or groundwater contamination identified through Site observation and historical records review process.



Based on the above, the following recommendations are provided:

- Should excess soil be generated at the Site during future construction activities, representative soil samples should be collected in coordination with a qualified person for environmental site assessment (QP_{ESA}) as defined by Ontario Regulation 153/04 and submitted for chemical analysis to determine management options and appropriate handling and health and safety guidelines.
- Should excess soil be generated at the Site during construction activities, soils that do not meet the Standards listed in Table 1 of the Ministry of Environment, Conservation, and Parks (MECP) document *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* (April 15, 2011) may not be considered inert fill upon excavation, and off-site management options for excess soils that cannot be reused within the Site must be considered. It is understood that salt-related parameters may not be considered to be contaminants at areas of the Site that cross a road alignment, when de-icing salt has been used for winter road maintenance (O.Reg. 153/04 s.48 (3)); however, soil or water impacted by salt should be managed according to MECP guidance if it is to be removed from the Site.
- Should excess water be generated at the Site during construction activities, water quality analyses should be conducted to determine appropriate management methods, such as is done in support of a permit to take water (PTTW). This work should be done in coordination with a QP_{ESA} to maintain data quality and provide an appropriate assessment of water quality. The QP_{ESA} should be aware of the PSOCs identified herein so as to select an appropriate list of analytes.
- Should evidence of soil or water impacts be identified during construction (e.g., staining, odours, debris/waste, petroleum hydrocarbon sheen) samples should be collected for laboratory analyses to confirm concentrations of potential contaminants so as to develop appropriate material management, and health and safety guidelines.
- Water wells within the study area can provide a conduit from the ground surface, and should be abandoned in accordance with Reg. 903 if they are no longer in use.
- A Phase I ESA, and Phase II ESA (if recommended as part of the Phase I ESA) should be considered for property that will be acquired by Enbridge Gas and a site-specific evaluation of PSOCs should be completed. If building demolition will be required, designated substance surveys should be completed for buildings or structures prior to demolition.

The statements made in this Executive Summary text are subject to the limitations included in **Section 5.0** and are to be read in conjunction with the remainder of this report.

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, Enbridge Gasis proposing to construct a new 48-inch diameter natural gas pipeline located within the City of Hamilton. The proposed pipeline 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 just 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 retained Stantec Consulting Ltd. (Stantec) to complete a Contamination Overview Study (COS) for the proposed project. The proposed pipeline generally runs north of Safari Road and south of Concession 8 West between Valens Road and just east of Highway 6. This length of proposed pipeline running along existing pipelines will be referred to herein as the "Site" (**Figure 1**, **Appendix A**). The specific purpose of the COS was to assess if evidence of potential and actual environmental contamination exists at the Site as a result of current and past activities on the Site or adjacent/neighbouring properties.

1.1 OBJECTIVE

The objective of the COS was to identify properties or areas that represented the potential for site contamination at the time of the investigation. The Canadian Standards Association (CSA) Standard Z768-01 for Phase I Environmental Site Assessment (ESA) defines contamination as the presence of a substance of concern, or a condition, in concentrations above appropriate pre-established criteria in soil, water, groundwater, air, or structures (CSA, R2016). Potential sources of contamination (PSOC) were qualitatively ranked as either a high, moderate, or low concern. **Section 2.0** provides a definition of each qualitative ranking.

1.2 SCOPE OF WORK

The scope of work completed to fulfill the objective of the COS entailed a modified Phase I ESA, as follows:

- Review of historical records and documentation available for the Site and study area (within 250 m of the Site between the Kirkwall Valve Site and Hamilton Valve Site). This review included a database search and a review of historical aerial photographs.
- Completion of a site reconnaissance of the Site and study area where accessible by public roadways.

The COS used the following documents as guidance to conduct the investigation:

- CSA, 2001. Standard Z768-01: Phase I Environmental Site Assessment. November 2001, reaffirmed 2016.
- Ontario, 2011. Ontario Regulation 153/04, Records of Site Condition, July 2011, as amended.

The COS deviated from a standard Phase I ESA in that site interviews were not completed with individual landowners, fire insurance plans were not ordered, city directory searches and title searches were not completed, well records were not reviewed, and requests were not directly made to the Ontario Ministry of the Environment, Conservation and Parks (MECP) for information they have on file for the Site. Much of this information was obtained through a database search completed by Environmental Risk Information Services (ERIS). The site reconnaissance comprised a windshield level survey that was conducted only in areas accessible by public roadways. Furthermore, although the guidance provided in O.Reg. 153/04 was referenced for the completion of the COS, it was not intended to meet all investigation and reporting requirements of a Phase One ESA as presented in Schedule D of O.Reg. 153/04.

2.0 METHODOLOGY

This section describes the methods used to complete the historical records review and the site reconnaissance activities. A list of PSOCs contributing to potential environmental concerns at the Site was developed using the information obtained from the COS (refer to **Table 1**).

High, Moderate, and Low potential concerns identified within the study area were generally defined as follows:

- **High**: Current or former potentially contaminating activity at which soil and/or groundwater contamination is typically found (e.g., gasoline service station, dry cleaning operation, known soil and/or groundwater contamination, heavy industrial operations) adjacent to the Site or within 50 m of the Site in the inferred upgradient direction.
- **Moderate**: Current or former potentially contaminating activity at which soil and/or groundwater contamination is typically found (e.g., gasoline service station, dry cleaning operation, known soil and/or groundwater contamination, heavy industrial operations, reported spills) within 50 m of the Site in the inferred downgradient direction or within 75 m of the Site in the inferred upgradient direction.
- **Low**: Current or former potentially contaminating activity between 75 m and 250 m from the Site in the inferred downgradient direction OR between 75 m and 250 m from the Site in the inferred upgradient direction, or a source of potential contamination where the source has likely been remediated or the contamination has likely attenuated (e.g., the potential for concern associated with a spill of a limited quantity of fuel (<50 L) to a roadway).

Section 4.0 summarizes PSOCs that represent environmental concerns at the Site, while **Table 1** provides the justification for ranking the PSOC as High, Moderate, or Low.

2.1 HISTORICAL RECORDS REVIEW

The historical records review consisted of a review of information available from government, public, and other agencies or parties, and information on file at Stantec. In addition, topographic mapping and geological reference maps were reviewed to develop a conceptual understanding of site physiography and hydrogeology. Information was reviewed from the following sources:

- Aerial/Satellite Imagery:
  - ESRI World Imagery from ERIS
  - City of Hamilton GIS Services (1995, 2002, 2005, 2007, 2010, 2012, 2014, 2015, and 2017)
  - Earth Observation Data Management System (Natural Resources Canada) (1966, 1972, 1980, and 1992)

- ERIS – The ERIS report documented a database search for the Site and properties within 250 m of the Site. The ERIS report, including full references for each database searched, is provided in **Appendix D**, and included searches of the following:
  - Federal Databases, including but not limited to: federal tanks, spills, polychlorinated biphenyl (PCB) storage sites, and waste disposal site databases
  - Private Databases, including but not limited to: private tank listings, waste disposal site databases, and manufacturing directories
  - Provincial Databases, including but not limited to: provincial tanks, certificates of approval/environmental compliance approvals, waste generators, waste disposal sites, and spills
- Topographic/Geologic/Physiographic Mapping:
  - Barnett, P.J., Cowan, W.R. and Henry, A.P. 1991. Quaternary geology of Ontario, southern sheet; Ontario Geological Survey, Map 2556, scale 1:1 000 000.
  - Ontario Geological Survey, 1991. Bedrock Geology of Ontario, Southern Sheet; Map 2544, Scale 1: 1,000,000
  - Ontario Ministry of Natural Resources and Forestry, 2019. Make a Topographic Map website

A search of MECP Freedom of Information (FOI) files and the Technical Standards and Safety Authority (TSSA) was not completed. Information typically available through the FOI and TSSA offices was accessed by the ERIS database search.

2.2 SITE RECONNAISSANCE

Site reconnaissance activities included:

- A windshield level survey of the preferred route along Carlisle Road, Highway 6, Concession 8 West, Brock Road, Safari Road, Middletown Road, Valens Road, and Westover Road, between the Kirkwall Valve Site and Compressor Station and Hamilton Valve Site in the City of Hamilton. The windshield level survey included observations and photographic documentation of the Site from publicly accessible roadways.
- Observation of properties adjacent to the Site to determine land use, where visible from public roadways.

Mr. Mark de Verteuil, B.Sc., and Ms. Dawn Brake-Holmes, B.Sc. (Hons), of Stantec carried out the site reconnaissance on January 4, 2019.

3.0 RESULTS

3.1 HISTORICAL RECORDS REVIEW

This section presents the findings of the historical records review. The site location is presented on **Figure 1** (**Appendix A**). The ERIS report prepared for the Site is included in **Appendix D**.

3.1.1 Aerial and Satellite Imagery

The earliest available aerial photograph was from 1966. Aerial photographs and satellite imagery were reviewed for the study area from the Kirkwall Valve Site to the Hamilton Valve Site. The study area is illustrated in **Figures 2.1** and **2.2**, **Appendix A**.

The table below (Table 2) provides a summary of pertinent information obtained from the aerial photographs and satellite imagery listed above.

Table 2: Summary of Aerial Photographs and Satellite Imagery

Year	Summary
1966	The study area appeared to consist of agricultural or wooded areas, with some agricultural buildings and residential homes. Major roadways were generally visible in the same locations as present-day conditions. Several watercourses appeared to cross the Site, including Spencer Creek. No infrastructure associated with the valve sites could be observed.
1972	The study area was generally consistent with the layout as shown on the 1966 aerial photograph, with the exception of new residential development in the vicinity of the Beverly Hills Adult Lifestyle Community (shown on Figure 2.1) and some ground disturbance visible beyond the study area to the south, near a waterbody at the intersection of Brock Road and Safari Road. The area of the Kirkwall Valve Site and Kirkwall Compressor Station is not shown in the aerial photo coverage of 1972; however, there was no sign of development at the Hamilton Valve Site.
1980	The study area was generally consistent with the layout as shown on the 1972 aerial photograph, with the exception of additional residential construction in the vicinity of the Beverly Hills Adult Lifestyle Community, and Ponderosa Nature Resort (shown on Figure 2.1). Disturbed earth continued to be visible around the waterbody at the intersection of Brock Road and Safari Road. Small rectangular buildings or other structures were noted at the present-day location of Verbinnen's Nursery, adjacent to Brock Road (shown on Figure 2.2). A strip of cleared land following the approximate site alignment was also observed between Valens Road and Ponderosa Nature Resort, suggesting that a pipeline easement was under construction.
1992, 1995	The study area was generally consistent with the layout as shown on the 1980 aerial photograph, with the exception of additional ground disturbance visible along the approximate site alignment, between Ponderosa Nature Resort and Brock Road. Infrastructure associated with the Kirkwall Valve Site and Compressor Station and Hamilton Valve Site were visible in 1995, and approximate site alignment appeared to extend to Highway 6. An oval track associated with an agricultural property was visible adjacent to the south of the Study Area between Highway 6 and Brock Road.

Table 2: Summary of Aerial Photographs and Satellite Imagery

Year	Summary
2002	The study area was generally consistent with the layout as shown on the 1992 and 1995 aerial imagery, with the exception of the development of the Antrim Glen Retirement Community (shown on Figure 2.1) and disturbed earth to the southwest of the Antrim Glen Retirement Community and within the northern half of the Study Area.
2005, 2007	The study area was generally consistent with the layout as shown on the 2002 aerial imagery, with the exception of additional development at the Antrim Glen Retirement Community, particularly to the south of the community, near the approximate site alignment, and east of the community, near Ponderosa Nature Resort. Two lagoons were visible within the study area to the southwest of the Antrim Glen Retirement Community and north of the Site. A new large building or greenhouse was visible to the east of the Hamilton Valve Site in 2005 and this building was expanded in 2007.
2010, 2012, 2014, 2015, 2017	The study area was generally consistent with the layout as shown on the 2005 and 2007 aerial imagery, with the exception of the completion of additional development at the Antrim Glen Retirement Community in 2010.

3.1.2 Physiographic Setting

According to the Quaternary Geology of Ontario map published by the Ontario Geologic Survey (Map 2556), the surficial soil in the vicinity of the Site generally consists of Wentworth Till (sandy silt to silt matrix, highly calcareous) with some glaciofluvial ice-contact deposits of gravel and sand with minor till and organic deposits including peat. Map 2556 also noted that there was exposed Paleozoic bedrock in the vicinity of the Site, consisting of carbonate or clastic sedimentary rock exposed at the surface or covered by a thin layer of overburden.

A number of borehole and WWIS records within the study area were provided by ERIS. In general, the overburden material for the boreholes within 250 m of the Site consisted of a layer of sandy clay, sand, sand and gravel, or clay with gravel, usually underlain by bedrock (identified as limestone) to the termination of the boreholes at depths up to 70.0 m (200 ft) below ground surface (BGS). Occasionally, bedrock was also identified at the surface, or peat layers were identified within the overburden stratigraphy.

According to bedrock geology mapping published by the Ontario Geologic Survey (Map 2544), bedrock in the vicinity of the Site is classified as the Arnabel Formation or Guelph Formation and consists of sandstone, shale, dolostone, and siltstone. Bedrock was not encountered in any of the borehole records reviewed in the ERIS report to depths of 10.3 m BGS; however, the well records described above identified limestone bedrock at depths of between approximately 0.3 m (1 ft) and 59.4 m (195 ft) BGS. The depth to water in the WWIS wells was identified between approximately 5.5 m (18 ft) and 60.4 m (198 ft) BGS.

3.1.3 Hydrogeological Setting

The Site was observed to consist of mostly flat land with some rolling hills covered by agricultural fields or low-lying vegetation that form part of an existing natural gas pipeline easement. The Site crossed four roads: Westover Road, Middletown Road, Brock Road, and Highway 6. The adjacent properties were generally at the same grade as the Site, although ditches were sometimes located on either side of roadways that intersected the Site.

Based on a review of available maps and the topography observed in the vicinity of the Site, the inferred regional groundwater flow appears to be to the south toward the Niagara Escarpment and Lake Ontario, which were situated approximately 11.1 km and 13.6 km southeast of the eastern limit of the Site, respectively. The elevation of the local groundwater table can generally mimic the local topography and may not reflect the regional trend in drainage. The local shallow groundwater flow pattern also can be influenced by subsurface structures in the vicinity, such as building foundations, weeping tiles, and utility trenches.

As shown in **Figures 2.1** to **2.2** (**Appendix A**), there are several small watercourses in the vicinity of the Study Area, including Spencer's Creek and an unnamed tributary that extends mainly along the northern side of the Site from the Ponderosa Nature Resort and discharges into Bronte Creek to the west of Highway 6. A large waterbody was observed to the south of the study area, near the intersection of Brock Road and Safari Road, and constructed lagoons were observed north of the Site within the study area to the east of Spencer Creek.

3.1.4 ERIS Historical Database Review

This section summarizes pertinent information provided by the ERIS database review. The complete ERIS report is included in **Appendix D** and additional details regarding identified PSOCs are included in **Table 1, Appendix B**.

3.1.4.1 Trans Canada Kirkwall Compressor Station

At the Kirkwall Compressor Station, records from the National Energy Board Pipeline Incidents (NEBI) and National Pollutant Release inventory (NPRI) databases were identified in the ERIS report for Trans Canada related to a release of natural gas in 2009 due to cracked or damaged equipment, in addition to air releases of 2.5 and 10 micron particulate matter, carbon monoxide, and nitrous oxides between 2002 and 2013, and 2015. Although releases to air are not considered to represent potential concerns to the Site, given the presence of a compressor station with significant infrastructure related to pipeline maintenance and operations directly adjacent to the Site, this property is considered to represent a potential source of contamination (**PSOC 2**).

3.1.4.2 Beverly Hills and Antrim Glen Residential Communities

The Beverly Hills Adult Lifestyle Community and Antrim Glen Retirement Community, located at Lots 32 and 33, Concession 7, Beverly Township, City of Hamilton had relevant records within the ERIS report. This included a certificate of approval for additions to the sewage treatment works servicing the Beverly

Hills Adult Lifestyle Community in 2006, which identified a sewage lagoon with approximately 30,700 m^3 of storage capacity. Permits to Take Water (PTTWs) were listed for both properties under Parkbridge B/P Inc. and Belmac Estate Properties Inc. in 2006 and 2009. Two spills of raw sewage (200 L in 2004 and 140,000 L in 2010) were also listed for the Antrim Glen Retirement Community. Given the residential land use of these properties, the nature of the material released, and the time elapsed, the sewage lagoons and releases were not considered to represent a PSOC for the Site.

3.1.4.3 Ponderosa Nature Resort

The Ponderosa Nature Resort, located at Lot 34, Concession 7, Flamborough Township had relevant records within the ERIS report. This included a certificate of approval in 2001 for the temporary installation of a sewage line and holding tank to accommodate a flow of 600 L/ day. The temporary installation was to be replaced by a permanent facility in 2003. A PTTW was also identified for Ponderosa Nature Resort in 2011. The activities related to this resort are not considered to represent a PSOC at the Site.

3.1.4.4 Historical Spills

Records for spills related to vehicular accidents and leaks within the study area were noted in both the plottable and unplottable sections of the ERIS report. The spills anticipated to represent PSOCs for the Site are summarized below:

- A spill of 100 L of diesel fuel onto Highway 6 in 1997 was reported approximately 4 km north of Concession 7 East in Flamborough (i.e., within the Study Area; **Figure 2.2**, **Appendix A**).
- A spill of an unknown volume of diesel fuel to the ditch in 1990 was reported along Brock Road in Flamborough (potentially within the Study Area; **Figure 2.2**, **Appendix A**).
- A leak of 23 L of furnace oil/ gasoline in 1993 was reported along Highway 6 in Flamborough (potentially within the Study Area; **Figure 2.2**, **Appendix A**).

Residual impacts to soil and/or groundwater that may remain following these releases represents a PSOC. Because the precise spill locations are not known for several of these incidents, the PSOC was identified along the length of the reported roadways within the Site (**PSOC 6**). Full spill details can be found in the ERIS report (**Appendix D**).

3.1.4.5 Water Wells

Records for water wells were included in the ERIS report from searches of the WWIS database. These records indicate that water wells have been drilled at multiple locations within 250 m of the Site. Forty-two wells were advanced between 1954 and 2017, with stratigraphy, depth to bedrock, and water levels as described above. The water uses for these wells included irrigation, livestock, domestic, water supply, observation, and unknown (one from 1991 to depth of 18.3 m). Full details can be found in the ERIS report (**Appendix D**). The presence of water wells within the study area does not represent a PSOC for

the Site; however, it should be noted that wells can provide a conduit from the ground surface, and should be abandoned in accordance with Reg. 903 if they are no longer in use.

3.1.4.6 Other Records

ERIS provided several unplottable records that could be associated with the study area. One record considered environmentally relevant, and that was not associated with any of the sections described above, was for an Ontario Ministry of Transportation waste generator listing for oil skimmings and sludges at Highway 6 in Hamilton, Ontario. Although the location of waste generation along Highway 6 was not confirmed, this listing was considered to contribute to **PSOC 6** since Highway 6 intersects the Study Area (**Figure 2.2**, **Appendix A**).

3.2 SITE RECONNAISSANCE

The results of the site reconnaissance conducted on January 4, 2019 are summarized in the following sections. Pertinent photographs of the Site are provided in **Appendix C**, and the site details are indicated on **Figures. 2.1** to **2.2**, **Appendix A**.

3.2.1 General Site Layout and Observations

The Site extends from the Kirkwall Valve Site at 1374 Valens Road in Hamilton, Ontario to the Hamilton Valve Site at 43 Carlisle Road in Hamilton, Ontario (length of approximately 10 km). The proposed pipeline generally runs north of Safari Road and south of Concession 8 West between Valens Road and just east of Highway 6 (**Figure 1**, **Appendix A**). The observed surface features on the Site included cultivated fields, low-lying vegetation, and asphalt or gravel roadways. Adjacent surface features included wooded areas, the compressor station (PSOC 2), and commercial properties, residential properties, and small waterways. Natural gas pipeline markers and overhead electrical lines were observed along nearby roadways and occasionally crossing the Study Area. During the windshield level survey, stockpiles and piles of debris were observed at different locations on agricultural or commercial properties within the Study Area. These included scrap cars and debris at 1454 Middletown Road, approximately 75 m south of the Site, and stockpiles at 1490 Highway 6, approximately 110 m south of the Site. The locations of observed stockpiles and debris are indicated on **Figures 2.1** and **2.2**, **Appendix A**. Given that the stockpiles observed at 1490 Highway 6 are located at a distance > 100 m from the Site, they were not considered to contribute to a PSOC. However, the materials observed at 1454 Middletown Road were considered to represent a PSOC, due to the potential for release of fuel or other fluids and the potential for the stockpiles or debris to be disturbed during the construction if moved closer to the Site (**PSOC 5**).

Given that the proposed pipeline was observed to intersect numerous roadways, it is likely that road de-icing materials have impacted the soil and/or groundwater quality at these locations within the Site. Salt-related parameters are not considered to be contaminants in a road alignment when de-icing salt has been used for winter road maintenance (O.Reg. 153/04 s.48 (3)); however, salt-impacted soil or water would require special management measures if being removed off-site.

The majority of the properties adjacent to the Site and within the Study Area were residential or agricultural properties. Other properties of note have been described below.

The Enbridge Gas Kirkwall Valve Site is present at the western limit of the Site and is accessed from Valens Road between Safari Road and Concession 8 West. This property was observed to include industrial buildings and infrastructure relating to pipeline maintenance and operations (such as metering equipment). Given the nature of this facility and possibility for storage of maintenance fluids or fuels, it was considered to be a PSOC (**PSOC 1**).

The Trans Canada Kirkwall Compressor Station is located at the adjacent property to the south of the Kirkwall Valve Site. Based on the presence of industrial buildings and infrastructure relating to pipeline maintenance and operations at the Compressor Station, and possibility for storage of maintenance fluids or fuels, it was considered to be a PSOC (**PSOC 2**).

In the central portion of the Site, which is the preferred new pipeline route, two residential communities (Beverly Hills Adult Lifestyle Community, Antrim Glen Retirement Community) and a vacation resort (Ponderosa Nature Resort) are located adjacent to the Site. The Site is located directly south of the Beverly Hill Adult Lifestyle Community, and intersects the southern portions of the Antrim Glen Retirement Community and Ponderosa Nature Resort. A pad-mounted transformer was identified in the southeastern corner of the Antrim Glen Retirement Community and was considered to be a PSOC (**PSOC 4**), as discussed below.

A tree nursery (Verbinnen's Nursery) was observed at 1504 Brock Road adjacent to the southern side of the Site. Given the expected use of pesticides and herbicides to protect against disease and pests, and the possibility of bulk storage of such materials, it was considered to be a PSOC (**PSOC 7**).

The eastern limit of the Site is the Hamilton Valve Site, accessed from Carlisle Road east of Highway 6. Similar to the Kirkwall Valve Site, given the nature of this facility, presence of metering equipment, and possibility for storage of maintenance fluids or fuels, it was considered to be a PSOC (**PSOC 8**).

3.2.2 Site Services

Overhead electrical lines, roadside ditches, and culverts were observed within the Study Area. Natural gas pipelines were present throughout the Site and Study Area, as evidenced by the presence of pipeline markers. Various underground telecommunication or other services are also expected to be present within the Study Area.

3.2.3 Storage Tanks

No storage tanks were observed on the Site; however, it is expected that nearby residential and/or agricultural properties could be heated by fuel oil and have associated aboveground fuel storage tanks. Based on the anticipated limited size of these domestic tanks and distance from the Site, they are not anticipated to represent PSOCs.



Although no evidence of fuel storage tanks was observed, it is possible that fuel is stored at the Hamilton or Kirkwall Valve Sites or the Kirkwall Compressor Station. As indicated above, these facilities were considered to be PSOCs (**PSOCs 1**, **2**, **8**)

3.2.4 Building Materials

Typical road construction materials (e.g., asphalt, concrete, etc.) were present and building materials associated with culverts were also present along the roadways. No buildings were observed within the Site, although commercial, industrial, and residential buildings were observed within the Study Area, as described above.

3.2.5 PCBs

Pole-mounted transformers were identified along the roadways within the Study Area, as well as a pad-mounted transformer off Glenariff Drive associated with the residential communities to the south of Concession 8 West. Given the recent construction of the pad-mounted transformer (i.e., between 1995 and 2002 from a review of aerial imagery), the potential for it to contain polychlorinated biphenyls (PCBs) is considered low; however, it was considered to be a PSOC (**PSOC 4**). It is anticipated that the most, if not all, of the pole-mounted transformers have been upgraded and no longer contain PCBs. Given this, and the limited size and distance from the Site, pole-mounted transformers at the Site are not considered to represent a PSOC.

3.2.6 Chemical Storage

Chemical storage was not observed on the Site, although as indicated above, it is anticipated that chemical storage may be present at the commercial and industrial properties identified within the Study Area. These include the Kirkwall and Hamilton Valve Sites, Kirkwall Compressor Station, and Verbinnen's Nursery.

3.2.7 Waste Generation and Disposal

No evidence of waste generation or disposal was observed on the Site or within the study area.

3.2.8 Surficial Staining, Fill, Debris, and Vegetation Observations

Surficial staining or stressed vegetation was not observed at the Site; however, numerous stockpiles of soil and/ or debris were observed within the Study Area. It is also likely that fill materials were imported onto the Site for the purposes of construction within the easement. The environmental quality of the imported fill through the length of the Site is unknown and represents a PSOC (**PSOC 3**).

4.0 ENVIRONMENTAL CONCERNS

PSOC were identified that may contribute to environmental concerns at the Site. The PSOC are summarized in Section 4.1 and are listed in **Table 1** (**Appendix B**), along with a ranking of the likelihood (i.e., high, moderate, or low) that the soil and/or groundwater quality at the Site has been impacted.

4.1 POTENTIAL SOURCES OF CONTAMINATION

Properties or features identified as being PSOCs to the Site are summarized below:

- **PSOC 1** – The presence of the Kirkwall Valve Site and associated infrastructure relating to pipeline maintenance and operations (such as metering equipment) at 1374 Valens Road (**Figure 2.1, Appendix A**). This PSOC is interpreted to be low given that no evidence of soil or groundwater contamination was identified through Site observation or historical records review.
- **PSOC 2** – The presence of the Kirkwall Compressor Station and associated infrastructure relating to pipeline maintenance and operations (such as metering equipment) at 1376 Valens Road (**Figure 2.1, Appendix A**). This PSOC is i interpreted to be low, given that no evidence of soil or groundwater contamination was identified through Site observation or historical records review.
- **PSOC 3** – Imported fill materials along the route, which follows an existing natural gas pipeline easement (**Figures 2.1** to **2.2**, **Appendix A**). This PSOC is interpreted to be moderate.
- **PSOC 4** – Pad-mounted transformer located off Glenariff Drive near the residential communities off of Concession 8 West. This PSOC is interpreted to be low.
- **PSOC 5** – Scrap cars, piles of debris, and stockpiles located at 1454 Middletown Road (**Figure 2.2**, **Appendix A**). Based on the distance of the materials observed at 1454 Middletown Road from the Site (approximately 75 m), the potential for the release of fuel or other fluids or the disturbance of stockpiles or debris to impact the Site is considered to represent a low PSOC.
- **PSOC 6** – Historical spills of diesel, gasoline, and oil along Brock Road and Highway 6, which may have occurred within the study area (**Figure 2.2**, **Appendix A**). This PSOC is interpreted to be low, given the age and small volumes of the spills (less than 100 L), and the uncertainty of their exact locations in relation to the Site.
- **PSOC 7** – Potential pesticide and herbicide use and bulk storage at Verbinnen's Tree Nursery at 1504 Brock Road (**Figure 2.2**, **Appendix A**). This PSOC is interpreted to be low based on the nature of the activities at the Site.
- **PSOC 8** – The presence of the Hamilton Valve Site and associated infrastructure relating to pipeline maintenance and operations (such as metering equipment) at 43 Carlisle Road (**Figure 2.2, Appendix A**). This PSOC is interpreted to be low given that no evidence of soil or groundwater contamination was identified through Site observation or historical records review.

4.2 RECOMMENDATIONS

Based on the PSOCs identified in Section 4.1, the following recommendations are provided:

- Should excess soil be generated at the Site during future construction activities, representative soil samples should be collected and submitted for chemical analysis in coordination with a qualified person for environmental site assessment (QP_{ESA}) as defined by Ontario Regulation 153/04, to determine management options.

- Should excess soil be generated at the Site during construction activities, soils that do not meet the Standards listed in Table 1 of the MECP document *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* (April 15, 2011) may not be considered inert fill upon excavation, and off-site management options for excess soils that cannot be reused within the Site must be considered. It is understood that salt-related parameters may not be considered to be contaminants in areas of the Site that cross a road alignment, when de-icing salt has been used for winter road maintenance (O.Reg. 153/04 s.48 (3)); however, soil or water impacted by salt should be managed according to MECP guidance if it is to be removed from the Site.

- Should excess water be generated at the Site during construction activities, water quality analyses should be conducted to determine appropriate management methods, such as is done in support of a permit to take water (PTTW). This work should be done in coordination with a QP_{ESA}, to maintain data quality and provide an appropriate assessment of water quality. The QP_{ESA} should be aware of the PSOCs identified herein so as to select an appropriate list of analytes.

- Should evidence of soil or water impacts be identified during construction (e.g., staining, odours, debris/waste, petroleum hydrocarbon sheen) samples should be collected for laboratory analyses to confirm concentrations of potential contaminants so as to develop appropriate material management, and health and safety guidelines.

- Water wells within the study area can provide a conduit from the ground surface, and should be abandoned in accordance with Reg. 903 if they are no longer in use.

- A Phase I ESA, and Phase II ESA (if recommended as part of the Phase I ESA) should be considered for any property that will be acquired by Enbridge Gas and a site-specific evaluation of PSOCs should be completed. If building demolition will be required, designated substance surveys should be completed for buildings or structures prior to demolition.



5.0 LIMITATIONS

This report documents work that was performed in accordance with generally accepted professional standards at the time and location in which the services were provided. No other representations, warranties or guarantees are made concerning the accuracy or completeness of the data or conclusions contained within this report, including no assurance that this work has uncovered all potential liabilities associated with the identified property.

This report provides an evaluation of selected environmental conditions associated with the identified portion of the property that was assessed at the time the work was conducted and is based on information obtained by and/or provided to Stantec at that time. There are no assurances regarding the accuracy and completeness of this information. All information received from the client or third parties in the preparation of this report has been assumed by Stantec to be correct. Stantec assumes no responsibility for any deficiency or inaccuracy in information received from others.

The opinions in this report can only be relied upon as they relate to the condition of the portion of the identified property that was assessed at the time the work was conducted. Activities at the property subsequent to Stantec's assessment may have significantly altered the property's condition. Stantec cannot comment on other areas of the property that were not assessed.

Conclusions made within this report consist of Stantec's professional opinion as of the time of the writing of this report, and are based solely on the scope of work described in the report, the limited data available and the results of the work. They are not a certification of the property's environmental condition. This report should not be construed as legal advice.

This report has been prepared for the exclusive use of the client identified herein and any use by any third party is prohibited. Stantec assumes no responsibility for losses, damages, liabilities or claims, howsoever arising, from third party use of this report.

This report is limited by the following:

- Review of the specific databases and information sources listed.
- Site visit of the preferred route included observations from publicly accessible areas only.

The locations of any utilities, buildings and structures, and property boundaries illustrated in or described within this report, if any, including pole lines, conduits, water mains, sewers and other surface or sub-surface utilities and structures are not guaranteed. Before starting work, the exact location of all such utilities and structures should be confirmed and Stantec assumes no liability for damage to them.

The conclusions are based on the site conditions encountered by Stantec at the time the work was performed at the specific testing and/or sampling locations, and conditions may vary among sampling locations. Factors such as areas of potential concern identified in previous studies, site conditions (e.g., utilities) and cost may have constrained the sampling locations used in this assessment. In addition, analysis has been carried out for only a limited number of chemical parameters, and it should not be



inferred that other chemical species are not present. Due to the nature of the investigation and the limited data available, Stantec does not warrant against undiscovered environmental liabilities nor that the sampling results are indicative of the condition of the entire site. As the purpose of this report is to identify site conditions which may pose an environmental risk; the identification of non-environmental risks to structures or people on the site is beyond the scope of this assessment.

Should additional information become available which differs significantly from our understanding of conditions presented in this report, Stantec specifically disclaims any responsibility to update the conclusions in this report.

This report was prepared by Janice Cooper, M.Sc., EIT, and reviewed by Grace Ferguson, M.Sc., P.Eng. Qualifications are provided in **Appendix E**.

All of which is respectfully submitted,

STANTEC CONSULTING LTD.

Digitally signed by Janice Cooper
Date: 2019.06.18 20:17:48 -04'00'

Janice Cooper, M.Sc., EIT
Environmental Scientist
Tel: 519-585-7317
janice.cooper@stantec.com

Digitally signed by Grace Ferguson
Date: 2019.06.19 08:57:12 -04'00'

Grace Ferguson, M.Sc., P.Eng.
Senior Hydrogeologist
Tel: 519-585-7456
grace.ferguson@stantec.com

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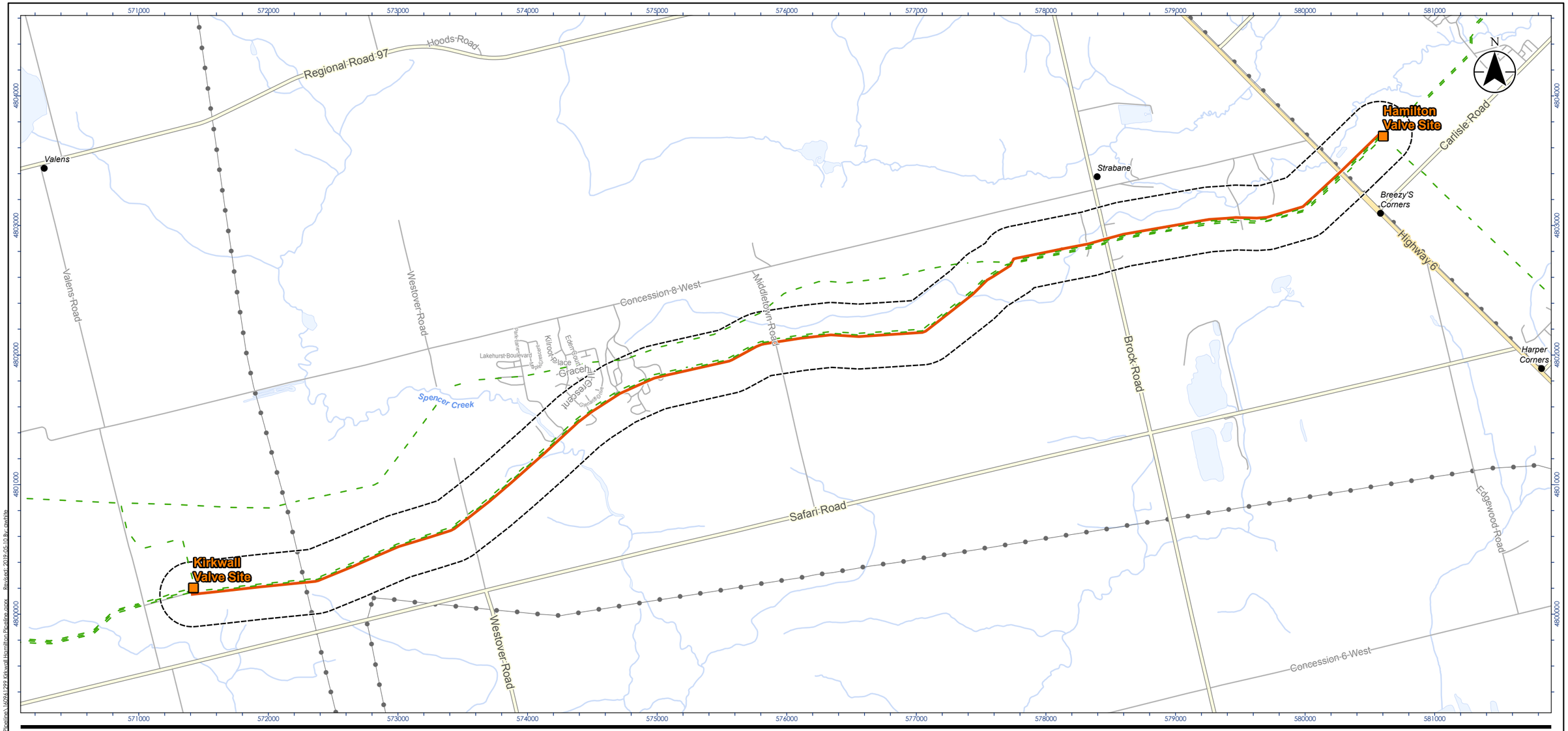
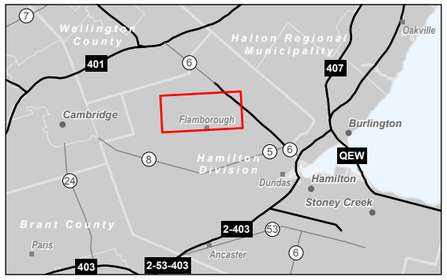
APPENDIX A
FIGURES







Legend

- Existing Enbridge Station
- Preferred Route
- Study Area
- Existing Pipeline
- Municipal Boundary, Lower
- Highway
- Major Road
- Minor Road
- Hydro Line
- Watercourse
- Waterbody

0 0.5 1 km

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, 2019.

Stantec

Project Location
City of Hamilton

160961299

Client/Project
ENBRIDGE GAS INC.
KIRKWALL TO HAMILTON PIPELINE PROJECT

Figure No.
1

Title
Site Plan

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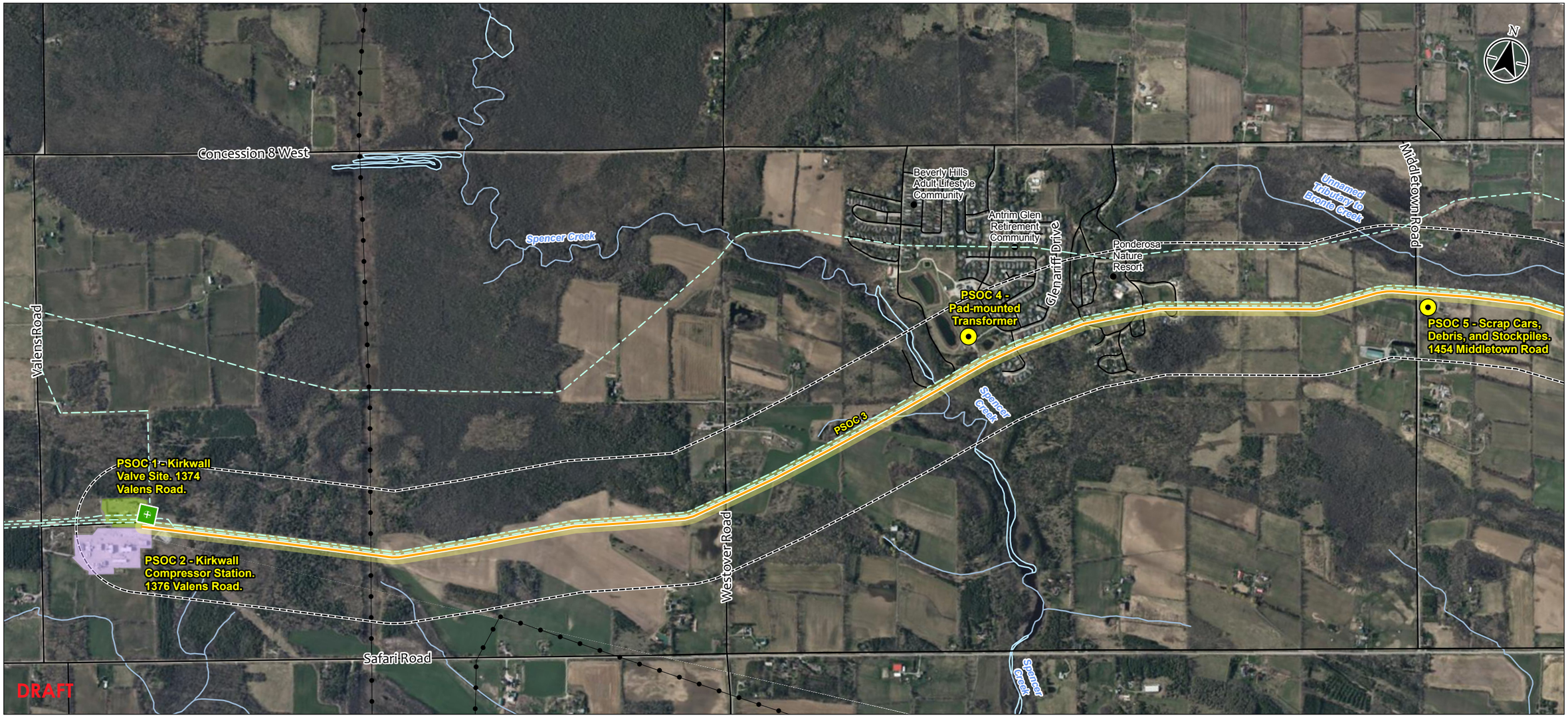

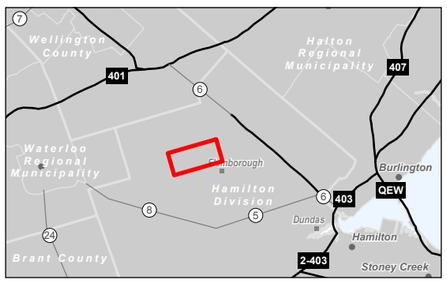

Legend

- Site
- Existing Enbridge Station
- 250 m Zone of Investigation
- Potential Source of Contamination (PSOC) (point)
- PSOC 1 - Kirkwall Valve Site. 1374 Valens Road.
- PSOC 2 - Kirkwall Compressor Station. 1376 Valens Road.
- PSOC 3 Fill Materials
- Roads
- Existing Enbridge Gas Inc. Pipeline
- Hydro Line
- Waterbody
- Watercourse

0 250 500 m

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Notes

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3. Orthoimagery © First Base Solutions, 2018. Imagery Date, 2017.

Stantec

Project Location
City of Hamilton

160961299
Prepared by AMW on 2019-05-29
Technical Review by MD on 2019-05-09

Client/Project
Enbridge Gas Inc.
Kirkwall to Hamilton Pipeline

Figure No.
2.1

DRAFT

Title
Sources of Contamination

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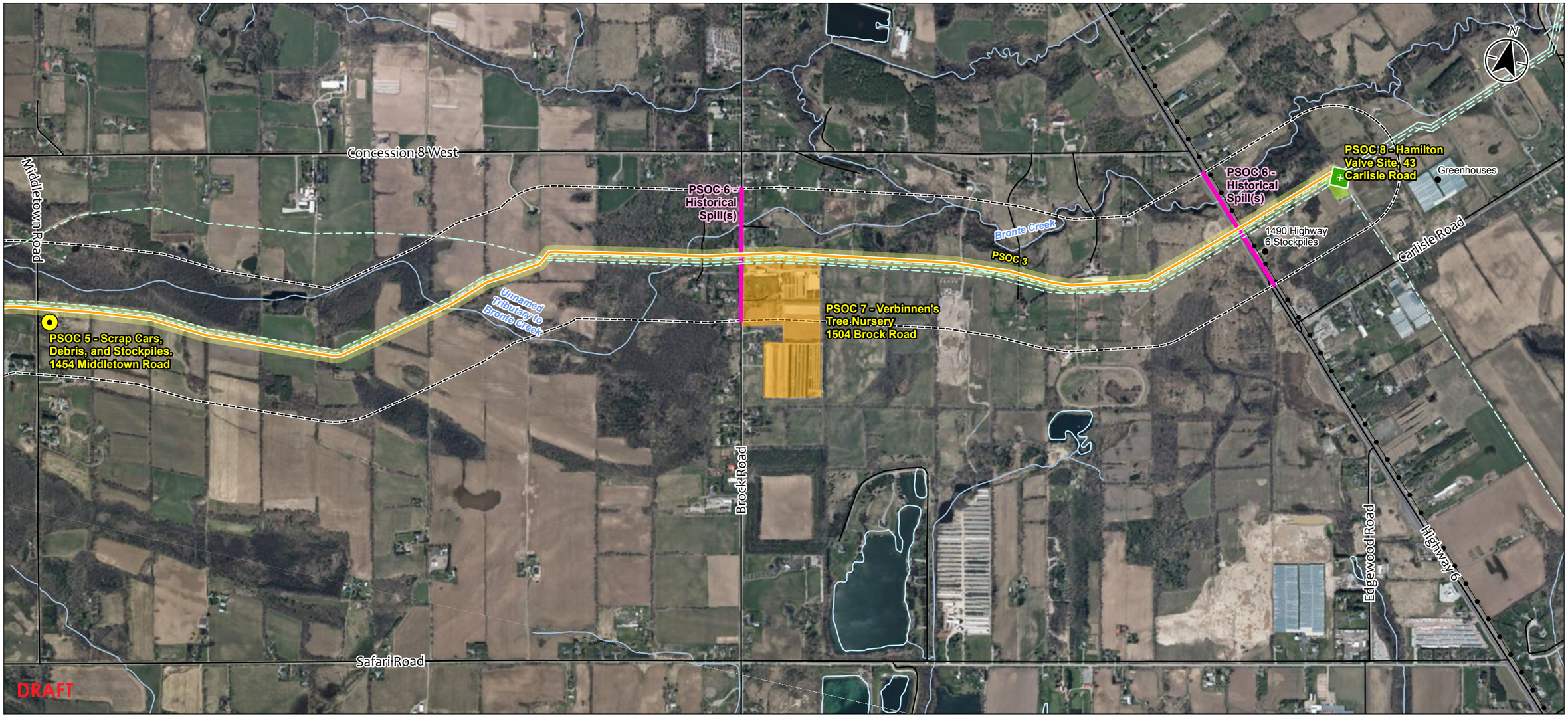

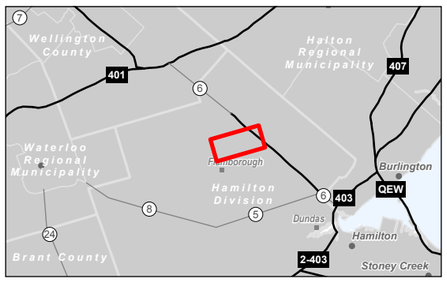

Legend

- Site
- Existing Enbridge Station
- 250 m Zone of Investigation
- Potential Source of Contamination (PSOC) (point)
- PSOC 3 Fill Materials
- PSOC 6 Historical Spill(s)
- PSOC 7 - Verbinnen's Tree Nursery 1504 Brock Road
- PSOC 8 - Hamilton Valve Site, 43 Carlisle Road
- Roads
- Existing Enbridge Gas Inc. Pipeline
- Hydro Line
- Waterbody
- Watercourse

0 250 500 m

1:15,000 (At original document size of 11x17)

Notes

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Stantec

Project Location
City of Hamilton

160961299
Prepared by AMW on 2019-05-29
Technical Review by MD on 2019-05-09

Client/Project
Enbridge Gas Inc.
Kirkwall to Hamilton Pipeline

Figure No.
2.2

DRAFT

Title
Sources of Contamination

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APPENDIX B
PSOC TABLE

Table 1: Summary of Potential Sources of Contamination

PSOC ID No.	Description of Potential Source	Location	Approximate Distance from the Site	Contaminant of Concern	Potential for Concern	Explanation of Potential for Concern
1	Enbridge Gas Kirkwall Valve Site	1374 Valens Road	Adjacent property to the west	Petroleum Hydrocarbons (PHCs), Polycyclic Aromatic Hydrocarbons (PAHs), and Volatile Organic Compounds (VOCs)	Low	Presence of metering equipment. No evidence of soil or groundwater contamination identified through Site observation and historical records review process.
2	Trans Canada Kirkwall Compressor Station	1376 Valens Road	Adjacent property to the west	PHCs, PAHs, and VOCs	Low	Presence of metering equipment. No evidence of soil or groundwater contamination identified through Site observation and historical records review process.
3	Imported fill material	Entire Site	On Site	PHCs, PAHs, VOCs, Metals and Inorganics	Moderate	It is expected that fill materials of unknown quality were imported onto the Site for the purposes of construction within the easement Therefore, the PSOC associated with imported fill along the Site is considered to be moderate.

PSOC ID No.	Description of Potential Source	Location	Approximate Distance from the Site	Contaminant of Concern	Potential for Concern	Explanation of Potential for Concern
4	Pad-mounted transformers	Off Glenariff Drive	Within Study Area	PHCs and PCBs	Low	A pad-mounted transformer was identified off Glenariff Drive associated with the residential communities off Concession 8 West. Given the potential for this transformer to contain PCBs and/or transformer oil, it is considered to represent a PSOC with low potential concern.
5	Scrap Cars, Debris, and Stockpiles	1454 Middletown Road	Approximately 75 m south of the Site	PHCs, PAHs, and VOCs	Low	Stockpiles of unknown origin/quality and several cars in varying states of disrepair were observed at this property, in addition to several piles of debris. The potential for migration of contaminants from these materials onto the Site represents a potential concern. This PSOC is considered to be low due to the distance of the property from the Site.

PSOC ID No.	Description of Potential Source	Location	Approximate Distance from the Site	Contaminant of Concern	Potential for Concern	Explanation of Potential for Concern
6	Historical Spills	Portions of Brock Road and Highway 6 within Study Area	On Site and within Study Area	PHCs, PAHs, and VOCs	Low	A few unplottable records existed for spills (≤100 L) of diesel, gasoline, and oil along Brock Road and Highway 6 between 1990 and 1997. These spills may have occurred within the Study Area. The PSOC associated with these spills is considered to be low due to the age and size of the spills.
7	Verbinnen's Tree Nursery	1504 Brock Road	Adjacent property to the south	Pesticides and Herbicides	Low	During the site reconnaissance, a tree nursery was identified adjacent to the south of the Site. It is possible that bulk storage of pesticides and herbicides may be present given their likely use at the tree nursery to protect against disease and pests. Based on the nature of the activities at this property, the PSOC is considered to be low.

PSOC ID No.	Description of Potential Source	Location	Approximate Distance from the Site	Contaminant of Concern	Potential for Concern	Explanation of Potential for Concern
8	Hamilton Valve Site	43 Carlisle Road	Adjacent property to the southeast	PHCs, PAHs, and VOCs	Low	Presence of metering equipment. No evidence of soil or groundwater contamination identified through Site observation and historical records review process.

APPENDIX C
PHOTOGRAPHIC LOG



Photo 1 Enbridge Gas Kirkwall Valve Site, located at 1374 Valens Road (PSOC 1).



Photo 2 TransCanada Kirkwall Compressor Station, located at 1376 Valens Road (PSOC 2).

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Photo 3 Pad-mounted transformer, located off Glenariff Drive south of the Antrim Glen Retirement Community (PSOC 4)



Photo 4 Scrap cars located at 1454 Middletown Road (PSOC 5).

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Photo 5 Stockpiles and debris at 1454 Middletown Road (PSOC 5).



Photo 6 Verbinnen's Tree Nursery, located at 1504 Brock Road (PSOC 7).

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Photo 7 Hamilton Valve Site, located at 43 Carlisle Road (PSOC 8).

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APPENDIX D
RELEVANT HISTORICAL INFORMATION

Disclaimer: The following Appendix falls under the category of exceptions as the information came from another organization, not Stantec. Therefore, this appendix is not accessible as per Accessibility for Ontarians with Disabilities Act, 2005 (AODA).

ENVIRONMENTAL RISK INFORMATION SERVICES

DATABASE REPORT

Project Property:	*quote* *n/a* *ON L0R 1K0 ON*
Project No:	*160961299.200.200*
Report Type:	*Quote - Custom-Build Your Own Report*
Order No:	*20181024125*
Requested by:	*Stantec Consulting Ltd.*
Date Completed:	*October 30, 2018*

Environmental Risk Information Services
A division of Glacier Media Inc.
P: 1.866.517.5204
E: info@erisinfo.com

www.erisinfo.com

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Executive Summary

Property Information:

Project Property:	*quote* *n/a ON L0R 1K0 ON*
Project No:	*160961299.200.200*

Order Information:

Order No:	*20181024125*
Date Requested:	*October 24, 2018*
Requested by:	*Stantec Consulting Ltd.*
Report Type:	*Quote - Custom-Build Your Own Report*

Historical/Products:

Excel Add-On	*Excel Add-On*

Executive Summary: Report Summary

Database	Name	Searched	Project Property	Boundary to 0.25km	Total
AAGR	*Abandoned Aggregate Inventory*	Y	0	0	0
AGR	*Aggregate Inventory*	Y	0	0	0
AMIS	*Abandoned Mine Information System*	Y	0	0	0
ANDR	*Anderson's Waste Disposal Sites*	Y	0	0	0
AUWR	*Automobile Wrecking & Supplies*	Y	0	0	0
BORE	*Borehole*	Y	0	8	8
CA	*Certificates of Approval*	Y	0	0	0
CFOT	*Commercial Fuel Oil Tanks*	Y	0	0	0
CHEM	*Chemical Register*	Y	0	0	0
CNG	*Compressed Natural Gas Stations*	Y	0	0	0
COAL	*Inventory of Coal Gasification Plants and Coal Tar Sites*	Y	0	0	0
CONV	*Compliance and Convictions*	Y	0	0	0
CPU	*Certificates of Property Use*	Y	0	0	0
DRL	*Drill Hole Database*	Y	0	0	0
DRYCLEANERS	*Dry Cleaning Facilities*	Y	0	0	0
EASR	*Environmental Activity and Sector Registry*	Y	0	0	0
EBR	*Environmental Registry*	Y	0	0	0
ECA	*Environmental Compliance Approval*	Y	0	3	3
EEM	*Environmental Effects Monitoring*	Y	0	0	0
EHS	*ERIS Historical Searches*	Y	0	3	3
EIIS	*Environmental Issues Inventory System*	Y	0	0	0
EMHE	*Emergency Management Historical Event*	Y	0	0	0
EXP	*List of TSSA Expired Facilities*	Y	0	0	0
FCON	*Federal Convictions*	Y	0	0	0
FCS	*Contaminated Sites on Federal Land*	Y	0	0	0
FOFT	*Fisheries & Oceans Fuel Tanks*	Y	0	0	0
FST	*Fuel Storage Tank*	Y	0	0	0
FSTH	*Fuel Storage Tank - Historic*	Y	0	0	0
GEN	*Ontario Regulation 347 Waste Generators Summary*	Y	0	0	0
GHG	*Greenhouse Gas Emissions from Large Facilities*	Y	0	0	0
HINC	*TSSA Historic Incidents*	Y	0	0	0
IAFT	*Indian & Northern Affairs Fuel Tanks*	Y	0	0	0
INC	*TSSA Incidents*	Y	0	0	0
LIMO	*Landfill Inventory Management Ontario*	Y	0	0	0
MINE	*Canadian Mine Locations*	Y	0	0	0
MISA PENALTY	*Environmental Penalty Annual Report*	Y	0	0	0

Database	Name	Searched	Project Property	Boundary to 0.25km	Total
MNR	Mineral Occurrences	Y	0	0	0
NATE	National Analysis of Trends in Emergencies System (NATES)	Y	0	0	0
NCPL	Non-Compliance Reports	Y	0	0	0
NDFT	National Defense & Canadian Forces Fuel Tanks	Y	0	0	0
NDSP	National Defense & Canadian Forces Spills	Y	0	0	0
NDWD	National Defence & Canadian Forces Waste Disposal Sites	Y	0	0	0
NEBI	National Energy Board Pipeline Incidents	Y	0	1	1
NEBW	National Energy Board Wells	Y	0	0	0
NEES	National Environmental Emergencies System (NEES)	Y	0	0	0
NPCB	National PCB Inventory	Y	0	0	0
NPRI	National Pollutant Release Inventory	Y	0	14	14
OGW	Oil and Gas Wells	Y	0	0	0
OOGW	Ontario Oil and Gas Wells	Y	0	0	0
OPCB	Inventory of PCB Storage Sites	Y	0	0	0
ORD	Orders	Y	0	0	0
PAP	Canadian Pulp and Paper	Y	0	0	0
PCFT	Parks Canada Fuel Storage Tanks	Y	0	0	0
PES	Pesticide Register	Y	0	0	0
PINC	TSSA Pipeline Incidents	Y	0	0	0
PRT	Private and Retail Fuel Storage Tanks	Y	0	0	0
PTTW	Permit to Take Water	Y	0	0	0
REC	Ontario Regulation 347 Waste Receivers Summary	Y	0	0	0
RSC	Record of Site Condition	Y	0	0	0
RST	Retail Fuel Storage Tanks	Y	0	0	0
SCT	Scott's Manufacturing Directory	Y	0	0	0
SPL	Ontario Spills	Y	0	2	2
SRDS	Wastewater Discharger Registration Database	Y	0	0	0
TANK	Anderson's Storage Tanks	Y	0	0	0
TCFT	Transport Canada Fuel Storage Tanks	Y	0	0	0
VAR	TSSA Variances for Abandonment of Underground Storage Tanks	Y	0	0	0
WDS	Waste Disposal Sites - MOE CA Inventory	Y	0	0	0
WDSH	Waste Disposal Sites - MOE 1991 Historical Approval Inventory	Y	0	0	0
WWIS	Water Well Information System	Y	0	46	46
	Total:		0	77	77

Executive Summary: Site Report Summary - Project Property

Map Key	DB	Company/Site Name	Address	Dir/Dist (m)	Elev diff (m)	Page Number

No records found in the selected databases for the project property.

Executive Summary: Site Report Summary - Surrounding Properties

Map Key	DB	Company/Site Name	Address	Dir/Dist (m)	Elev Diff (m)	Page Number
1	WWIS		lot 7 con 7 ON **Well ID:** 6810347	ENE/5.7	-7.19	25
2	WWIS		lot 7 con 7 ON **Well ID:** 6809875	ENE/10.1	-7.75	27
3	ECA	Parkbridge G/P Inc.	Hamilton ON L0L 2P0	WSW/10.7	3.39	31
4	ECA	New Country Investors Ltd.	Hamilton ON M2N 6G8	WSW/17.1	4.00	31
5	WWIS		lot 34 con 7 ON **Well ID:** 6812181	WSW/22.1	4.00	31
6	WWIS		lot 34 con 7 ON **Well ID:** 6807519	WSW/24.2	5.00	34
7	ECA	Belmac Estate Properties Inc.	Hamilton ON L0L 2P0	WSW/34.1	-0.76	37
8	WWIS		Hamilton ON **Well ID:** 7281367	WSW/37.3	5.00	37
9	WWIS		lot 32 con 7 ON **Well ID:** 6813045	WSW/41.1	0.79	44
9	WWIS		lot 32 con 7 ON **Well ID:** 6812044	WSW/41.1	0.79	47
10	NEBI	TransCanada PipeLines Limited	Hamilton ON	WSW/41.9	1.00	50
11	WWIS		lot 33 con 7 ON	SW/47.1	1.09	51

Map Key	DB	Company/Site Name	Address	Dir/Dist (m)	Elev Diff (m)	Page Number
			Well ID: 6810703			
12	WWIS		lot 7 con 7 ON ***Well ID:*** 6810346	ENE/52.8	-6.00	54
13	EHS		780 Concession Rd 8 W Hamilton ON N0B2J0 ***Order ID:*** 566928	ENE/53.6	0.39	57
14	WWIS		lot 31 con 7 ON ***Well ID:*** 6807572	WSW/57.2	2.69	57
15	WWIS		lot 16 con 1 ON ***Well ID:*** 5005530	WSW/57.3	4.00	60
16	WWIS		lot 31 con 7 ON ***Well ID:*** 6807576	WSW/57.6	5.00	64
17	WWIS		lot 11 con 7 ON ***Well ID:*** 6806543	ENE/71.5	-10.98	67
18	WWIS		lot 7 con 7 ON ***Well ID:*** 6806533	ENE/79.8	-4.95	69
19	WWIS		lot 31 con 7 ON ***Well ID:*** 6809554	WSW/84.4	1.31	72
20	WWIS		lot 34 con 7 FLAMBOROUGH ON ***Well ID:*** 7206722	WSW/86.3	5.00	75
21	WWIS		lot 6 con 7 ON ***Well ID:*** 6809427	ENE/90.4	-5.00	76
22	WWIS		lot 9 con 7 MILLGROVE ON ***Well ID:*** 7226659	ENE/99.0	3.34	80
23	WWIS		ACTON ON ***Well ID:*** 7042163	E/101.2	-2.40	87
24	SPL		1264 8th Concession Road West Hamilton ON	WSW/103.2	5.00	90

Map Key	DB	Company/Site Name	Address	Dir/Dist (m)	Elev Diff (m)	Page Number
24	SPL	Parkbridge Lifestyle Communities Inc.	1264 8th Concession Rd W Part of Lots 32 and 33, Concession 7, geographic townsh Hamilton ON L0R 1K0	WSW/103.2	5.00	90
25	WWIS		lot 31 con 7 ON ***Well ID:*** 6809278	WSW/104.3	3.05	91
26	WWIS		lot 1 con 7 ON ***Well ID:*** 6807665	NNW/104.5	-2.00	93
27	WWIS		lot 7 con 7 ON ***Well ID:*** 6806527	ENE/105.4	-9.78	96
28	WWIS		ON ***Well ID:*** 7143751	W/108.4	5.00	99
29	BORE		ON	ENE/113.5	-10.32	100
30	BORE		ON	ENE/115.3	-12.42	101
31	BORE		ON	ENE/116.3	-12.77	101
32	WWIS		lot 34 con 7 ON ***Well ID:*** 6808445	WSW/116.6	5.00	102
33	BORE		ON	ENE/116.8	-11.87	105
34	WWIS		lot 31 con 7 ON ***Well ID:*** 6808253	WSW/117.5	5.00	105
35	BORE		ON	ENE/126.4	-12.42	108
36	NPRI	TRANSCANADA PIPELINES LIMITED	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 EX PLANS 62R-9684, 62R-9685, 62R-	WSW/127.2	0.66	109

Map Key	DB	Company/Site Name	Address	Dir/Dist (m)	Elev Diff (m)	Page Number
			10903 HAMILTON ON			
36	NPRI	TRANSCANADA PIPELINES LIMITED	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 EX PLANS 62R-9684, 62R-9685, 62R-10903 HAMILTON ON	WSW/127.2	0.66	110
36	NPRI	TRANSCANADA PIPELINES	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 EX PLANS 62R-9684, 62R-9685, 62R-10903 HAMILTON ON	WSW/127.2	0.66	111
36	NPRI	TRANSCANADA PIPELINES	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 EX PLANS 62R-9684, 62R-9685, 62R-10903 HAMILTON ON	WSW/127.2	0.66	113
36	NPRI	TRANSCANADA PIPELINES	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 NOT AVAILABLE HAMILTON ON	WSW/127.2	0.66	114
36	NPRI	TRANSCANADA PIPELINES	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 NOT AVAILABLE HAMILTON ON	WSW/127.2	0.66	116
36	NPRI	TRANSCANADA PIPELINES	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 NOT AVAILABLE HAMILTON ON	WSW/127.2	0.66	117
36	NPRI	TRANSCANADA PIPELINES	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 NOT AVAILABLE HAMILTON ON	WSW/127.2	0.66	119
36	NPRI	TRANSCANADA PIPELINES LTD.	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 NOT AVAILABLE HAMILTON ON	WSW/127.2	0.66	120
36	NPRI	TRANSCANADA PIPELINES LTD.	NOT AVAILABLE Hamilton ON	WSW/127.2	0.66	121
36	NPRI	TRANSCANADA PIPELINES LTD.	n/a n/a ON n/a	WSW/127.2	0.66	122
36	NPRI	TRANSCANADA PIPELINES LTD.	NOT AVAILABLE Hamilton ON	WSW/127.2	0.66	123

Map Key	DB	Company/Site Name	Address	Dir/Dist (m)	Elev Diff (m)	Page Number
36	NPRI	TransCanada PipeLines Ltd.	NOT AVAILABLE Hamilton ON	WSW/127.2	0.66	124
36	NPRI	TRANSCANADA PIPELINES LTD.	NOT AVAILABLE Hamilton ON	WSW/127.2	0.66	125
37	WWIS		lot 13 con 9 ON ***Well ID:*** 6808147	ENE/127.3	-11.00	126
38	BORE		ON	ENE/127.8	-12.39	128
39	BORE		ON	ENE/128.1	-12.42	129
40	BORE		ON	ENE/132.0	-12.42	129
41	WWIS		lot 6 con 7 ON ***Well ID:*** 6809552	ENE/137.0	-5.08	130
42	WWIS		lot 35 con 7 ON ***Well ID:*** 6810002	W/139.1	6.76	133
43	WWIS		lot 10 con 7 ON ***Well ID:*** 6810186	ENE/139.7	-6.95	137
44	WWIS		lot 33 con 7 ON ***Well ID:*** 6810279	SW/166.5	1.00	140
45	WWIS		lot 30 con 7 ON ***Well ID:*** 6809041	WSW/183.7	1.97	143
46	WWIS		lot 34 con 7 ON ***Well ID:*** 6800950	W/191.6	4.69	146
47	WWIS		lot 36 con 7 ON	ENE/193.9	-5.00	148

Map Key	DB	Company/Site Name	Address	Dir/Dist (m)	Elev Diff (m)	Page Number
			Well ID: 6813531			
48	WWIS		lot 13 con 9 ON ***Well ID:*** 6803040	ENE/207.0	-7.36	150
49	WWIS		lot 30 con 7 ON ***Well ID:*** 6813584	WSW/213.5	3.00	153
50	WWIS		lot 4 con 7 STRABANE ON ***Well ID:*** 6814308	SSW/215.7	18.08	156
51	WWIS		lot 31 con 7 ON ***Well ID:*** 6809021	WSW/216.6	3.97	162
52	WWIS		lot 1 con 7 ON ***Well ID:*** 6806821	SSE/220.4	15.84	165
53	WWIS		lot 34 con 7 ON ***Well ID:*** 6800951	SSW/225.2	2.27	168
54	WWIS		lot 1 con 7 ON ***Well ID:*** 6806873	NNW/226.1	-0.88	170
55	WWIS		lot 36 con 7 ON ***Well ID:*** 6808740	S/235.0	17.01	173
56	WWIS		lot 31 con 7 ON ***Well ID:*** 6813022	WSW/237.9	13.99	176
56	WWIS		lot 31 con 7 ON ***Well ID:*** 6813044	WSW/237.9	13.99	179
56	WWIS		lot 31 con 7 ON ***Well ID:*** 6811497	WSW/237.9	13.99	183
57	WWIS		lot 7 con 7 ON ***Well ID:*** 6807838	ENE/237.9	-5.27	185
58	WWIS		lot 36 con 7 ON	SSW/238.7	0.85	188

Map Key	DB	Company/Site Name	Address	Dir/Dist (m)	Elev Diff (m)	Page Number
			Well ID: 6810831			
59	EHS		1434 Middletown Road Millgrove ON L0R 1V0 ***Order ID:*** 621135	SSE/243.8	15.83	191
60	EHS		955 4th Concession Road West Hamilton ON ***Order ID:*** 107799	ENE/247.0	-10.00	192

Executive Summary: Summary By Data Source

BORE - Borehole

A search of the BORE database, dated 1875-Jul 2014 has found that there are 8 BORE site(s) within approximately 0.25 kilometers of the project property.

Site	Address	Distance (m)	Map Key
	ON	113.5	29
	ON	115.3	30
	ON	116.3	31
	ON	116.8	33
	ON	126.4	35
	ON	127.8	38
	ON	128.1	39
	ON	132.0	40

ECA - Environmental Compliance Approval

A search of the ECA database, dated Oct 2011-Sep 30, 2018 has found that there are 3 ECA site(s) within approximately 0.25

kilometers of the project property.

Site	Address	Distance (m)	Map Key
Parkbridge G/P Inc.	Hamilton ON L0L 2P0	10.7	3
New Country Investors Ltd.	Hamilton ON M2N 6G8	17.1	4
Belmac Estate Properties Inc.	Hamilton ON L0L 2P0	34.1	7

EHS - ERIS Historical Searches

A search of the EHS database, dated 1999-Jul 31, 2018 has found that there are 3 EHS site(s) within approximately 0.25 kilometers of the project property.

Site	Address	Distance (m)	Map Key
	780 Concession Rd 8 W Hamilton ON N0B2J0 ***Order ID:*** 566928	53.6	13
	1434 Middletown Road Millgrove ON L0R 1V0 ***Order ID:*** 621135	243.8	59
	955 4th Concession Road West Hamilton ON ***Order ID:*** 107799	247.0	60

NEBI - National Energy Board Pipeline Incidents

A search of the NEBI database, dated 2008-Jun 30, 2018 has found that there are 1 NEBI site(s) within approximately 0.25 kilometers of the project property.

Site	Address	Distance (m)	Map Key
TransCanada PipeLines Limited	Hamilton ON	41.9	10

NPRI - National Pollutant Release Inventory

A search of the NPRI database, dated 1993-May 2017 has found that there are 14 NPRI site(s) within approximately 0.25 kilometers of the project property.

Site	Address	Distance (m)	Map Key
TRANSCANADA PIPELINES	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 EX PLANS 62R-9684, 62R-9685, 62R-10903 HAMILTON ON	127.2	36
TRANSCANADA PIPELINES	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 NOT AVAILABLE HAMILTON ON	127.2	36
TRANSCANADA PIPELINES	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 NOT AVAILABLE HAMILTON ON	127.2	36
TRANSCANADA PIPELINES LTD.	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 NOT AVAILABLE HAMILTON ON	127.2	36
TRANSCANADA PIPELINES LTD.	NOT AVAILABLE Hamilton ON	127.2	36
TRANSCANADA PIPELINES LTD.	n/a n/a ON n/a	127.2	36
TRANSCANADA PIPELINES LTD.	NOT AVAILABLE Hamilton ON	127.2	36
TransCanada PipeLines Ltd.	NOT AVAILABLE Hamilton ON	127.2	36
TRANSCANADA PIPELINES LTD.	NOT AVAILABLE Hamilton ON	127.2	36
TRANSCANADA PIPELINES LIMITED	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 EX PLANS 62R-9684, 62R-9685, 62R-10903 HAMILTON ON	127.2	36
TRANSCANADA PIPELINES LIMITED	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 EX PLANS 62R-9684, 62R-9685, 62R-10903 HAMILTON ON	127.2	36

Site	Address	Distance (m)	Map Key
TRANSCANADA PIPELINES	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 EX PLANS 62R-9684, 62R-9685, 62R-10903 HAMILTON ON	127.2	36
TRANSCANADA PIPELINES	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 NOT AVAILABLE HAMILTON ON	127.2	36
TRANSCANADA PIPELINES	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 NOT AVAILABLE HAMILTON ON	127.2	36

SPL - Ontario Spills

A search of the SPL database, dated 1988-Jul 2018 has found that there are 2 SPL site(s) within approximately 0.25 kilometers of the project property.

Site	Address	Distance (m)	Map Key
Parkbridge Lifestyle Communities Inc.	1264 8th Concession Rd W Part of Lots 32 and 33, Concession 7, geographic townsh Hamilton ON L0R 1K0	103.2	24
	1264 8th Concession Road West Hamilton ON	103.2	24

WWIS - Water Well Information System

A search of the WWIS database, dated Dec 31, 2017 has found that there are 46 WWIS site(s) within approximately 0.25 kilometers of the project property.

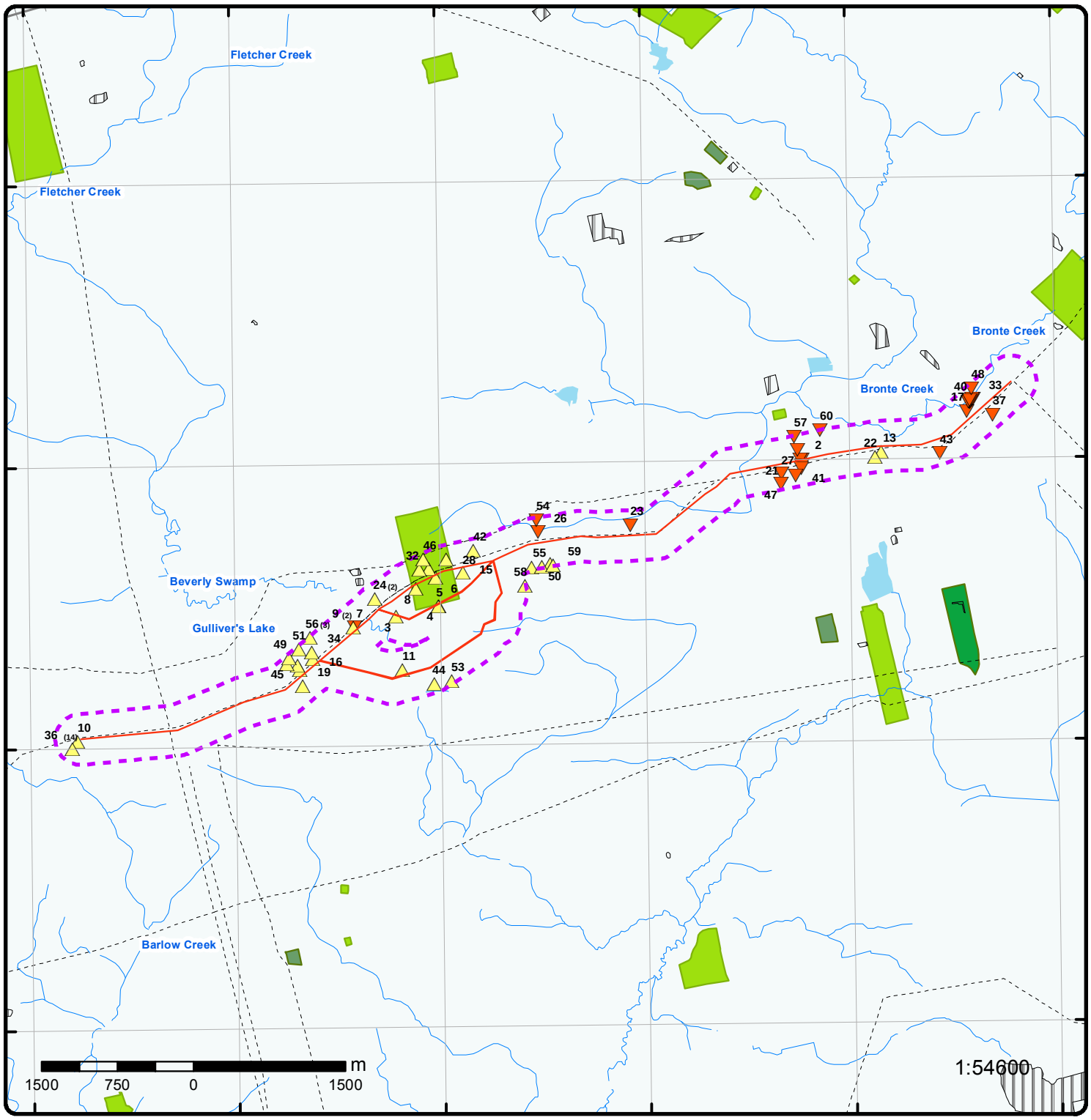
Site	Address	Distance (m)	Map Key
	lot 7 con 7 ON ***Well ID:*** 6810347	5.7	1
	lot 7 con 7 ON ***Well ID:*** 6809875	10.1	2
	lot 34 con 7 ON	22.1	5

Site	Address	Distance (m)	Map Key
	Well ID: 6812181		
	lot 34 con 7 ON	24.2	6
	Well ID: 6807519		
	Hamilton ON	37.3	8
	Well ID: 7281367		
	lot 32 con 7 ON	41.1	9
	Well ID: 6813045		
	lot 32 con 7 ON	41.1	9
	Well ID: 6812044		
	lot 33 con 7 ON	47.1	11
	Well ID: 6810703		
	lot 7 con 7 ON	52.8	12
	Well ID: 6810346		
	lot 31 con 7 ON	57.2	14
	Well ID: 6807572		
	lot 16 con 1 ON	57.3	15
	Well ID: 5005530		
	lot 31 con 7 ON	57.6	16
	Well ID: 6807576		
	lot 11 con 7 ON	71.5	17
	Well ID: 6806543		
	lot 7 con 7 ON	79.8	18
	Well ID: 6806533		

Site	Address	Distance (m)	Map Key
	lot 31 con 7 ON ***Well ID:*** 6809554	84.4	19
	lot 34 con 7 FLAMBOROUGH ON ***Well ID:*** 7206722	86.3	20
	lot 6 con 7 ON ***Well ID:*** 6809427	90.4	21
	lot 9 con 7 MILLGROVE ON ***Well ID:*** 7226659	99.0	22
	ACTON ON ***Well ID:*** 7042163	101.2	23
	lot 31 con 7 ON ***Well ID:*** 6809278	104.3	25
	lot 1 con 7 ON ***Well ID:*** 6807665	104.5	26
	lot 7 con 7 ON ***Well ID:*** 6806527	105.4	27
	ON ***Well ID:*** 7143751	108.4	28
	lot 34 con 7 ON ***Well ID:*** 6808445	116.6	32
	lot 31 con 7 ON ***Well ID:*** 6808253	117.5	34
	lot 13 con 9 ON	127.3	37

Site	Address	Distance (m)	Map Key
	Well ID: 6808147		
	lot 6 con 7 ON ***Well ID:*** 6809552	137.0	41
	lot 35 con 7 ON ***Well ID:*** 6810002	139.1	42
	lot 10 con 7 ON ***Well ID:*** 6810186	139.7	43
	lot 33 con 7 ON ***Well ID:*** 6810279	166.5	44
	lot 30 con 7 ON ***Well ID:*** 6809041	183.7	45
	lot 34 con 7 ON ***Well ID:*** 6800950	191.6	46
	lot 36 con 7 ON ***Well ID:*** 6813531	193.9	47
	lot 13 con 9 ON ***Well ID:*** 6803040	207.0	48
	lot 30 con 7 ON ***Well ID:*** 6813584	213.5	49
	lot 4 con 7 STRABANE ON ***Well ID:*** 6814308	215.7	50
	lot 31 con 7 ON ***Well ID:*** 6809021	216.6	51

Site	Address	Distance (m)	Map Key
	lot 1 con 7 ON ***Well ID:*** 6806821	220.4	52
	lot 34 con 7 ON ***Well ID:*** 6800951	225.2	53
	lot 1 con 7 ON ***Well ID:*** 6806873	226.1	54
	lot 36 con 7 ON ***Well ID:*** 6808740	235.0	55
	lot 31 con 7 ON ***Well ID:*** 6813022	237.9	56
	lot 31 con 7 ON ***Well ID:*** 6813044	237.9	56
	lot 31 con 7 ON ***Well ID:*** 6811497	237.9	56
	lot 7 con 7 ON ***Well ID:*** 6807838	237.9	57
	lot 36 con 7 ON ***Well ID:*** 6810831	238.7	58



Map : 0.25 Kilometer Radius

Order No: 20181024125

Address: n/a, ON L0R 1K0, ON

[redacted]

- Project Property
- Buffer Outline
- Eris Sites with Higher Elevation
- Eris Sites with Same Elevation
- Eris Sites with Lower Elevation
- Eris Sites with Unknown Elevation
- Industrial and Resource - Regions
- Main Line
- Sidetrack
- Transit Line
- Abandoned Line
- National Park
- Provincial or Territorial Park
- Other Park
- Golf Course or Driving Range
- Park or Sports Field
- Other Recreation Area

Source: © 2015 DMTI Spatial Inc.

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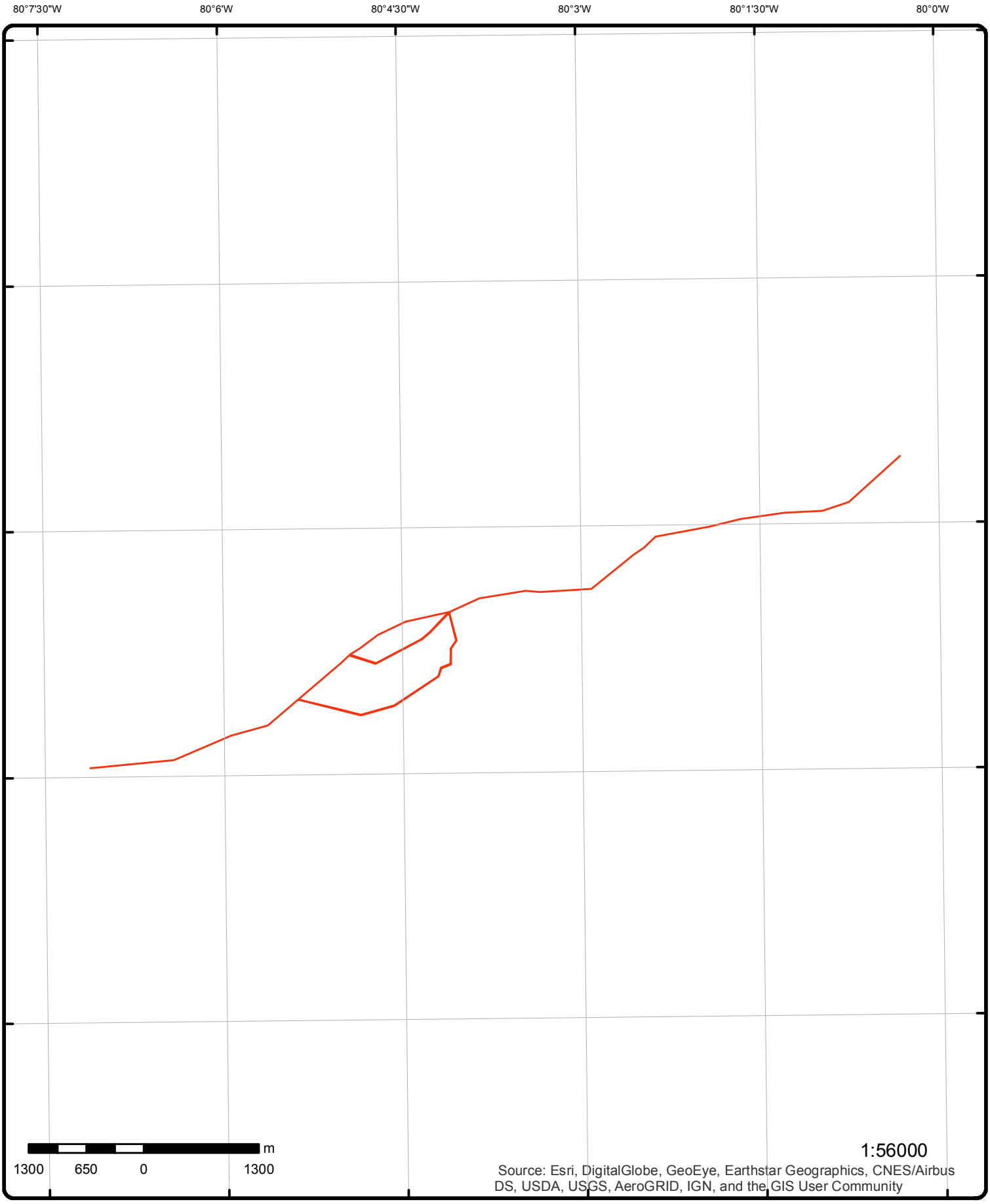

Aerial (2013)

Address: n/a, ON L0R 1K0, ON

Source: ESRI World Imagery

Order No: 20181024125

[redacted]

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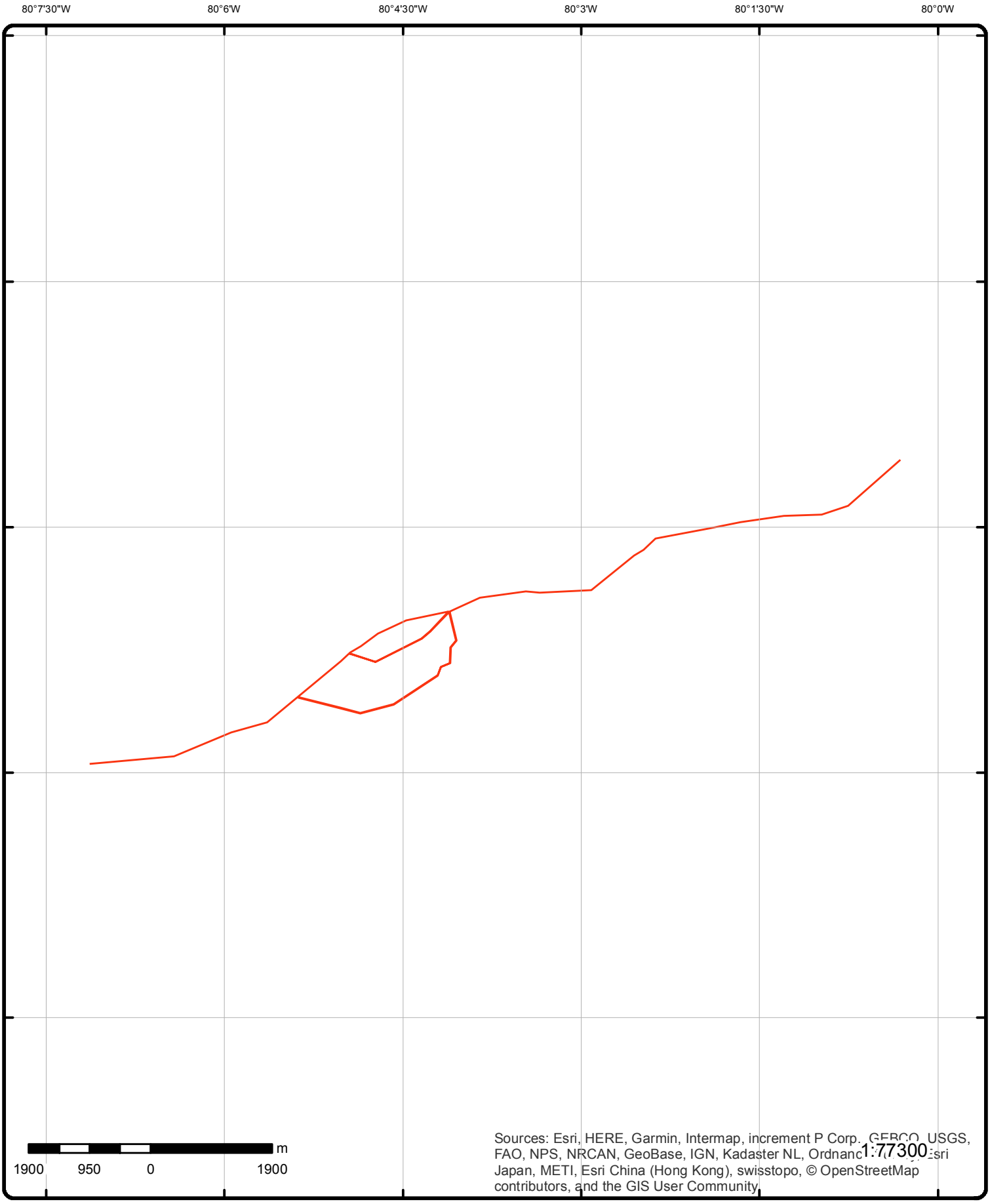

Topographic Map

Address: n/a, ON L0R 1K0, ON

Source: ESRI World Topographic Map

Order No: 20181024125

[redacted]

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Detail Report

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
1	1 of 1	ENE/5.7	262.7 / -7.19	lot 7 con 7 ON	WWIS

Well ID:	6810347	**Data Entry Status:**	
Construction Date:		**Data Src:**	1
Primary Water Use:	Irrigation	**Date Received:**	1/15/1982
Sec. Water Use:	0	**Selected Flag:**	Yes
Final Well Status:	Water Supply	**Abandonment Rec:**	
Water Type:		**Contractor:**	4208
Casing Material:		**Form Version:**	1
Audit No:		**Owner:**	
Tag:		**Street Name:**	
Construction Method:		**County:**	WENTWORTH
Elevation (m):		**Municipality:**	WEST FLAMBOROUGH TOWNSHIP
Elevation Reliability:		**Site Info:**	
Depth to Bedrock:		**Lot:**	007
Well Depth:		**Concession:**	07
Overburden/Bedrock:		**Concession Name:**	CON
Pump Rate:		**Easting NAD83:**	
Static Water Level:		**Northing NAD83:**	
Flowing (Y/N):		**Zone:**	
Flow Rate:		**UTM Reliability:**	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10487673	**Elevation:**	263.67
DP2BR:	17	**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:	r	**East83:**	578514.4
Code OB Desc:	Bedrock	**Org CS:**	
Open Hole:		**North83:**	4802923
Cluster Kind:		**UTMRC:**	4
Date Completed:	08-JUN-81	**UTMRC Desc:**	margin of error : 30 m - 100 m
Remarks:		**Location Method:**	p4
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932694485
Layer:	2
Color:	2
General Color:	GREY
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	
Other Materials:	
Mat3:	

Other Materials:	
Formation Top Depth:	17
Formation End Depth:	37
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932694484
Layer:	1
Color:	6
General Color:	BROWN
Mat1:	05
Most Common Material:	CLAY
Mat2:	81
Other Materials:	SANDY
Mat3:	
Other Materials:	
Formation Top Depth:	0
Formation End Depth:	17
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966810347
Method Construction Code:	4
Method Construction:	Rotary (Air)
Other Method Construction:	

Pipe Information

Pipe ID:	11036243
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930797330
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	17
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pump Test ID:	996810347
Pump Set At:	
Static Level:	6
Final Level After Pumping:	35
Recommended Pump Depth:	35
Pumping Rate:	150
Flowing Rate:	
Recommended Pump Rate:	150
Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	1

Water State After Test:	CLEAR
Pumping Test Method:	1
Pumping Duration HR:	1
Pumping Duration MIN:	0
Flowing:	N

Draw Down & Recovery

Pump Test Detail ID:	935145787
Test Type:	Recovery
Test Duration:	60
Test Level:	6
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934352482
Test Type:	Recovery
Test Duration:	15
Test Level:	6
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934623992
Test Type:	Recovery
Test Duration:	30
Test Level:	6
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934867148
Test Type:	Recovery
Test Duration:	45
Test Level:	6
Test Level UOM:	ft

Water Details

Water ID:	933979733
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	20
Water Found Depth UOM:	ft

Water Details

Water ID:	933979734
Layer:	2
Kind Code:	1
Kind:	FRESH
Water Found Depth:	35
Water Found Depth UOM:	ft

2	***1 of 1***	***ENE/10.1***	***262.1 / -7.75***	***lot 7 con 7 ON***	***WWIS***

Well ID: 6809875 ***Data Entry Status:***

Construction Date:		**Data Src:**	1
Primary Water Use:	Irrigation	**Date Received:**	1/9/1979
Sec. Water Use:	0	**Selected Flag:**	Yes
Final Well Status:	Water Supply	**Abandonment Rec:**	
Water Type:		**Contractor:**	4208
Casing Material:		**Form Version:**	1
Audit No:		**Owner:**	
Tag:		**Street Name:**	
Construction Method:		**County:**	WENTWORTH
Elevation (m):		**Municipality:**	WEST FLAMBOROUGH TOWNSHIP
Elevation Reliability:		**Site Info:**	
Depth to Bedrock:		**Lot:**	007
Well Depth:		**Concession:**	07
Overburden/Bedrock:		**Concession Name:**	CON
Pump Rate:		**Easting NAD83:**	
Static Water Level:		**Northing NAD83:**	
Flowing (Y/N):		**Zone:**	
Flow Rate:		**UTM Reliability:**	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10487208	**Elevation:**	263.82
DP2BR:	22	**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:	r	**East83:**	578494.4
Code OB Desc:	Bedrock	**Org CS:**	
Open Hole:		**North83:**	4802923
Cluster Kind:		**UTMRC:**	4
Date Completed:	12-SEP-78	**UTMRC Desc:**	margin of error : 30 m - 100 m
Remarks:		**Location Method:**	p4
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932692919
Layer:	1
Color:	6
General Color:	BROWN
Mat1:	05
Most Common Material:	CLAY
Mat2:	81
Other Materials:	SANDY
Mat3:	
Other Materials:	
Formation Top Depth:	0
Formation End Depth:	22
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932692921
Layer:	3
Color:	2
General Color:	GREY
Mat1:	15

Most Common Material:	LIMESTONE
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	30
Formation End Depth:	40
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932692920
Layer:	2
Color:	2
General Color:	GREY
Mat1:	17
Most Common Material:	SHALE
Mat2:	12
Other Materials:	STONES
Mat3:	85
Other Materials:	SOFT
Formation Top Depth:	22
Formation End Depth:	30
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966809875
Method Construction Code:	2
Method Construction:	Rotary (Convent.)
Other Method Construction:	

Pipe Information

Pipe ID:	11035778
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930796654
Layer:	1
Material:	
Open Hole or Material:	
Depth From:	
Depth To:	22
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pump Test ID:	996809875
Pump Set At:	
Static Level:	8
Final Level After Pumping:	40
Recommended Pump Depth:	35
Pumping Rate:	90
Flowing Rate:	

Recommended Pump Rate:	50
Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	1
Water State After Test:	CLEAR
Pumping Test Method:	1
Pumping Duration HR:	1
Pumping Duration MIN:	0
Flowing:	N

Draw Down & Recovery

Pump Test Detail ID:	934350837
Test Type:	Recovery
Test Duration:	15
Test Level:	8
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	935144734
Test Type:	Recovery
Test Duration:	60
Test Level:	8
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934875282
Test Type:	Recovery
Test Duration:	45
Test Level:	8
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934614326
Test Type:	Recovery
Test Duration:	30
Test Level:	8
Test Level UOM:	ft

Water Details

Water ID:	933979127
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	30
Water Found Depth UOM:	ft

Water Details

Water ID:	933979128
Layer:	2
Kind Code:	1
Kind:	FRESH
Water Found Depth:	37
Water Found Depth UOM:	ft

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
3	1 of 1	WSW/10.7	273.2 / 3.39	Parkbridge G/P Inc. Hamilton ON L0L 2P0	ECA

Approval No:	3720-4MDPAG	**SWP Area Name:**	Hamilton
Approval Date:	2005-06-22	**MOE District:**	Hamilton
Status:	Approved	**City:**	
Record Type:	ECA	**Longitude:**	-80.0804
Link Source:	IDS	**Latitude:**	43.3615
Approval Type:	ECA-Municipal Drinking Water Systems		
Project Type:	Municipal Drinking Water Systems		
Address:			
Full Address:			
Full PDF Link:			

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
4	1 of 1	WSW/17.1	273.9 / 4.00	New Country Investors Ltd. Hamilton ON M2N 6G8	ECA

Approval No:	0764-4UDL8P	**SWP Area Name:**	Halton
Approval Date:	2001-03-12	**MOE District:**	Hamilton
Status:	Approved	**City:**	Hamilton
Record Type:	ECA	**Longitude:**	-80.0752
Link Source:	IDS	**Latitude:**	43.3624
Approval Type:	ECA-MUNICIPAL AND PRIVATE SEWAGE WORKS		
Project Type:	MUNICIPAL AND PRIVATE SEWAGE WORKS		
Address:			
Full Address:			
Full PDF Link:	https://www.accessenvironment.ene.gov.on.ca/instruments/4848-4TKS27-14.pdf		

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
5	1 of 1	WSW/22.1	273.9 / 4.00	lot 34 con 7 ON	WWIS

Well ID:	6812181	**Data Entry Status:**	
Construction Date:		**Data Src:**	1
Primary Water Use:	Public	**Date Received:**	3/17/1992
Sec. Water Use:		**Selected Flag:**	Yes
Final Well Status:	Water Supply	**Abandonment Rec:**	
Water Type:		**Contractor:**	4207
Casing Material:		**Form Version:**	1
Audit No:	093542	**Owner:**	
Tag:		**Street Name:**	
Construction Method:		**County:**	WENTWORTH
Elevation (m):		**Municipality:**	BEVERLY TOWNSHIP
Elevation Reliability:		**Site Info:**	
Depth to Bedrock:		**Lot:**	034
Well Depth:		**Concession:**	07
Overburden/Bedrock:		**Concession Name:**	CON
Pump Rate:		**Easting NAD83:**	
Static Water Level:		**Northing NAD83:**	
Flowing (Y/N):		**Zone:**	
Flow Rate:		**UTM Reliability:**	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10489495	**Elevation:**	273.62
DP2BR:	10	**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:	r	**East83:**	574933.3
Code OB Desc:	Bedrock	**Org CS:**	
Open Hole:		**North83:**	4801469

Cluster Kind:
Date Completed: 07-MAR-92
Remarks:
Elevrc Desc:
Location Source Date:
Improvement Location Source:
Improvement Location Method:
Source Revision Comment:
Supplier Comment:
UTMRC: 9
UTMRC Desc: unknown UTM
Location Method: lot

Overburden and Bedrock Materials Interval

Formation ID: 932700840
Layer: 1
Color: 6
General Color: BROWN
Mat1: 05
Most Common Material: CLAY
Mat2: 12
Other Materials: STONES
Mat3: 13
Other Materials: BOULDERS
Formation Top Depth: 0
Formation End Depth: 10
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 932700841
Layer: 2
Color: 2
General Color: GREY
Mat1: 15
Most Common Material: LIMESTONE
Mat2:
Other Materials:
Mat3:
Other Materials:
Formation Top Depth: 10
Formation End Depth: 97
Formation End Depth UOM: ft

Method of Construction & Well Use

Method Construction ID: 966812181
Method Construction Code: 4
Method Construction: Rotary (Air)
Other Method Construction:

Pipe Information

Pipe ID: 11038065
Casing No: 1
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 930800090

Layer: 2
Material: 4
Open Hole or Material: OPEN HOLE
Depth From:
Depth To: 97
Casing Diameter: 6
Casing Diameter UOM: inch
Casing Depth UOM: ft

Construction Record - Casing

Casing ID: 930800089
Layer: 1
Material: 1
Open Hole or Material: STEEL
Depth From:
Depth To: 21
Casing Diameter: 6
Casing Diameter UOM: inch
Casing Depth UOM: ft

Results of Well Yield Testing

Pump Test ID: 996812181
Pump Set At:
Static Level: 8
Final Level After Pumping: 97
Recommended Pump Depth: 95
Pumping Rate: 20
Flowing Rate:
Recommended Pump Rate: 20
Levels UOM: ft
Rate UOM: GPM
Water State After Test Code: 1
Water State After Test: CLEAR
Pumping Test Method: 1
Pumping Duration HR: 1
Pumping Duration MIN: 0
Flowing: N

Draw Down & Recovery

Pump Test Detail ID: 934880462
Test Type: Recovery
Test Duration: 45
Test Level: 8
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 935142132
Test Type: Recovery
Test Duration: 60
Test Level: 8
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934629555
Test Type: Recovery
Test Duration: 30
Test Level: 8

Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934358066
Test Type: Recovery
Test Duration: 15
Test Level: 9
Test Level UOM: ft

Water Details

Water ID: 933982204
Layer: 1
Kind Code: 1
Kind: FRESH
Water Found Depth: 95
Water Found Depth UOM: ft

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6 | **1 of 1** | **WSW/24.2** | **274.9 / 5.00** | **lot 34 con 7 ON** | **WWIS**

Well ID: 6807519
Construction Date:
Primary Water Use: Public
Sec. Water Use: 0
Final Well Status: Water Supply
Water Type:
Casing Material:
Audit No:
Tag:
Construction Method:
Elevation (m):
Elevation Reliability:
Depth to Bedrock:
Well Depth:
Overburden/Bedrock:
Pump Rate:
Static Water Level:
Flowing (Y/N):
Flow Rate:
Clear/Cloudy:

Data Entry Status:
Data Src: 1
Date Received: 8/5/1970
Selected Flag: Yes
Abandonment Rec:
Contractor: 1205
Form Version: 1
Owner:
Street Name:
County: WENTWORTH
Municipality: BEVERLY TOWNSHIP
Site Info:
Lot: 034
Concession: 07
Concession Name: CON
Easting NAD83:
Northing NAD83:
Zone:
UTM Reliability:

Bore Hole Information

Bore Hole ID: 10484930
DP2BR: 14
Spatial Status:
Code OB: r
Code OB Desc: Bedrock
Open Hole:
Cluster Kind:
Date Completed: 16-JUL-70
Remarks:
Elevrc Desc:
Location Source Date:
Improvement Location Source:
Improvement Location Method:
Source Revision Comment:
Supplier Comment:

Elevation: 273.57
Elevrc:
Zone: 17
East83: 574904.3
Org CS:
North83: 4801753
UTMRC: 4
UTMRC Desc: margin of error : 30 m - 100 m
Location Method: p4

Overburden and Bedrock

Materials Interval

Formation ID:	932685568
Layer:	1
Color:	6
General Color:	BROWN
Mat1:	05
Most Common Material:	CLAY
Mat2:	12
Other Materials:	STONES
Mat3:	
Other Materials:	
Formation Top Depth:	0
Formation End Depth:	14
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932685569
Layer:	2
Color:	2
General Color:	GREY
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	14
Formation End Depth:	50
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966807519
Method Construction Code:	1
Method Construction:	Cable Tool
Other Method Construction:	

Pipe Information

Pipe ID:	11033500
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930793044
Layer:	2
Material:	4
Open Hole or Material:	OPEN HOLE
Depth From:	
Depth To:	50
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Casing

Casing ID:	930793043
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	15
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pump Test ID:	996807519
Pump Set At:	
Static Level:	6
Final Level After Pumping:	10
Recommended Pump Depth:	47
Pumping Rate:	15
Flowing Rate:	
Recommended Pump Rate:	8
Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	1
Water State After Test:	CLEAR
Pumping Test Method:	2
Pumping Duration HR:	2
Pumping Duration MIN:	0
Flowing:	N

Draw Down & Recovery

Pump Test Detail ID:	934351914
Test Type:	Draw Down
Test Duration:	15
Test Level:	10
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934868156
Test Type:	Draw Down
Test Duration:	45
Test Level:	10
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	935138408
Test Type:	Draw Down
Test Duration:	60
Test Level:	10
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934616332
Test Type:	Draw Down
Test Duration:	30
Test Level:	10
Test Level UOM:	ft

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB

Water Details

Water ID:	933976295
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	48
Water Found Depth UOM:	ft

---

7 ***1 of 1*** ***WSW/34.1*** ***269.1 / -0.76*** ***Belmac Estate Properties Inc.*** ***ECA***

Hamilton ON L0L 2P0

Approval No:	5241-6S3QQ2	***SWP Area Name:***	Hamilton
Approval Date:	2006-08-16	***MOE District:***	Hamilton
Status:	Approved	***City:***	Hamilton
Record Type:	ECA	***Longitude:***	-80.0855
Link Source:	IDS	***Latitude:***	43.3606
Approval Type:	ECA-MUNICIPAL AND PRIVATE SEWAGE WORKS		
Project Type:	MUNICIPAL AND PRIVATE SEWAGE WORKS		
Address:			
Full Address:			
Full PDF Link:	https://www.accessenvironment.ene.gov.on.ca/instruments/7721-6RKHFN-14.pdf		

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8 ***1 of 1*** ***WSW/37.3*** ***274.9 / 5.00*** ***WWIS***

Hamilton ON

Well ID:	7281367	***Data Entry Status:***	
Construction Date:		***Data Src:***	
Primary Water Use:	Livestock	***Date Received:***	2/17/2017
Sec. Water Use:	Domestic	***Selected Flag:***	Yes
Final Well Status:	Water Supply	***Abandonment Rec:***	
Water Type:		***Contractor:***	7221
Casing Material:		***Form Version:***	7
Audit No:	Z249188	***Owner:***	
Tag:	A202574	***Street Name:***	207 8TH CONCESSION WEST
Construction Method:		***County:***	WENTWORTH
Elevation (m):		***Municipality:***	BEVERLY TOWNSHIP
Elevation Reliability:		***Site Info:***	
Depth to Bedrock:		***Lot:***	
Well Depth:		***Concession:***	
Overburden/Bedrock:		***Concession Name:***	
Pump Rate:		***Easting NAD83:***	
Static Water Level:		***Northing NAD83:***	
Flowing (Y/N):		***Zone:***	
Flow Rate:		***UTM Reliability:***	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	1006354812	***Elevation:***	273.71
DP2BR:		***Elevrc:***	
Spatial Status:		***Zone:***	17
Code OB:		***East83:***	574709
Code OB Desc:		***Org CS:***	UTM83
Open Hole:		***North83:***	4801646
Cluster Kind:		***UTMRC:***	4
Date Completed:	07-FEB-17	***UTMRC Desc:***	margin of error : 30 m - 100 m
Remarks:		***Location Method:***	wwr
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			

Improvement Location Method:
Source Revision Comment:
Supplier Comment:

Overburden and Bedrock Materials Interval

Formation ID:	1006588741
Layer:	1
Color:	6
General Color:	BROWN
Mat1:	28
Most Common Material:	SAND
Mat2:	11
Other Materials:	GRAVEL
Mat3:	05
Other Materials:	CLAY
Formation Top Depth:	0
Formation End Depth:	2.7
Formation End Depth UOM:	m

Overburden and Bedrock Materials Interval

Formation ID:	1006588743
Layer:	3
Color:	2
General Color:	GREY
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	19.2
Formation End Depth:	27.4
Formation End Depth UOM:	m

Overburden and Bedrock Materials Interval

Formation ID:	1006588742
Layer:	2
Color:	6
General Color:	BROWN
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	2.7
Formation End Depth:	19.2
Formation End Depth UOM:	m

Annular Space/Abandonment Sealing Record

Plug ID:	1006588781
Layer:	1
Plug From:	0
Plug To:	10.7

Plug Depth UOM: m

Method of Construction & Well Use

Method Construction ID: 1006588780
Method Construction Code: 2
Method Construction: Rotary (Convent.)
Other Method Construction:

Pipe Information

Pipe ID: 1006588739
Casing No: 0
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 1006588749
Layer: 2
Material: 4
Open Hole or Material: OPEN HOLE
Depth From: 10.7
Depth To: 27.4
Casing Diameter: 15.6
Casing Diameter UOM: cm
Casing Depth UOM: m

Construction Record - Casing

Casing ID: 1006588748
Layer: 1
Material: 1
Open Hole or Material: STEEL
Depth From: -.8
Depth To: 10.7
Casing Diameter: 16
Casing Diameter UOM: cm
Casing Depth UOM: m

Construction Record - Screen

Screen ID: 1006588750
Layer:
Slot:
Screen Top Depth:
Screen End Depth:
Screen Material:
Screen Depth UOM: m
Screen Diameter UOM: cm
Screen Diameter:

Results of Well Yield Testing

Pump Test ID: 1006588740
Pump Set At: 15.24
Static Level: 10.6
Final Level After Pumping: 11.64
Recommended Pump Depth: 15.2
Pumping Rate: 68.16

Flowing Rate:
Recommended Pump Rate: 54.5
Levels UOM: m
Rate UOM: LPM
Water State After Test Code: 1
Water State After Test: CLEAR
Pumping Test Method: 0
Pumping Duration HR: 1
Pumping Duration MIN: 0
Flowing:

Draw Down & Recovery

Pump Test Detail ID: 1006588762
Test Type: Draw Down
Test Duration: 10
Test Level: 11.61
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 1006588767
Test Type: Recovery
Test Duration: 20
Test Level: 10.6
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 1006588774
Test Type: Draw Down
Test Duration: 50
Test Level: 11.64
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 1006588752
Test Type: Draw Down
Test Duration: 1
Test Level: 11.44
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 1006588755
Test Type: Recovery
Test Duration: 2
Test Level: 10.64
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 1006588765
Test Type: Recovery
Test Duration: 15
Test Level: 10.6
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 1006588769
Test Type: Recovery
Test Duration: 25
Test Level: 10.6
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 1006588773
Test Type: Recovery
Test Duration: 40
Test Level: 10.6
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 1006588751
Test Type: Recovery
Test Duration: 0
Test Level: 11.64
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 1006588754
Test Type: Draw Down
Test Duration: 2
Test Level: 11.54
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 1006588756
Test Type: Draw Down
Test Duration: 3
Test Level: 11.58
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 1006588759
Test Type: Recovery
Test Duration: 4
Test Level: 10.64
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 1006588772
Test Type: Draw Down
Test Duration: 40
Test Level: 11.64
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 1006588757
Test Type: Recovery
Test Duration: 3

Test Level: 10.67
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 1006588764
Test Type: Draw Down
Test Duration: 15
Test Level: 11.64
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 1006588766
Test Type: Draw Down
Test Duration: 20
Test Level: 11.64
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 1006588770
Test Type: Draw Down
Test Duration: 30
Test Level: 11.64
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 1006588775
Test Type: Recovery
Test Duration: 50
Test Level: 10.6
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 1006588753
Test Type: Recovery
Test Duration: 1
Test Level: 10.67
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 1006588758
Test Type: Draw Down
Test Duration: 4
Test Level: 11.61
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 1006588760
Test Type: Draw Down
Test Duration: 5
Test Level: 11.61
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 1006588768
Test Type: Draw Down
Test Duration: 25
Test Level: 11.64
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 1006588771
Test Type: Recovery
Test Duration: 30
Test Level: 10.6
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 1006588776
Test Type: Draw Down
Test Duration: 60
Test Level: 11.64
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 1006588761
Test Type: Recovery
Test Duration: 5
Test Level: 10.63
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 1006588763
Test Type: Recovery
Test Duration: 10
Test Level: 10.6
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 1006588777
Test Type: Recovery
Test Duration: 60
Test Level: 10.6
Test Level UOM: m

Water Details

Water ID: 1006588747
Layer: 1
Kind Code: 8
Kind: Untested
Water Found Depth: 27.4
Water Found Depth UOM: m

Hole Diameter

Hole ID: 1006588745

Diameter:	21.6
Depth From:	7.6
Depth To:	10.7
Hole Depth UOM:	m
Hole Diameter UOM:	cm

Hole Diameter

Hole ID:	1006588746
Diameter:	15.6
Depth From:	10.7
Depth To:	27.4
Hole Depth UOM:	m
Hole Diameter UOM:	cm

Hole Diameter

Hole ID:	1006588744
Diameter:	25
Depth From:	0
Depth To:	7.6
Hole Depth UOM:	m
Hole Diameter UOM:	cm

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9 ***1 of 2*** ***WSW/41.1*** ***270.6 / 0.79*** ***lot 32 con 7 ON*** ***WWIS***

Well ID:	6813045	**Data Entry Status:**	
Construction Date:		**Data Src:**	1
Primary Water Use:	Public	**Date Received:**	12/1/1998
Sec. Water Use:		**Selected Flag:**	Yes
Final Well Status:	Water Supply	**Abandonment Rec:**	
Water Type:		**Contractor:**	4005
Casing Material:		**Form Version:**	1
Audit No:	198301	**Owner:**	
Tag:		**Street Name:**	
Construction Method:		**County:**	WENTWORTH
Elevation (m):		**Municipality:**	BEVERLY TOWNSHIP
Elevation Reliability:		**Site Info:**	
Depth to Bedrock:		**Lot:**	032
Well Depth:		**Concession:**	07
Overburden/Bedrock:		**Concession Name:**	CON
Pump Rate:		**Easting NAD83:**	
Static Water Level:		**Northing NAD83:**	
Flowing (Y/N):		**Zone:**	
Flow Rate:		**UTM Reliability:**	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10490358	**Elevation:**	269.67
DP2BR:	5	**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:	r	**East83:**	574092.3
Code OB Desc:	Bedrock	**Org CS:**	
Open Hole:		**North83:**	4801267
Cluster Kind:		**UTMRC:**	9
Date Completed:	28-OCT-98	**UTMRC Desc:**	unknown UTM
Remarks:		**Location Method:**	lot
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			

Improvement Location Method:
Source Revision Comment:
Supplier Comment:

Overburden and Bedrock Materials Interval

Formation ID: 932703687
Layer: 2
Color: 2
General Color: GREY
Mat1: 15
Most Common Material: LIMESTONE
Mat2:
Other Materials:
Mat3:
Other Materials:
Formation Top Depth: 5
Formation End Depth: 100
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 932703686
Layer: 1
Color: 6
General Color: BROWN
Mat1: 05
Most Common Material: CLAY
Mat2: 28
Other Materials: SAND
Mat3:
Other Materials:
Formation Top Depth: 0
Formation End Depth: 5
Formation End Depth UOM: ft

Annular Space/Abandonment Sealing Record

Plug ID: 933211874
Layer: 1
Plug From: 0
Plug To: 21
Plug Depth UOM: ft

Method of Construction & Well Use

Method Construction ID: 966813045
Method Construction Code: 5
Method Construction: Air Percussion
Other Method Construction:

Pipe Information

Pipe ID: 11038928
Casing No: 1
Comment:
Alt Name:

Construction Record - Casing

Casing ID:	930801504
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	21
Casing Diameter:	8
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Casing

Casing ID:	930801505
Layer:	2
Material:	4
Open Hole or Material:	OPEN HOLE
Depth From:	
Depth To:	100
Casing Diameter:	8
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pump Test ID:	996813045
Pump Set At:	
Static Level:	6
Final Level After Pumping:	8
Recommended Pump Depth:	50
Pumping Rate:	75
Flowing Rate:	
Recommended Pump Rate:	75
Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	1
Water State After Test:	CLEAR
Pumping Test Method:	1
Pumping Duration HR:	24
Pumping Duration MIN:	0
Flowing:	N

Draw Down & Recovery

Pump Test Detail ID:	934351606
Test Type:	Recovery
Test Duration:	15
Test Level:	6
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934623058
Test Type:	Recovery
Test Duration:	30
Test Level:	6
Test Level UOM:	ft

Water Details

Water ID: 933983416
Layer: 1
Kind Code: 5
Kind: Not stated
Water Found Depth: 24
Water Found Depth UOM: ft

Water Details

Water ID: 933983417
Layer: 2
Kind Code: 5
Kind: Not stated
Water Found Depth: 47
Water Found Depth UOM: ft

Water Details

Water ID: 933983418
Layer: 3
Kind Code: 5
Kind: Not stated
Water Found Depth: 50
Water Found Depth UOM: ft

Water Details

Water ID: 933983419
Layer: 4
Kind Code: 5
Kind: Not stated
Water Found Depth: 65
Water Found Depth UOM: ft

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9 | **2 of 2** | **WSW/41.1** | **270.6 / 0.79** | **lot 32 con 7 ON** | **WWIS**

Well ID: 6812044
Construction Date:
Primary Water Use:
Sec. Water Use:
Final Well Status:
Water Type:
Casing Material:
Audit No: 76471
Tag:
Construction Method:
Elevation (m):
Elevation Reliability:
Depth to Bedrock:
Well Depth:
Overburden/Bedrock:
Pump Rate:
Static Water Level:
Flowing (Y/N):
Flow Rate:
Clear/Cloudy:

Data Entry Status:
Data Src: 1
Date Received: 6/24/1991
Selected Flag: Yes
Abandonment Rec:
Contractor: 4005
Form Version: 1
Owner:
Street Name:
County: WENTWORTH
Municipality: BEVERLY TOWNSHIP
Site Info:
Lot: 032
Concession: 07
Concession Name: CON
Easting NAD83:
Northing NAD83:
Zone:
UTM Reliability:

Bore Hole Information

Bore Hole ID: 10489358
DP2BR: 4
Elevation: 269.67
Elevrc:

Spatial Status:		***Zone:***	17
Code OB:	r	***East83:***	574092.3
Code OB Desc:	Bedrock	***Org CS:***	
Open Hole:		***North83:***	4801267
Cluster Kind:		***UTMRC:***	9
Date Completed:	05-JUN-91	***UTMRC Desc:***	unknown UTM
Remarks:		***Location Method:***	lot
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932700354
Layer:	2
Color:	2
General Color:	GREY
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	73
Other Materials:	HARD
Mat3:	
Other Materials:	
Formation Top Depth:	4
Formation End Depth:	60
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932700353
Layer:	1
Color:	6
General Color:	BROWN
Mat1:	28
Most Common Material:	SAND
Mat2:	11
Other Materials:	GRAVEL
Mat3:	77
Other Materials:	LOOSE
Formation Top Depth:	0
Formation End Depth:	4
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966812044
Method Construction Code:	0
Method Construction:	Not Known
Other Method Construction:	

Pipe Information

Pipe ID:	11037928
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930799874
Layer:	1
Material:	
Open Hole or Material:	
Depth From:	
Depth To:	20
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Casing

Casing ID:	930799875
Layer:	2
Material:	
Open Hole or Material:	
Depth From:	
Depth To:	60
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pump Test ID:	996812044
Pump Set At:	
Static Level:	5
Final Level After Pumping:	
Recommended Pump Depth:	
Pumping Rate:	8
Flowing Rate:	
Recommended Pump Rate:	
Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	2
Water State After Test:	CLOUDY
Pumping Test Method:	1
Pumping Duration HR:	1
Pumping Duration MIN:	0
Flowing:	N

Draw Down & Recovery

Pump Test Detail ID:	934628496
Test Type:	Draw Down
Test Duration:	30
Test Level:	55
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934357546
Test Type:	Draw Down
Test Duration:	15
Test Level:	55
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID: 934881072
Test Type: Draw Down
Test Duration: 45
Test Level: 55
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 935142045
Test Type: Draw Down
Test Duration: 60
Test Level: 55
Test Level UOM: ft

Water Details

Water ID: 933982002
Layer: 1
Kind Code: 5
Kind: Not stated
Water Found Depth: 35
Water Found Depth UOM: ft

Water Details

Water ID: 933982003
Layer: 2
Kind Code: 5
Kind: Not stated
Water Found Depth: 52
Water Found Depth UOM: ft

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10 ***1 of 1*** ***WSW/41.9*** ***270.9 / 1.00*** ***TransCanada PipeLines Limited*** ***NEBI***

Hamilton ON

Incident No:	INC2009-034	***Regulation:***	OPR
Status:	Closed	***Schedule:***	NULL
Facility Name:	NULL	***Application Method:***	NULL
Facility Type:	NULL	***Investigation Type:***	Standard Review
Approx Vol Released:	Not Provided	***Equip or Comp Involv:***	Station/Facility, Compression, Piping, Weld
Vol Released (M3):	0	***Equip Never Inspect:***	No
Release Type:	Gas	***Oper Prs at Failure:***	NULL
Release Substance:	Natural Gas - Sweet	***Oper Beyond Limits:***	NULL
Substance:	Natural Gas - Sweet	***Lic Max Oper Prs:***	0
Coating Type:	NULL	***Restricted Oper Prs:***	NULL
Coating Condition:	NULL	***Emergency Level:***	Level I
Coating Location:	NULL	***No Evacuated:***	0
Year Coating Applied:	NULL	***Fatalities:***	NULL
Material:	Stainless Steel	***Activity at Fatality:***	NULL
Material Grade:	NULL	***Aff Off Pipe R of Way:***	No
Dsgn Dp of Cover (m):	NULL	***Individuals Injured:***	NULL
Depth of Cover (m):	NULL	***Type of Injury:***	NULL
Dsgn Wall Th (mm):	NULL	***Affects Co. Property:***	Yes
Wall Thickness (mm):	NULL	***Off Co. Property:***	No
Custom W Th (mm):	NULL	***Activity at Incident:***	Operation
Weld Type:	NULL	***NEB Staff Deployed?:***	No
Insulation Installed:	No	***Near Pop Centre:***	Hamilton
Pipeline Name:	TCPL - Station 1301 (Kirkwall Compressor Station)	***Population Density:***	Unknown Population Density (Historical Data Migration)
Pipe Length (km):	NULL	***Workdays Lost:***	NULL

Pipeline/Fac Type:	NULL	**Nominal Pipe Size:**	NPS 1
Pipe/Fac Equip:	Yes	**Work Restr by Injury:**	NULL
Pipe Out Diam (NPS):	NULL	**Kilometre Post:**	NULL
Pipe Body Release:	No	**Year:**	2009
In-Service Year:	NULL	**Pipe Oper Intrption:**	NULL
Year of Installation:	NULL	**Rupture:**	No
Year of Manufacture:	NULL	**Env Conditions:**	NULL
How Discovered:	Employee / Contractor (Onsite)	**Residual Env Effects:**	No
Discovered Date:	2009/04/20 03:40:00 PM Eastern	**Seam Type:**	NULL
Occurrence Date:	NULL	**Seam Clock Position:**	NULL
Last Maint. Date:	NULL	**Seam Joining Method:**	NULL
Closed Date:	7/27/2012	**Source of Explosion:**	NULL
Reported Date:	4/23/2009	**Source of Fire:**	NULL
Repair Date:	NULL	**Cath Protect Reading:**	NULL
Repair Type:	Replacement	**Recent Inspection Dt:**	NULL
Land Use:	Unknown Land Use (Historical Data Migration)	**Aff Pipeline R of Way:**	No
Recent Rout Inspect:	No	**Marker:**	small_green
Recent Inspect Type:	NULL	**Facility Latitude:**	NULL
Recent Maintenance:	Replacement	**Facility Longitude:**	NULL
Recent Rout Maint:	No	**Latitude:**	43.35064
No Maint. Done:	No	**Longitude:**	-80.1193
Significant:	No		

Related NEB Event No:	NULL
Incident Type:	Release of Substance
Incident Types:	Release of Substance
Substance Carried:	NULL
Design Standard:	NULL
Basic Cause Category:	Maintenance
Immed Cause Cat:	Corrosion and Cracking
Detailed Basic Cause:	Job or system factors, Excessive wear and tear, Improper loading or rate of use
Detailed Immediate Cause:	Damage or deterioration mechanism, Cracking, Corrosion Fatigue

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11 | ***1 of 1*** | ***SW/47.1*** | ***270.9 / 1.09*** | ***lot 33 con 7 ON*** | ***WWIS***

Well ID:	6810703	**Data Entry Status:**	
Construction Date:		**Data Src:**	1
Primary Water Use:	Domestic	**Date Received:**	8/10/1984
Sec. Water Use:	0	**Selected Flag:**	Yes
Final Well Status:	Water Supply	**Abandonment Rec:**	
Water Type:		**Contractor:**	4005
Casing Material:		**Form Version:**	1
Audit No:		**Owner:**	
Tag:		**Street Name:**	
Construction Method:		**County:**	WENTWORTH
Elevation (m):		**Municipality:**	BEVERLY TOWNSHIP
Elevation Reliability:		**Site Info:**	
Depth to Bedrock:		**Lot:**	033
Well Depth:		**Concession:**	07
Overburden/Bedrock:		**Concession Name:**	CON
Pump Rate:		**Easting NAD83:**	
Static Water Level:		**Northing NAD83:**	
Flowing (Y/N):		**Zone:**	
Flow Rate:		**UTM Reliability:**	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10488025	**Elevation:**	270.76
DP2BR:	40	**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:	r	**East83:**	574574.3
Code OB Desc:	Bedrock	**Org CS:**	

Open Hole:		**North83:**	4800843
Cluster Kind:		**UTMRC:**	4
Date Completed:	25-JUL-84	**UTMRC Desc:**	margin of error : 30 m - 100 m
Remarks:		**Location Method:**	p4
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932695657
Layer:	1
Color:	6
General Color:	BROWN
Mat1:	05
Most Common Material:	CLAY
Mat2:	13
Other Materials:	BOULDERS
Mat3:	77
Other Materials:	LOOSE
Formation Top Depth:	0
Formation End Depth:	23
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932695659
Layer:	3
Color:	2
General Color:	GREY
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	73
Other Materials:	HARD
Mat3:	
Other Materials:	
Formation Top Depth:	40
Formation End Depth:	86
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932695658
Layer:	2
Color:	6
General Color:	BROWN
Mat1:	28
Most Common Material:	SAND
Mat2:	11
Other Materials:	GRAVEL
Mat3:	77
Other Materials:	LOOSE
Formation Top Depth:	23
Formation End Depth:	40
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966810703
Method Construction Code:	1
Method Construction:	Cable Tool
Other Method Construction:	

Pipe Information

Pipe ID:	11036595
Casing No:	1
Comment:	
Alt Name:	

Results of Well Yield Testing

Pump Test ID:	996810703
Pump Set At:	
Static Level:	28
Final Level After Pumping:	66
Recommended Pump Depth:	83
Pumping Rate:	18
Flowing Rate:	
Recommended Pump Rate:	10
Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	1
Water State After Test:	CLEAR
Pumping Test Method:	1
Pumping Duration HR:	1
Pumping Duration MIN:	0
Flowing:	N

Draw Down & Recovery

Pump Test Detail ID:	934353617
Test Type:	Recovery
Test Duration:	15
Test Level:	32
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934625634
Test Type:	Recovery
Test Duration:	30
Test Level:	28
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	935147007
Test Type:	Recovery
Test Duration:	60
Test Level:	28
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934868229

Test Type:	Recovery
Test Duration:	45
Test Level:	28
Test Level UOM:	ft

Water Details

Water ID:	933980166
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	52
Water Found Depth UOM:	ft

Water Details

Water ID:	933980167
Layer:	2
Kind Code:	1
Kind:	FRESH
Water Found Depth:	85
Water Found Depth UOM:	ft

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12 | ***1 of 1*** | ***ENE/52.8*** | ***263.9 / -6.00*** | ***lot 7 con 7 ON*** | ***WWIS***

Well ID:	6810346	**Data Entry Status:**	
Construction Date:		**Data Src:**	1
Primary Water Use:	Domestic	**Date Received:**	1/15/1982
Sec. Water Use:	0	**Selected Flag:**	Yes
Final Well Status:	Water Supply	**Abandonment Rec:**	
Water Type:		**Contractor:**	4208
Casing Material:		**Form Version:**	1
Audit No:		**Owner:**	
Tag:		**Street Name:**	
Construction Method:		**County:**	WENTWORTH
Elevation (m):		**Municipality:**	WEST FLAMBOROUGH TOWNSHIP
Elevation Reliability:		**Site Info:**	
Depth to Bedrock:		**Lot:**	007
Well Depth:		**Concession:**	07
Overburden/Bedrock:		**Concession Name:**	CON
Pump Rate:		**Easting NAD83:**	
Static Water Level:		**Northing NAD83:**	
Flowing (Y/N):		**Zone:**	
Flow Rate:		**UTM Reliability:**	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10487672	**Elevation:**	264.84
DP2BR:	23	**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:	r	**East83:**	578514.4
Code OB Desc:	Bedrock	**Org CS:**	
Open Hole:		**North83:**	4802863
Cluster Kind:		**UTMRC:**	4
Date Completed:	08-JUN-81	**UTMRC Desc:**	margin of error : 30 m - 100 m
Remarks:		**Location Method:**	p4
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			

Source Revision Comment:
Supplier Comment:

Overburden and Bedrock Materials Interval

Formation ID:	932694482
Layer:	1
Color:	6
General Color:	BROWN
Mat1:	05
Most Common Material:	CLAY
Mat2:	81
Other Materials:	SANDY
Mat3:	
Other Materials:	
Formation Top Depth:	0
Formation End Depth:	23
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932694483
Layer:	2
Color:	2
General Color:	GREY
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	23
Formation End Depth:	30
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966810346
Method Construction Code:	4
Method Construction:	Rotary (Air)
Other Method Construction:	

Pipe Information

Pipe ID:	11036242
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930797329
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	23
Casing Diameter:	6
Casing Diameter UOM:	inch

Casing Depth UOM: ft

Results of Well Yield Testing

Pump Test ID: 996810346
Pump Set At:
Static Level: 5
Final Level After Pumping: 30
Recommended Pump Depth: 20
Pumping Rate: 40
Flowing Rate:
Recommended Pump Rate: 10
Levels UOM: ft
Rate UOM: GPM
Water State After Test Code: 1
Water State After Test: CLEAR
Pumping Test Method: 1
Pumping Duration HR: 1
Pumping Duration MIN: 0
Flowing: N

Draw Down & Recovery

Pump Test Detail ID: 934352481
Test Type: Recovery
Test Duration: 15
Test Level: 5
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934623991
Test Type: Recovery
Test Duration: 30
Test Level: 5
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934867147
Test Type: Recovery
Test Duration: 45
Test Level: 5
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 935145786
Test Type: Recovery
Test Duration: 60
Test Level: 5
Test Level UOM: ft

Water Details

Water ID: 933979732
Layer: 1
Kind Code: 1
Kind: FRESH
Water Found Depth: 26
Water Found Depth UOM: ft

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
13	1 of 1	ENE/53.6	270.2 / 0.39	780 Concession Rd 8 W Hamilton ON N0B2J0	EHS

Order ID:	566928	**Date Received:**	29-MAR-18
Order No:	20180329033	**Lot/Building Size:**	
Customer ID:	129588	**Municipality:**	HAMILTON
Company ID:	80685	**Client Prov/State:**	ON
Status:	C	**Search Radius (km):**	.25
Report Code:	4CAN	**Large Radius:**	.35
Report Type:	Custom Report	**X:**	-80.021165
Report Date:	05-APR-18	**Y:**	43.375658
Report Requested by:	Monarch Environmental Consulting Ltd.		
Nearest Intersection:			
Previous Site Name:			
Additional Info Ordered:	Fire Insur. Maps and/or Site Plans		

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
14	1 of 1	WSW/57.2	272.5 / 2.69	lot 31 con 7 ON	WWIS

Well ID:	6807572	**Data Entry Status:**	
Construction Date:		**Data Src:**	1
Primary Water Use:	Domestic	**Date Received:**	9/17/1970
Sec. Water Use:	0	**Selected Flag:**	Yes
Final Well Status:	Water Supply	**Abandonment Rec:**	
Water Type:		**Contractor:**	2309
Casing Material:		**Form Version:**	1
Audit No:		**Owner:**	
Tag:		**Street Name:**	
Construction Method:		**County:**	WENTWORTH
Elevation (m):		**Municipality:**	BEVERLY TOWNSHIP
Elevation Reliability:		**Site Info:**	
Depth to Bedrock:		**Lot:**	031
Well Depth:		**Concession:**	07
Overburden/Bedrock:		**Concession Name:**	CON
Pump Rate:		**Easting NAD83:**	
Static Water Level:		**Northing NAD83:**	
Flowing (Y/N):		**Zone:**	
Flow Rate:		**UTM Reliability:**	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10484980	**Elevation:**	273.72
DP2BR:	1	**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:	r	**East83:**	573564.3
Code OB Desc:	Bedrock	**Org CS:**	
Open Hole:		**North83:**	4800843
Cluster Kind:		**UTMRC:**	4
Date Completed:	11-AUG-70	**UTMRC Desc:**	margin of error : 30 m - 100 m
Remarks:		**Location Method:**	p4
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932685731
Layer:	2
Color:	2
General Color:	GREY
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	1
Formation End Depth:	59
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932685730
Layer:	1
Color:	6
General Color:	BROWN
Mat1:	02
Most Common Material:	TOPSOIL
Mat2:	09
Other Materials:	MEDIUM SAND
Mat3:	
Other Materials:	
Formation Top Depth:	0
Formation End Depth:	1
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966807572
Method Construction Code:	1
Method Construction:	Cable Tool
Other Method Construction:	

Pipe Information

Pipe ID:	11033550
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930793134
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	10
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Casing

Casing ID:	930793135
Layer:	2

Material:	4
Open Hole or Material:	OPEN HOLE
Depth From:	
Depth To:	59
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pump Test ID:	996807572
Pump Set At:	
Static Level:	15
Final Level After Pumping:	54
Recommended Pump Depth:	56
Pumping Rate:	5
Flowing Rate:	
Recommended Pump Rate:	4
Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	1
Water State After Test:	CLEAR
Pumping Test Method:	2
Pumping Duration HR:	1
Pumping Duration MIN:	0
Flowing:	N

Draw Down & Recovery

Pump Test Detail ID:	934352374
Test Type:	Draw Down
Test Duration:	15
Test Level:	54
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934616375
Test Type:	Draw Down
Test Duration:	30
Test Level:	54
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	935138451
Test Type:	Draw Down
Test Duration:	60
Test Level:	54
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934868615
Test Type:	Draw Down
Test Duration:	45
Test Level:	54
Test Level UOM:	ft

Water Details

Water ID:	933976348
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	55
Water Found Depth UOM:	ft

15 **1 of 1** **WSW/57.3** **273.9 / 4.00** **lot 16 con 1 ON** **WWIS**

Well ID:	5005530	**Data Entry Status:**	
Construction Date:		**Data Src:**	1
Primary Water Use:	Domestic	**Date Received:**	8/25/2003
Sec. Water Use:		**Selected Flag:**	Yes
Final Well Status:	Water Supply	**Abandonment Rec:**	
Water Type:		**Contractor:**	7154
Casing Material:		**Form Version:**	1
Audit No:	264311	**Owner:**	
Tag:		**Street Name:**	
Construction Method:		**County:**	PERTH
Elevation (m):		**Municipality:**	SOUTH EASTHOPE TOWNSHIP
Elevation Reliability:		**Site Info:**	
Depth to Bedrock:		**Lot:**	016
Well Depth:		**Concession:**	01
Overburden/Bedrock:		**Concession Name:**	CON
Pump Rate:		**Easting NAD83:**	
Static Water Level:		**Northing NAD83:**	
Flowing (Y/N):		**Zone:**	
Flow Rate:		**UTM Reliability:**	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10546580	**Elevation:**	272.95
DP2BR:	195	**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:	r	**East83:**	575174
Code OB Desc:	Bedrock	**Org CS:**	N83a
Open Hole:		**North83:**	4801800
Cluster Kind:		**UTMRC:**	8
Date Completed:	06-AUG-03	**UTMRC Desc:**	margin of error : 3 km - 10 km
Remarks:		**Location Method:**	wc
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932934844
Layer:	3
Color:	6
General Color:	BROWN
Mat1:	05
Most Common Material:	CLAY
Mat2:	12
Other Materials:	STONES
Mat3:	
Other Materials:	
Formation Top Depth:	96

Formation End Depth: 103
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 932934846
Layer: 5
Color: 2
General Color: GREY
Mat1: 06
Most Common Material: SILT
Mat2:
Other Materials:
Mat3:
Other Materials:
Formation Top Depth: 105
Formation End Depth: 188
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 932934842
Layer: 1
Color: 6
General Color: BROWN
Mat1: 02
Most Common Material: TOPSOIL
Mat2:
Other Materials:
Mat3:
Other Materials:
Formation Top Depth: 0
Formation End Depth: 2
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 932934843
Layer: 2
Color: 6
General Color: BROWN
Mat1: 05
Most Common Material: CLAY
Mat2:
Other Materials:
Mat3:
Other Materials:
Formation Top Depth: 2
Formation End Depth: 96
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 932934847
Layer: 6
Color: 2
General Color: GREY
Mat1: 05

Most Common Material:	CLAY
Mat2:	12
Other Materials:	STONES
Mat3:	
Other Materials:	
Formation Top Depth:	188
Formation End Depth:	195
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932934845
Layer:	4
Color:	2
General Color:	GREY
Mat1:	05
Most Common Material:	CLAY
Mat2:	84
Other Materials:	SILTY
Mat3:	
Other Materials:	
Formation Top Depth:	103
Formation End Depth:	105
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932934848
Layer:	7
Color:	6
General Color:	BROWN
Mat1:	26
Most Common Material:	ROCK
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	195
Formation End Depth:	200
Formation End Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933243562
Layer:	1
Plug From:	0
Plug To:	192
Plug Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	965005530
Method Construction Code:	2
Method Construction:	Rotary (Convent.)
Other Method Construction:	

Pipe Information

Pipe ID: 11095150
Casing No: 1
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 930543566
Layer: 1
Material: 1
Open Hole or Material: STEEL
Depth From:
Depth To:
Casing Diameter: 6
Casing Diameter UOM: inch
Casing Depth UOM: ft

Construction Record - Casing

Casing ID: 930543567
Layer: 2
Material: 4
Open Hole or Material: OPEN HOLE
Depth From:
Depth To:
Casing Diameter: 6
Casing Diameter UOM: inch
Casing Depth UOM: ft

Results of Well Yield Testing

Pump Test ID: 995005530
Pump Set At:
Static Level: 16
Final Level After Pumping: 59
Recommended Pump Depth: 100
Pumping Rate: 12
Flowing Rate:
Recommended Pump Rate: 12
Levels UOM: ft
Rate UOM: GPM
Water State After Test Code: 1
Water State After Test: CLEAR
Pumping Test Method: 1
Pumping Duration HR: 2
Pumping Duration MIN: 0
Flowing: N

Draw Down & Recovery

Pump Test Detail ID: 935054229
Test Type: Draw Down
Test Duration: 60
Test Level: 59
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934789276
Test Type: Draw Down
Test Duration: 45
Test Level: 58

Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934254503
Test Type: Draw Down
Test Duration: 15
Test Level: 48
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934526816
Test Type: Draw Down
Test Duration: 30
Test Level: 57
Test Level UOM: ft

Water Details

Water ID: 934040533
Layer: 2
Kind Code: 1
Kind: FRESH
Water Found Depth: 196
Water Found Depth UOM: ft

Water Details

Water ID: 934040532
Layer: 1
Kind Code: 1
Kind: FRESH
Water Found Depth: 194
Water Found Depth UOM: ft

Water Details

Water ID: 934040534
Layer: 3
Kind Code: 1
Kind: FRESH
Water Found Depth: 198
Water Found Depth UOM: ft

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16 | ***1 of 1*** | ***WSW/57.6*** | ***274.9 / 5.00*** | ***lot 31 con 7 ON*** | ***WWIS***

Well ID: 6807576
Construction Date:
Primary Water Use: Domestic
Sec. Water Use: 0
Final Well Status: Water Supply
Water Type:
Casing Material:
Audit No:
Tag:
Construction Method:
Elevation (m):
Elevation Reliability:
Depth to Bedrock:

Data Entry Status:
Data Src: 1
Date Received: 9/22/1970
Selected Flag: Yes
Abandonment Rec:
Contractor: 2309
Form Version: 1
Owner:
Street Name:
County: WENTWORTH
Municipality: BEVERLY TOWNSHIP
Site Info:
Lot: 031

Well Depth:		***Concession:***	07
Overburden/Bedrock:		***Concession Name:***	CON
Pump Rate:		***Easting NAD83:***	
Static Water Level:		***Northing NAD83:***	
Flowing (Y/N):		***Zone:***	
Flow Rate:		***UTM Reliability:***	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10484984	***Elevation:***	273.78
DP2BR:	18	***Elevrc:***	
Spatial Status:		***Zone:***	17
Code OB:	r	***East83:***	573694.3
Code OB Desc:	Bedrock	***Org CS:***	
Open Hole:		***North83:***	4800953
Cluster Kind:		***UTMRC:***	4
Date Completed:	16-SEP-70	***UTMRC Desc:***	margin of error : 30 m - 100 m
Remarks:		***Location Method:***	p4
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932685742
Layer:	2
Color:	
General Color:	
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	18
Formation End Depth:	70
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932685741
Layer:	1
Color:	6
General Color:	BROWN
Mat1:	05
Most Common Material:	CLAY
Mat2:	09
Other Materials:	MEDIUM SAND
Mat3:	12
Other Materials:	STONES
Formation Top Depth:	0
Formation End Depth:	18
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID: 966807576
Method Construction Code: 1
Method Construction: Cable Tool
Other Method Construction:

Pipe Information

Pipe ID: 11033554
Casing No: 1
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 930793142
Layer: 1
Material: 1
Open Hole or Material: STEEL
Depth From:
Depth To: 22
Casing Diameter: 6
Casing Diameter UOM: inch
Casing Depth UOM: ft

Construction Record - Casing

Casing ID: 930793143
Layer: 2
Material: 4
Open Hole or Material: OPEN HOLE
Depth From:
Depth To: 70
Casing Diameter:
Casing Diameter UOM: inch
Casing Depth UOM: ft

Results of Well Yield Testing

Pump Test ID: 996807576
Pump Set At:
Static Level: 58
Final Level After Pumping: 65
Recommended Pump Depth: 65
Pumping Rate: 20
Flowing Rate:
Recommended Pump Rate: 3
Levels UOM: ft
Rate UOM: GPM
Water State After Test Code: 1
Water State After Test: CLEAR
Pumping Test Method: 2
Pumping Duration HR: 2
Pumping Duration MIN: 0
Flowing: N

Draw Down & Recovery

Pump Test Detail ID: 934352378
Test Type: Draw Down
Test Duration: 15
Test Level: 58

Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 935138455
Test Type: Draw Down
Test Duration: 60
Test Level: 65
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934868619
Test Type: Draw Down
Test Duration: 45
Test Level: 61
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934616379
Test Type: Draw Down
Test Duration: 30
Test Level: 60
Test Level UOM: ft

Water Details

Water ID: 933976352
Layer: 1
Kind Code: 1
Kind: FRESH
Water Found Depth: 68
Water Found Depth UOM: ft

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17 | ***1 of 1*** | ***ENE/71.5*** | ***258.9 / -10.98*** | ***lot 11 con 7 ON*** | ***WWIS***

Well ID: 6806543
Construction Date:
Primary Water Use: Livestock
Sec. Water Use: Domestic
Final Well Status: Water Supply
Water Type:
Casing Material:
Audit No:
Tag:
Construction Method:
Elevation (m):
Elevation Reliability:
Depth to Bedrock:
Well Depth:
Overburden/Bedrock:
Pump Rate:
Static Water Level:
Flowing (Y/N):
Flow Rate:
Clear/Cloudy:

Data Entry Status:
Data Src: 1
Date Received: 10/26/1965
Selected Flag: Yes
Abandonment Rec:
Contractor: 5417
Form Version: 1
Owner:
Street Name:
County: WENTWORTH
Municipality: WEST FLAMBOROUGH TOWNSHIP
Site Info:
Lot: 011
Concession: 07
Concession Name: CON
Easting NAD83:
Northing NAD83:
Zone:
UTM Reliability:

Bore Hole Information

Bore Hole ID:	10484001	**Elevation:**	259.35
DP2BR:		**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:	o	**East83:**	580137.4
Code OB Desc:	Overburden	**Org CS:**	
Open Hole:		**North83:**	4803399
Cluster Kind:		**UTMRC:**	5
Date Completed:	23-JUN-65	**UTMRC Desc:**	margin of error : 100 m - 300 m
Remarks:		**Location Method:**	p5
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932682665
Layer:	3
Color:	
General Color:	
Mat1:	10
Most Common Material:	COARSE SAND
Mat2:	11
Other Materials:	GRAVEL
Mat3:	
Other Materials:	
Formation Top Depth:	45
Formation End Depth:	46
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932682663
Layer:	1
Color:	6
General Color:	BROWN
Mat1:	05
Most Common Material:	CLAY
Mat2:	09
Other Materials:	MEDIUM SAND
Mat3:	
Other Materials:	
Formation Top Depth:	0
Formation End Depth:	34
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932682664
Layer:	2
Color:	
General Color:	
Mat1:	09
Most Common Material:	MEDIUM SAND
Mat2:	05
Other Materials:	CLAY
Mat3:	11
Other Materials:	GRAVEL

Formation Top Depth:	34
Formation End Depth:	45
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966806543
Method Construction Code:	1
Method Construction:	Cable Tool
Other Method Construction:	

Pipe Information

Pipe ID:	11032571
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930791440
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	46
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pump Test ID:	996806543
Pump Set At:	
Static Level:	18
Final Level After Pumping:	30
Recommended Pump Depth:	40
Pumping Rate:	30
Flowing Rate:	
Recommended Pump Rate:	10
Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	1
Water State After Test:	CLEAR
Pumping Test Method:	1
Pumping Duration HR:	0
Pumping Duration MIN:	45
Flowing:	N

Water Details

Water ID:	933975262
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	45
Water Found Depth UOM:	ft

18	***1 of 1***	***ENE/79.8***	***264.9 / -4.95***	***lot 7 con 7 ON***	***WWIS***

Well ID:	6806533	***Data Entry Status:***	
Construction Date:		***Data Src:***	1
Primary Water Use:	Domestic	***Date Received:***	1/3/1967
Sec. Water Use:	0	***Selected Flag:***	Yes
Final Well Status:	Water Supply	***Abandonment Rec:***	
Water Type:		***Contractor:***	4602
Casing Material:		***Form Version:***	1
Audit No:		***Owner:***	
Tag:		***Street Name:***	
Construction Method:		***County:***	WENTWORTH
Elevation (m):		***Municipality:***	WEST FLAMBOROUGH TOWNSHIP
Elevation Reliability:		***Site Info:***	
Depth to Bedrock:		***Lot:***	007
Well Depth:		***Concession:***	07
Overburden/Bedrock:		***Concession Name:***	CON
Pump Rate:		***Easting NAD83:***	
Static Water Level:		***Northing NAD83:***	
Flowing (Y/N):		***Zone:***	
Flow Rate:		***UTM Reliability:***	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10483991	***Elevation:***	265.52
DP2BR:	33	***Elevrc:***	
Spatial Status:		***Zone:***	17
Code OB:	r	***East83:***	578508.4
Code OB Desc:	Bedrock	***Org CS:***	
Open Hole:		***North83:***	4802834
Cluster Kind:		***UTMRC:***	5
Date Completed:	28-DEC-66	***UTMRC Desc:***	margin of error : 100 m - 300 m
Remarks:		***Location Method:***	p5
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932682634
Layer:	2
Color:	
General Color:	
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	33
Formation End Depth:	44
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932682633
Layer:	1
Color:	6

General Color:	BROWN
Mat1:	09
Most Common Material:	MEDIUM SAND
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	0
Formation End Depth:	33
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966806533
Method Construction Code:	1
Method Construction:	Cable Tool
Other Method Construction:	

Pipe Information

Pipe ID:	11032561
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930791425
Layer:	2
Material:	4
Open Hole or Material:	OPEN HOLE
Depth From:	
Depth To:	44
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Casing

Casing ID:	930791424
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	34
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pump Test ID:	996806533
Pump Set At:	
Static Level:	15
Final Level After Pumping:	44
Recommended Pump Depth:	42
Pumping Rate:	10
Flowing Rate:	
Recommended Pump Rate:	5
Levels UOM:	ft
Rate UOM:	GPM

Water State After Test Code:	2
Water State After Test:	CLOUDY
Pumping Test Method:	1
Pumping Duration HR:	1
Pumping Duration MIN:	0
Flowing:	N

Water Details

Water ID:	933975252
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	43
Water Found Depth UOM:	ft

19 | ***1 of 1*** | ***WSW/84.4*** | ***271.2 / 1.31*** | ***lot 31 con 7 ON*** | ***WWIS***

Well ID:	6809554	**Data Entry Status:**	
Construction Date:		**Data Src:**	1
Primary Water Use:	Domestic	**Date Received:**	2/15/1977
Sec. Water Use:	0	**Selected Flag:**	Yes
Final Well Status:	Water Supply	**Abandonment Rec:**	
Water Type:		**Contractor:**	4005
Casing Material:		**Form Version:**	1
Audit No:		**Owner:**	
Tag:		**Street Name:**	
Construction Method:		**County:**	WENTWORTH
Elevation (m):		**Municipality:**	BEVERLY TOWNSHIP
Elevation Reliability:		**Site Info:**	
Depth to Bedrock:		**Lot:**	031
Well Depth:		**Concession:**	07
Overburden/Bedrock:		**Concession Name:**	CON
Pump Rate:		**Easting NAD83:**	
Static Water Level:		**Northing NAD83:**	
Flowing (Y/N):		**Zone:**	
Flow Rate:		**UTM Reliability:**	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10486896	**Elevation:**	271.16
DP2BR:	11	**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:	r	**East83:**	573594.3
Code OB Desc:	Bedrock	**Org CS:**	
Open Hole:		**North83:**	4800683
Cluster Kind:		**UTMRC:**	4
Date Completed:	02-JAN-77	**UTMRC Desc:**	margin of error : 30 m - 100 m
Remarks:		**Location Method:**	p4
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932691860

Layer:	1
Color:	6
General Color:	BROWN
Mat1:	28
Most Common Material:	SAND
Mat2:	11
Other Materials:	GRAVEL
Mat3:	77
Other Materials:	LOOSE
Formation Top Depth:	0
Formation End Depth:	11
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932691861
Layer:	2
Color:	2
General Color:	GREY
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	73
Other Materials:	HARD
Mat3:	
Other Materials:	
Formation Top Depth:	11
Formation End Depth:	30
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966809554
Method Construction Code:	1
Method Construction:	Cable Tool
Other Method Construction:	

Pipe Information

Pipe ID:	11035466
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930796209
Layer:	2
Material:	4
Open Hole or Material:	OPEN HOLE
Depth From:	
Depth To:	30
Casing Diameter:	
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Casing

Casing ID:	930796208
Layer:	1
Material:	1

Open Hole or Material: STEEL
Depth From:
Depth To: 11
Casing Diameter: 6
Casing Diameter UOM: inch
Casing Depth UOM: ft

Results of Well Yield Testing

Pump Test ID: 996809554
Pump Set At:
Static Level: 6
Final Level After Pumping: 15
Recommended Pump Depth: 26
Pumping Rate:
Flowing Rate:
Recommended Pump Rate: 10
Levels UOM: ft
Rate UOM: GPM
Water State After Test Code: 1
Water State After Test: CLEAR
Pumping Test Method:
Pumping Duration HR:
Pumping Duration MIN:
Flowing: N

Draw Down & Recovery

Pump Test Detail ID: 934349749
Test Type: Recovery
Test Duration: 15
Test Level: 6
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934874241
Test Type: Recovery
Test Duration: 45
Test Level: 6
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 935143552
Test Type: Recovery
Test Duration: 60
Test Level: 6
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934613689
Test Type: Recovery
Test Duration: 30
Test Level: 6
Test Level UOM: ft

Water Details

Water ID: 933978752

Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	27
Water Found Depth UOM:	ft

20 **1 of 1** **WSW/86.3** **274.9 / 5.00** **lot 34 con 7 FLAMBOROUGH ON** **WWIS**

Well ID:	7206722	**Data Entry Status:**	
Construction Date:		**Data Src:**	
Primary Water Use:		**Date Received:**	8/19/2013
Sec. Water Use:		**Selected Flag:**	Yes
Final Well Status:	Water Supply	**Abandonment Rec:**	
Water Type:		**Contractor:**	6020
Casing Material:		**Form Version:**	7
Audit No:	Z139373	**Owner:**	
Tag:	A118863	**Street Name:**	3 501
Construction Method:		**County:**	WENTWORTH
Elevation (m):		**Municipality:**	BEVERLY TOWNSHIP
Elevation Reliability:		**Site Info:**	
Depth to Bedrock:		**Lot:**	034
Well Depth:		**Concession:**	07
Overburden/Bedrock:		**Concession Name:**	CON
Pump Rate:		**Easting NAD83:**	
Static Water Level:		**Northing NAD83:**	
Flowing (Y/N):		**Zone:**	
Flow Rate:		**UTM Reliability:**	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	1004536454	**Elevation:**	272.47
DP2BR:		**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:		**East83:**	574834
Code OB Desc:		**Org CS:**	UTM83
Open Hole:		**North83:**	4801842
Cluster Kind:		**UTMRC:**	4
Date Completed:	10-JUN-13	**UTMRC Desc:**	margin of error : 30 m - 100 m
Remarks:		**Location Method:**	wwr
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Method of Construction & Well Use

Method Construction ID:	1004971341
Method Construction Code:	
Method Construction:	
Other Method Construction:	

Pipe Information

Pipe ID:	1004971335
Casing No:	0
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	1004971339
Layer:	
Material:	
Open Hole or Material:	
Depth From:	
Depth To:	
Casing Diameter:	
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Screen

Screen ID:	1004971340
Layer:	
Slot:	
Screen Top Depth:	
Screen End Depth:	
Screen Material:	
Screen Depth UOM:	ft
Screen Diameter UOM:	inch
Screen Diameter:	

Water Details

Water ID:	1004971338
Layer:	
Kind Code:	
Kind:	
Water Found Depth:	
Water Found Depth UOM:	ft

Hole Diameter

Hole ID:	1004971337
Diameter:	
Depth From:	
Depth To:	
Hole Depth UOM:	ft
Hole Diameter UOM:	inch

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21 ***1 of 1*** ***ENE/90.4*** ***264.9 / -5.00*** ***lot 6 con 7 ON*** ***WWIS***

Well ID:	6809427	***Data Entry Status:***	
Construction Date:		***Data Src:***	1
Primary Water Use:	Domestic	***Date Received:***	8/9/1976
Sec. Water Use:	0	***Selected Flag:***	Yes
Final Well Status:	Water Supply	***Abandonment Rec:***	
Water Type:		***Contractor:***	2309
Casing Material:		***Form Version:***	1
Audit No:		***Owner:***	
Tag:		***Street Name:***	
Construction Method:		***County:***	WENTWORTH
Elevation (m):		***Municipality:***	WEST FLAMBOROUGH TOWNSHIP
Elevation Reliability:		***Site Info:***	
Depth to Bedrock:		***Lot:***	006
Well Depth:		***Concession:***	07
Overburden/Bedrock:		***Concession Name:***	CON
Pump Rate:		***Easting NAD83:***	

Static Water Level:
Flowing (Y/N):
Flow Rate:
Clear/Cloudy:
Northing NAD83:
Zone:
UTM Reliability:

Bore Hole Information

Bore Hole ID:	10486771	***Elevation:***	265.19
DP2BR:	36	***Elevrc:***	
Spatial Status:		***Zone:***	17
Code OB:	r	***East83:***	578314.4
Code OB Desc:	Bedrock	***Org CS:***	
Open Hole:		***North83:***	4802783
Cluster Kind:		***UTMRC:***	4
Date Completed:	20-JUL-76	***UTMRC Desc:***	margin of error : 30 m - 100 m
Remarks:		***Location Method:***	p4
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932691499
Layer:	2
Color:	6
General Color:	BROWN
Mat1:	28
Most Common Material:	SAND
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	19
Formation End Depth:	30
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932691498
Layer:	1
Color:	6
General Color:	BROWN
Mat1:	28
Most Common Material:	SAND
Mat2:	79
Other Materials:	PACKED
Mat3:	
Other Materials:	
Formation Top Depth:	0
Formation End Depth:	19
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932691500
Layer:	3

Color:	6
General Color:	BROWN
Mat1:	28
Most Common Material:	SAND
Mat2:	12
Other Materials:	STONES
Mat3:	
Other Materials:	
Formation Top Depth:	30
Formation End Depth:	36
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932691501
Layer:	4
Color:	2
General Color:	GREY
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	73
Other Materials:	HARD
Mat3:	
Other Materials:	
Formation Top Depth:	36
Formation End Depth:	45
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966809427
Method Construction Code:	1
Method Construction:	Cable Tool
Other Method Construction:	

Pipe Information

Pipe ID:	11035341
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930796018
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	36
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Casing

Casing ID:	930796019
Layer:	2
Material:	4
Open Hole or Material:	OPEN HOLE

Depth From:
Depth To: 45
Casing Diameter: 6
Casing Diameter UOM: inch
Casing Depth UOM: ft

Results of Well Yield Testing

Pump Test ID: 996809427
Pump Set At:
Static Level: 9
Final Level After Pumping: 14
Recommended Pump Depth: 25
Pumping Rate: 30
Flowing Rate:
Recommended Pump Rate: 7
Levels UOM: ft
Rate UOM: GPM
Water State After Test Code: 1
Water State After Test: CLEAR
Pumping Test Method: 2
Pumping Duration HR: 1
Pumping Duration MIN: 0
Flowing: N

Draw Down & Recovery

Pump Test Detail ID: 934358002
Test Type: Draw Down
Test Duration: 15
Test Level: 12
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934613173
Test Type: Draw Down
Test Duration: 30
Test Level: 14
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934874143
Test Type: Draw Down
Test Duration: 45
Test Level: 14
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 935144149
Test Type: Draw Down
Test Duration: 60
Test Level: 14
Test Level UOM: ft

Water Details

Water ID: 933978588
Layer: 1

Kind Code:	1
Kind:	FRESH
Water Found Depth:	44
Water Found Depth UOM:	ft

22 **1 of 1** **ENE/99.0** **273.2 / 3.34** **lot 9 con 7 MILLGROVE ON** **WWIS**

Well ID:	7226659	**Data Entry Status:**	
Construction Date:		**Data Src:**	
Primary Water Use:	Irrigation	**Date Received:**	9/4/2014
Sec. Water Use:	Industrial	**Selected Flag:**	Yes
Final Well Status:	Water Supply	**Abandonment Rec:**	
Water Type:		**Contractor:**	7385
Casing Material:		**Form Version:**	7
Audit No:	Z189645	**Owner:**	
Tag:	A166160	**Street Name:**	780 CON 8 RD.
Construction Method:		**County:**	WENTWORTH
Elevation (m):		**Municipality:**	WEST FLAMBOROUGH TOWNSHIP
Elevation Reliability:		**Site Info:**	
Depth to Bedrock:		**Lot:**	009
Well Depth:		**Concession:**	07
Overburden/Bedrock:		**Concession Name:**	CON
Pump Rate:		**Easting NAD83:**	
Static Water Level:		**Northing NAD83:**	
Flowing (Y/N):		**Zone:**	
Flow Rate:		**UTM Reliability:**	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	1005111003	**Elevation:**	274.41
DP2BR:		**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:		**East83:**	579237
Code OB Desc:		**Org CS:**	UTM83
Open Hole:		**North83:**	4802946
Cluster Kind:		**UTMRC:**	4
Date Completed:	26-AUG-14	**UTMRC Desc:**	margin of error : 30 m - 100 m
Remarks:		**Location Method:**	wwr
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	1005251668
Layer:	3
Color:	2
General Color:	GREY
Mat1:	05
Most Common Material:	CLAY
Mat2:	11
Other Materials:	GRAVEL
Mat3:	
Other Materials:	
Formation Top Depth:	35
Formation End Depth:	60
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	1005251666
Layer:	1
Color:	6
General Color:	BROWN
Mat1:	05
Most Common Material:	CLAY
Mat2:	12
Other Materials:	STONES
Mat3:	
Other Materials:	
Formation Top Depth:	0
Formation End Depth:	18
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	1005251667
Layer:	2
Color:	6
General Color:	BROWN
Mat1:	28
Most Common Material:	SAND
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	18
Formation End Depth:	35
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	1005251669
Layer:	4
Color:	2
General Color:	GREY
Mat1:	26
Most Common Material:	ROCK
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	60
Formation End Depth:	106
Formation End Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	1005251705
Layer:	1
Plug From:	0
Plug To:	20
Plug Depth UOM:	ft

Method of Construction & Well

Use

Method Construction ID: 1005251704
Method Construction Code: 4
Method Construction: Rotary (Air)
Other Method Construction:

Pipe Information

Pipe ID: 1005251664
Casing No: 0
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 1005251674
Layer: 2
Material: 4
Open Hole or Material: OPEN HOLE
Depth From: 61
Depth To: 106
Casing Diameter: 6.125
Casing Diameter UOM: inch
Casing Depth UOM: ft

Construction Record - Casing

Casing ID: 1005251673
Layer: 1
Material: 1
Open Hole or Material: STEEL
Depth From: 2
Depth To: 61
Casing Diameter: 6.25
Casing Diameter UOM: inch
Casing Depth UOM: ft

Construction Record - Screen

Screen ID: 1005251675
Layer:
Slot:
Screen Top Depth:
Screen End Depth:
Screen Material:
Screen Depth UOM: ft
Screen Diameter UOM: inch
Screen Diameter:

Results of Well Yield Testing

Pump Test ID: 1005251665
Pump Set At: 60
Static Level: 12
Final Level After Pumping: 14
Recommended Pump Depth: 60
Pumping Rate: 16
Flowing Rate:
Recommended Pump Rate: 16
Levels UOM: ft
Rate UOM: GPM

Water State After Test Code: 1
Water State After Test: CLEAR
Pumping Test Method: 0
Pumping Duration HR: 1
Pumping Duration MIN: 0
Flowing: N

Draw Down & Recovery

Pump Test Detail ID: 1005251692
Test Type: Draw Down
Test Duration: 25
Test Level: 14
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 1005251694
Test Type: Draw Down
Test Duration: 30
Test Level: 14
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 1005251679
Test Type: Recovery
Test Duration: 2
Test Level: 12
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 1005251685
Test Type: Recovery
Test Duration: 5
Test Level: 12
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 1005251688
Test Type: Draw Down
Test Duration: 15
Test Level: 14
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 1005251701
Test Type: Recovery
Test Duration: 60
Test Level: 12
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 1005251683
Test Type: Recovery
Test Duration: 4

Test Level: 12
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 1005251690
Test Type: Draw Down
Test Duration: 20
Test Level: 14
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 1005251676
Test Type: Draw Down
Test Duration: 1
Test Level: 13
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 1005251677
Test Type: Recovery
Test Duration: 1
Test Level: 12
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 1005251686
Test Type: Draw Down
Test Duration: 10
Test Level: 14
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 1005251697
Test Type: Recovery
Test Duration: 40
Test Level: 12
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 1005251680
Test Type: Draw Down
Test Duration: 3
Test Level: 14
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 1005251689
Test Type: Recovery
Test Duration: 15
Test Level: 12
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 1005251691
Test Type: Recovery
Test Duration: 20
Test Level: 12
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 1005251681
Test Type: Recovery
Test Duration: 3
Test Level: 12
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 1005251700
Test Type: Draw Down
Test Duration: 60
Test Level: 14
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 1005251678
Test Type: Draw Down
Test Duration: 2
Test Level: 14
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 1005251682
Test Type: Draw Down
Test Duration: 4
Test Level: 14
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 1005251684
Test Type: Draw Down
Test Duration: 5
Test Level: 14
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 1005251687
Test Type: Recovery
Test Duration: 10
Test Level: 12
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 1005251693
Test Type: Recovery

Test Duration: 25
Test Level: 12
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 1005251696
Test Type: Draw Down
Test Duration: 40
Test Level: 14
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 1005251699
Test Type: Recovery
Test Duration: 50
Test Level: 12
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 1005251695
Test Type: Recovery
Test Duration: 30
Test Level: 12
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 1005251698
Test Type: Draw Down
Test Duration: 50
Test Level: 14
Test Level UOM: ft

Water Details

Water ID: 1005251672
Layer: 1
Kind Code: 1
Kind: FRESH
Water Found Depth: 106
Water Found Depth UOM: ft

Hole Diameter

Hole ID: 1005251671
Diameter: 6.125
Depth From: 20
Depth To: 106
Hole Depth UOM: ft
Hole Diameter UOM: inch

Hole Diameter

Hole ID: 1005251670
Diameter: 10
Depth From: 0
Depth To: 20

Hole Depth UOM: ft
Hole Diameter UOM: inch

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23 | **1 of 1** | **E/101.2** | **267.5 / -2.40** | **ACTON ON** | **WWIS**

Well ID: 7042163
Construction Date:
Primary Water Use: Not Used
Sec. Water Use:
Final Well Status: Observation Wells
Water Type:
Casing Material:
Audit No: Z46579
Tag: A005325
Construction Method:
Elevation (m):
Elevation Reliability:
Depth to Bedrock:
Well Depth:
Overburden/Bedrock:
Pump Rate:
Static Water Level:
Flowing (Y/N):
Flow Rate:
Clear/Cloudy:

Data Entry Status:
Data Src:
Date Received: 3/29/2007
Selected Flag: Yes
Abandonment Rec:
Contractor: 6032
Form Version: 3
Owner:
Street Name: 73 COMMERCE CRES
County: HALTON
Municipality: HALTON HILLS TOWN (ACTON)
Site Info:
Lot:
Concession:
Concession Name:
Easting NAD83:
Northing NAD83:
Zone:
UTM Reliability:

Bore Hole Information

Bore Hole ID: 11764660
DP2BR:
Spatial Status:
Code OB: x
Code OB Desc: Unknown type in the lower layer(s)
Open Hole:
Cluster Kind:
Date Completed: 04-JAN-07
Remarks:
Elevrc Desc:
Location Source Date:
Improvement Location Source:
Improvement Location Method:
Source Revision Comment:
Supplier Comment:

Elevation: 268.71
Elevrc:
Zone: 17
East83: 576820
Org CS: UTM83
North83: 4802272
UTMRC: 3
UTMRC Desc: margin of error : 10 - 30 m
Location Method: wwr

Overburden and Bedrock Materials Interval

Formation ID: 933096189
Layer: 2
Color:
General Color:
Mat1: 28
Most Common Material: SAND
Mat2: 06
Other Materials: SILT
Mat3: 91
Other Materials: WATER-BEARING
Formation Top Depth: 3.05
Formation End Depth: 3.05
Formation End Depth UOM: m

Overburden and Bedrock Materials Interval

Formation ID:	933096188
Layer:	1
Color:	
General Color:	
Mat1:	28
Most Common Material:	SAND
Mat2:	06
Other Materials:	SILT
Mat3:	91
Other Materials:	WATER-BEARING
Formation Top Depth:	0
Formation End Depth:	3.05
Formation End Depth UOM:	m

Overburden and Bedrock Materials Interval

Formation ID:	933096193
Layer:	6
Color:	
General Color:	
Mat1:	
Most Common Material:	
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	3.05
Formation End Depth:	
Formation End Depth UOM:	m

Overburden and Bedrock Materials Interval

Formation ID:	933096190
Layer:	3
Color:	
General Color:	
Mat1:	28
Most Common Material:	SAND
Mat2:	06
Other Materials:	SILT
Mat3:	91
Other Materials:	WATER-BEARING
Formation Top Depth:	3.05
Formation End Depth:	3.05
Formation End Depth UOM:	m

Overburden and Bedrock Materials Interval

Formation ID:	933096192
Layer:	5
Color:	
General Color:	
Mat1:	28
Most Common Material:	SAND
Mat2:	06
Other Materials:	SILT
Mat3:	91

Other Materials: WATER-BEARING
Formation Top Depth: 3.05
Formation End Depth: 3.05
Formation End Depth UOM: m

Overburden and Bedrock Materials Interval

Formation ID: 933096191
Layer: 4
Color:
General Color:
Mat1: 28
Most Common Material: SAND
Mat2: 06
Other Materials: SILT
Mat3: 91
Other Materials: WATER-BEARING
Formation Top Depth: 3.05
Formation End Depth: 3.05
Formation End Depth UOM: m

Annular Space/Abandonment Sealing Record

Plug ID: 933316345
Layer: 2
Plug From: .3
Plug To: 1.07
Plug Depth UOM: m

Annular Space/Abandonment Sealing Record

Plug ID: 933316344
Layer: 1
Plug From: 0
Plug To: .3
Plug Depth UOM: m

Method of Construction & Well Use

Method Construction ID: 967042163
Method Construction Code: 6
Method Construction: Boring
Other Method Construction:

Pipe Information

Pipe ID: 11772380
Casing No: 1
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 930897481
Layer: 1
Material: 5
Open Hole or Material: PLASTIC

Depth From:	0
Depth To:	1.52
Casing Diameter:	.5
Casing Diameter UOM:	cm
Casing Depth UOM:	m

Construction Record - Screen

Screen ID:	933423787
Layer:	1
Slot:	10
Screen Top Depth:	1.52
Screen End Depth:	3.05
Screen Material:	5
Screen Depth UOM:	m
Screen Diameter UOM:	cm
Screen Diameter:	.5

Hole Diameter

Hole ID:	11850960
Diameter:	16
Depth From:	0
Depth To:	3.05
Hole Depth UOM:	m
Hole Diameter UOM:	cm

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24 **1 of 2** **WSW/103.2** **274.9 / 5.00** **1264 8th Concession Road West**
Hamilton ON **SPL**

Ref No:	8510-64ALV6	**Discharger Report:**	
Site No:		**Material Group:**	Waste
Incident Dt:	8/28/2004	**Client Type:**	
Year:		**Sector Type:**	Other
Incident Cause:	Other Discharges	**Source Type:**	
Incident Event:		**Nearest Watercourse:**	
Contaminant Code:	44	**Site Name:**	ANTRIM GLEN RETIREMENT COMMUNITY
Contaminant Name:	SEWAGE,RAW UNCHLORINATED	**Site Address:**	
Contaminant Limit 1:		**Site District Office:**	Hamilton
Contam Limit Freq 1:		**Site County/District:**	
Contaminant UN No 1:		**Site Postal Code:**	
Contaminant Qty:	200 L	**Site Region:**	West Central
Environment Impact:	Not Anticipated	**Site Municipality:**	Hamilton
Nature of Impact:	Soil Contamination	**Site Lot:**	
Receiving Medium:	Land	**Site Conc:**	
Receiving Env:		**Northing:**	4801539
Health/Env Conseq:		**Easting:**	574306
MOE Response:		**Site Geo Ref Accu:**	
Dt MOE Arvl on Scn:		**Site Geo Ref Meth:**	
MOE Reported Dt:	8/28/2004	**Site Map Datum:**	
Dt Document Closed:			
Agency Involved:			
SAC Action Class:	Spill to Land		
Incident Reason:	Process upset		
Incident Summary:	Antrim Glen Retirement,200 L sewage to rd		

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24 **2 of 2** **WSW/103.2** **274.9 / 5.00** **Parkbridge Lifestyle Communities Inc.**
1264 8th Concession Rd W Part of Lots 32 and
33, Concession 7, geographic townsh
Hamilton ON L0R 1K0 **SPL**

Ref No:	5134-82LRCQ	**Discharger Report:**	

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB

Site No:		**Material Group:**	
Incident Dt:		**Client Type:**	
Year:		**Sector Type:**	Sewage Treatment
Incident Cause:	Process Upset	**Source Type:**	
Incident Event:		**Nearest Watercourse:**	
Contaminant Code:	44	**Site Name:**	Antrim Glen Retirement Community
Contaminant Name:	SEWAGE,RAW UNCHLORINATED	**Site Address:**	
Contaminant Limit 1:		**Site District Office:**	
Contam Limit Freq 1:		**Site County/District:**	
Contaminant UN No 1:		**Site Postal Code:**	
Contaminant Qty:	140 m3	**Site Region:**	
Environment Impact:	Possible	**Site Municipality:**	
Nature of Impact:	Soil Contamination; Surface Water Pollution	**Site Lot:**	
Receiving Medium:		**Site Conc:**	
Receiving Env:		**Northing:**	4801539
Health/Env Conseq:		**Easting:**	574306
MOE Response:	Planned Field Response	**Site Geo Ref Accu:**	
Dt MOE Arvl on Scn:		**Site Geo Ref Meth:**	
MOE Reported Dt:	2/12/2010	**Site Map Datum:**	
Dt Document Closed:	3/18/2010		
Agency Involved:			
SAC Action Class:	Land Spills		
Incident Reason:	Equipment Failure - Malfunction of system components		
Incident Summary:	Parkbridge Cmunty: est. 140 m3 raw sewage to containment		

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25 | ***1 of 1*** | ***WSW/104.3*** | ***272.9 / 3.05*** | ***lot 31 con 7 ON*** | ***WWIS***

Well ID:	6809278	**Data Entry Status:**	
Construction Date:		**Data Src:**	1
Primary Water Use:	Domestic	**Date Received:**	12/29/1975
Sec. Water Use:	0	**Selected Flag:**	Yes
Final Well Status:	Water Supply	**Abandonment Rec:**	
Water Type:		**Contractor:**	2309
Casing Material:		**Form Version:**	1
Audit No:		**Owner:**	
Tag:		**Street Name:**	
Construction Method:		**County:**	WENTWORTH
Elevation (m):		**Municipality:**	BEVERLY TOWNSHIP
Elevation Reliability:		**Site Info:**	
Depth to Bedrock:		**Lot:**	031
Well Depth:		**Concession:**	07
Overburden/Bedrock:		**Concession Name:**	CON
Pump Rate:		**Easting NAD83:**	
Static Water Level:		**Northing NAD83:**	
Flowing (Y/N):		**Zone:**	
Flow Rate:		**UTM Reliability:**	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10486628	**Elevation:**	273.38
DP2BR:	0	**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:	r	**East83:**	573542.3
Code OB Desc:	Bedrock	**Org CS:**	
Open Hole:		**North83:**	4800886
Cluster Kind:		**UTMRC:**	4
Date Completed:	15-OCT-75	**UTMRC Desc:**	margin of error : 30 m - 100 m
Remarks:		**Location Method:**	p4
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			

Improvement Location Method:
Source Revision Comment:
Supplier Comment:

Overburden and Bedrock Materials Interval

Formation ID:	932691045
Layer:	1
Color:	2
General Color:	GREY
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	73
Other Materials:	HARD
Mat3:	
Other Materials:	
Formation Top Depth:	0
Formation End Depth:	58
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966809278
Method Construction Code:	1
Method Construction:	Cable Tool
Other Method Construction:	

Pipe Information

Pipe ID:	11035198
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930795830
Layer:	2
Material:	4
Open Hole or Material:	OPEN HOLE
Depth From:	
Depth To:	58
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Casing

Casing ID:	930795829
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	10
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pump Test ID:	996809278
Pump Set At:	
Static Level:	10
Final Level After Pumping:	22
Recommended Pump Depth:	25
Pumping Rate:	25
Flowing Rate:	
Recommended Pump Rate:	7
Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	1
Water State After Test:	CLEAR
Pumping Test Method:	2
Pumping Duration HR:	1
Pumping Duration MIN:	0
Flowing:	N

Draw Down & Recovery

Pump Test Detail ID:	934357463
Test Type:	Draw Down
Test Duration:	15
Test Level:	20
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934621416
Test Type:	Draw Down
Test Duration:	30
Test Level:	22
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	935143078
Test Type:	Draw Down
Test Duration:	60
Test Level:	22
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934873627
Test Type:	Draw Down
Test Duration:	45
Test Level:	22
Test Level UOM:	ft

Water Details

Water ID:	933978412
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	50
Water Found Depth UOM:	ft

26	***1 of 1***	***NNW/104.5***	***267.9 / -2.00***	***lot 1 con 7 ON***	***WWIS***

Well ID:	6807665	***Data Entry Status:***	
Construction Date:		***Data Src:***	1
Primary Water Use:	Domestic	***Date Received:***	1/5/1971
Sec. Water Use:	0	***Selected Flag:***	Yes
Final Well Status:	Water Supply	***Abandonment Rec:***	
Water Type:		***Contractor:***	4208
Casing Material:		***Form Version:***	1
Audit No:		***Owner:***	
Tag:		***Street Name:***	
Construction Method:		***County:***	WENTWORTH
Elevation (m):		***Municipality:***	WEST FLAMBOROUGH TOWNSHIP
Elevation Reliability:		***Site Info:***	
Depth to Bedrock:		***Lot:***	001
Well Depth:		***Concession:***	07
Overburden/Bedrock:		***Concession Name:***	CON
Pump Rate:		***Easting NAD83:***	
Static Water Level:		***Northing NAD83:***	
Flowing (Y/N):		***Zone:***	
Flow Rate:		***UTM Reliability:***	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10485072	***Elevation:***	268.6
DP2BR:	32	***Elevrc:***	
Spatial Status:		***Zone:***	17
Code OB:	r	***East83:***	575914.3
Code OB Desc:	Bedrock	***Org CS:***	
Open Hole:		***North83:***	4802203
Cluster Kind:		***UTMRC:***	4
Date Completed:	26-OCT-70	***UTMRC Desc:***	margin of error : 30 m - 100 m
Remarks:		***Location Method:***	p4
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932686038
Layer:	1
Color:	2
General Color:	GREY
Mat1:	05
Most Common Material:	CLAY
Mat2:	12
Other Materials:	STONES
Mat3:	
Other Materials:	
Formation Top Depth:	0
Formation End Depth:	32
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932686039
Layer:	2
Color:	2

General Color:	GREY
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	17
Other Materials:	SHALE
Mat3:	
Other Materials:	
Formation Top Depth:	32
Formation End Depth:	40
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966807665
Method Construction Code:	1
Method Construction:	Cable Tool
Other Method Construction:	

Pipe Information

Pipe ID:	11033642
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930793295
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	32
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Casing

Casing ID:	930793296
Layer:	2
Material:	4
Open Hole or Material:	OPEN HOLE
Depth From:	
Depth To:	40
Casing Diameter:	
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pump Test ID:	996807665
Pump Set At:	
Static Level:	10
Final Level After Pumping:	32
Recommended Pump Depth:	35
Pumping Rate:	15
Flowing Rate:	
Recommended Pump Rate:	10
Levels UOM:	ft
Rate UOM:	GPM

Water State After Test Code:
Water State After Test:
Pumping Test Method: 2
Pumping Duration HR: 1
Pumping Duration MIN: 30
Flowing: N

Draw Down & Recovery

Pump Test Detail ID: 934352451
Test Type: Recovery
Test Duration: 15
Test Level: 12
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934616868
Test Type: Recovery
Test Duration: 30
Test Level: 10
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 935138529
Test Type: Recovery
Test Duration: 60
Test Level: 10
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934868690
Test Type: Recovery
Test Duration: 45
Test Level: 10
Test Level UOM: ft

Water Details

Water ID: 933976450
Layer: 1
Kind Code: 1
Kind: FRESH
Water Found Depth: 35
Water Found Depth UOM: ft

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27 | ***1 of 1*** | ***ENE/105.4*** | ***260.1 / -9.78*** | ***lot 7 con 7 ON*** | ***WWIS***

Well ID: 6806527
Construction Date:
Primary Water Use: Domestic
Sec. Water Use: 0
Final Well Status: Water Supply
Water Type:
Casing Material:
Audit No:
Tag:
Construction Method:

Data Entry Status:
Data Src: 1
Date Received: 11/10/1954
Selected Flag: Yes
Abandonment Rec:
Contractor: 4208
Form Version: 1
Owner:
Street Name:
County: WENTWORTH

Elevation (m):		***Municipality:***	WEST FLAMBOROUGH TOWNSHIP
Elevation Reliability:		***Site Info:***	
Depth to Bedrock:		***Lot:***	007
Well Depth:		***Concession:***	07
Overburden/Bedrock:		***Concession Name:***	CON
Pump Rate:		***Easting NAD83:***	
Static Water Level:		***Northing NAD83:***	
Flowing (Y/N):		***Zone:***	
Flow Rate:		***UTM Reliability:***	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10483985	***Elevation:***	262.47
DP2BR:	6	***Elevrc:***	
Spatial Status:		***Zone:***	17
Code OB:	r	***East83:***	578469.4
Code OB Desc:	Bedrock	***Org CS:***	
Open Hole:		***North83:***	4803015
Cluster Kind:		***UTMRC:***	9
Date Completed:	16-OCT-54	***UTMRC Desc:***	unknown UTM
Remarks:		***Location Method:***	p9
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932682619
Layer:	2
Color:	
General Color:	
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	6
Formation End Depth:	20
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932682618
Layer:	1
Color:	
General Color:	
Mat1:	05
Most Common Material:	CLAY
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	0
Formation End Depth:	6
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966806527
Method Construction Code:	1
Method Construction:	Cable Tool
Other Method Construction:	

Pipe Information

Pipe ID:	11032555
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930791413
Layer:	2
Material:	4
Open Hole or Material:	OPEN HOLE
Depth From:	
Depth To:	20
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Casing

Casing ID:	930791412
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	10
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pump Test ID:	996806527
Pump Set At:	
Static Level:	8
Final Level After Pumping:	12
Recommended Pump Depth:	
Pumping Rate:	7
Flowing Rate:	
Recommended Pump Rate:	
Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	1
Water State After Test:	CLEAR
Pumping Test Method:	1
Pumping Duration HR:	1
Pumping Duration MIN:	0
Flowing:	N

Water Details

Water ID:	933975246

Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	18
Water Found Depth UOM:	ft

28 **1 of 1** **W/108.4** **274.9 / 5.00** **ON** **WWIS**

Well ID:	7143751	**Data Entry Status:**	
Construction Date:		**Data Src:**	
Primary Water Use:	Public	**Date Received:**	4/23/2010
Sec. Water Use:	Domestic	**Selected Flag:**	Yes
Final Well Status:	Other Status	**Abandonment Rec:**	
Water Type:		**Contractor:**	3428
Casing Material:		**Form Version:**	7
Audit No:	Z108199	**Owner:**	
Tag:	A021801	**Street Name:**	1218 CON 8 W
Construction Method:		**County:**	WENTWORTH
Elevation (m):		**Municipality:**	BEVERLY TOWNSHIP
Elevation Reliability:		**Site Info:**	
Depth to Bedrock:		**Lot:**	
Well Depth:		**Concession:**	
Overburden/Bedrock:		**Concession Name:**	
Pump Rate:		**Easting NAD83:**	
Static Water Level:		**Northing NAD83:**	
Flowing (Y/N):		**Zone:**	
Flow Rate:		**UTM Reliability:**	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	1002961815	**Elevation:**	274.78
DP2BR:		**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:		**East83:**	575007
Code OB Desc:		**Org CS:**	UTM83
Open Hole:		**North83:**	4801933
Cluster Kind:		**UTMRC:**	4
Date Completed:	01-APR-10	**UTMRC Desc:**	margin of error : 30 m - 100 m
Remarks:		**Location Method:**	wwr
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Method of Construction & Well Use

Method Construction ID:	1003130670
Method Construction Code:	
Method Construction:	
Other Method Construction:	

Pipe Information

Pipe ID:	1003130660
Casing No:	0
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	1003130665
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	.81
Depth To:	7
Casing Diameter:	15
Casing Diameter UOM:	cm
Casing Depth UOM:	m

Construction Record - Casing

Casing ID:	1003130666
Layer:	2
Material:	4
Open Hole or Material:	OPEN HOLE
Depth From:	7
Depth To:	29.9
Casing Diameter:	15
Casing Diameter UOM:	cm
Casing Depth UOM:	m

Construction Record - Screen

Screen ID:	1003130667
Layer:	
Slot:	
Screen Top Depth:	
Screen End Depth:	
Screen Material:	
Screen Depth UOM:	m
Screen Diameter UOM:	cm
Screen Diameter:	

Water Details

Water ID:	1003130664
Layer:	
Kind Code:	
Kind:	
Water Found Depth:	
Water Found Depth UOM:	m

Hole Diameter

Hole ID:	1003130662
Diameter:	
Depth From:	
Depth To:	
Hole Depth UOM:	m
Hole Diameter UOM:	cm

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
29	1 of 1	ENE/113.5	259.5 / -10.32	ON	BORE

Borehole ID:	891535	***Type:***	Borehole
Use:	Geotechnical/Geological Investigation	***Status:***	Decommissioned
Drill Method:	Hand auger	***UTM Zone:***	17

Easting:	580172	**Northing:**	4803487
Location Accuracy:		**Orig. Ground Elev m:**	258
Elev. Reliability Note:		**DEM Ground Elev m:**	260
Total Depth m:	2.4	**Primary Name:**	
Township:	WEST FLAMBOROUGH	**Concession:**	CON 7
Lot:	LOT 11	**Municipality:**	
Completion Date:	15-JUL-1999	**Static Water Level:**	-999.9
Primary Water Use:		**Sec. Water Use:**	

--Details--

Stratum ID:	8505124	**Top Depth(m):**	0.0
Bottom Depth(m):	2.4	**Stratum Desc:**	0.2m Topsoil. Brown sand fill. With gravel, trace silt. Compact, damp. Moist

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30 ***1 of 1*** ***ENE/115.3*** ***257.4 / -12.42*** ***ON*** ***BORE***

Borehole ID:	891537	**Type:**	Borehole
Use:	Geotechnical/Geological Investigation	**Status:**	Decommissioned
Drill Method:	Hand auger	**UTM Zone:**	17
Easting:	580167	**Northing:**	4803484
Location Accuracy:		**Orig. Ground Elev m:**	257
Elev. Reliability Note:		**DEM Ground Elev m:**	259
Total Depth m:	3	**Primary Name:**	
Township:	WEST FLAMBOROUGH	**Concession:**	CON 7
Lot:	LOT 11	**Municipality:**	
Completion Date:	28-JUL-1999	**Static Water Level:**	.4
Primary Water Use:		**Sec. Water Use:**	

--Details--

Stratum ID:	8505128	**Top Depth(m):**	0.0
Bottom Depth(m):	1.7	**Stratum Desc:**	Brown mixture of clay, sand, gravel and silt (Fill), occasional cobbles. Loose to compact, wet
Stratum ID:	8505129	**Top Depth(m):**	1.7
Bottom Depth(m):	1.9	**Stratum Desc:**	Grey/black, sand with frequent organic clay layers. Loose, wet
Stratum ID:	8505130	**Top Depth(m):**	1.9
Bottom Depth(m):	3.0	**Stratum Desc:**	Grey, sand and gravel. Trace silt, compact, wet

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31 ***1 of 1*** ***ENE/116.3*** ***257.1 / -12.77*** ***ON*** ***BORE***

Borehole ID:	891533	**Type:**	Borehole
Use:	Geotechnical/Geological Investigation	**Status:**	Decommissioned
Drill Method:	Hollow stem auger	**UTM Zone:**	17
Easting:	580189	**Northing:**	4803506
Location Accuracy:		**Orig. Ground Elev m:**	260
Elev. Reliability Note:		**DEM Ground Elev m:**	260
Total Depth m:	8	**Primary Name:**	
Township:	EAST FLAMBOROUGH	**Concession:**	
Lot:		**Municipality:**	
Completion Date:	09-JUL-1999	**Static Water Level:**	4.7
Primary Water Use:		**Sec. Water Use:**	

--Details--

Stratum ID:	8505118	**Top Depth(m):**	0.0
Bottom Depth(m):	1.2	**Stratum Desc:**	Brown, sand fill with gravel. Damp

Stratum ID:	8505119	**Top Depth(m):**	1.2
Bottom Depth(m):	3.3	**Stratum Desc:**	Brown/ Black. Mixture of sand, gravel and topsoil (Fill) damp
Stratum ID:	8505120	**Top Depth(m):**	3.3
Bottom Depth(m):	5.6	**Stratum Desc:**	Grey/Black sand, with frequent Peat Layers loose, wet.
Stratum ID:	8505121	**Top Depth(m):**	5.6
Bottom Depth(m):	8.0	**Stratum Desc:**	Grey, sand and gravel. Wet. Sand layers, compact to very dense

32 **1 of 1** **WSW/116.6** **274.9 / 5.00** **lot 34 con 7 ON** **WWIS**

Well ID:	6808445	**Data Entry Status:**	
Construction Date:		**Data Src:**	1
Primary Water Use:	Public	**Date Received:**	5/29/1973
Sec. Water Use:	Domestic	**Selected Flag:**	Yes
Final Well Status:	Water Supply	**Abandonment Rec:**	
Water Type:		**Contractor:**	4005
Casing Material:		**Form Version:**	1
Audit No:		**Owner:**	
Tag:		**Street Name:**	
Construction Method:		**County:**	WENTWORTH
Elevation (m):		**Municipality:**	BEVERLY TOWNSHIP
Elevation Reliability:		**Site Info:**	
Depth to Bedrock:		**Lot:**	034
Well Depth:		**Concession:**	07
Overburden/Bedrock:		**Concession Name:**	CON
Pump Rate:		**Easting NAD83:**	
Static Water Level:		**Northing NAD83:**	
Flowing (Y/N):		**Zone:**	
Flow Rate:		**UTM Reliability:**	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10485813	**Elevation:**	271.6
DP2BR:	5	**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:	r	**East83:**	574744.3
Code OB Desc:	Bedrock	**Org CS:**	
Open Hole:		**North83:**	4801833
Cluster Kind:		**UTMRC:**	4
Date Completed:	22-MAY-73	**UTMRC Desc:**	margin of error : 30 m - 100 m
Remarks:		**Location Method:**	p4
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932688390
Layer:	2
Color:	2
General Color:	GREY

Mat1: 15
Most Common Material: LIMESTONE
Mat2:
Other Materials:
Mat3:
Other Materials:
Formation Top Depth: 5
Formation End Depth: 50
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 932688389
Layer: 1
Color: 6
General Color: BROWN
Mat1: 28
Most Common Material: SAND
Mat2: 11
Other Materials: GRAVEL
Mat3:
Other Materials:
Formation Top Depth: 0
Formation End Depth: 5
Formation End Depth UOM: ft

Method of Construction & Well Use

Method Construction ID: 966808445
Method Construction Code: 1
Method Construction: Cable Tool
Other Method Construction:

Pipe Information

Pipe ID: 11034383
Casing No: 1
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 930794582
Layer: 1
Material: 1
Open Hole or Material: STEEL
Depth From:
Depth To: 12
Casing Diameter: 6
Casing Diameter UOM: inch
Casing Depth UOM: ft

Construction Record - Casing

Casing ID: 930794583
Layer: 2
Material: 4
Open Hole or Material: OPEN HOLE
Depth From:
Depth To: 50

Casing Diameter:
Casing Diameter UOM: inch
Casing Depth UOM: ft

Results of Well Yield Testing

Pump Test ID: 996808445
Pump Set At:
Static Level: 8
Final Level After Pumping: 25
Recommended Pump Depth: 47
Pumping Rate: 25
Flowing Rate:
Recommended Pump Rate: 20
Levels UOM: ft
Rate UOM: GPM
Water State After Test Code: 1
Water State After Test: CLEAR
Pumping Test Method: 2
Pumping Duration HR: 1
Pumping Duration MIN: 30
Flowing: N

Draw Down & Recovery

Pump Test Detail ID: 934355160
Test Type: Recovery
Test Duration: 15
Test Level: 8
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934619147
Test Type: Recovery
Test Duration: 30
Test Level: 8
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934871378
Test Type: Recovery
Test Duration: 45
Test Level: 8
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 935131901
Test Type: Recovery
Test Duration: 60
Test Level: 8
Test Level UOM: ft

Water Details

Water ID: 933977356
Layer: 1
Kind Code: 1
Kind: FRESH

Water Found Depth: 18
Water Found Depth UOM: ft

Water Details

Water ID: 933977357
Layer: 2
Kind Code: 1
Kind: FRESH
Water Found Depth: 46
Water Found Depth UOM: ft

---

33 | **1 of 1** | **ENE/116.8** | **258.0 / -11.87** | **ON** | **BORE**

Borehole ID: 891538
Use: Geotechnical/Geological Investigation
Drill Method: Hand auger
Easting: 580198
Location Accuracy:
Elev. Reliability Note:
Total Depth m: 3.3
Township: EAST FLAMBOROUGH
Lot: LOT 13
Completion Date: 28-JUL-1999
Primary Water Use:

Type: Borehole
Status: Decommissioned
UTM Zone: 17
Northing: 4803514
Orig. Ground Elev m: 257
DEM Ground Elev m: 259
Primary Name:
Concession: CON 9
Municipality:
Static Water Level: 1.1
Sec. Water Use:

--Details--

Stratum ID: 8505131
Bottom Depth(m): 1.5
Top Depth(m): 0.0
Stratum Desc: 0.3m Topsoil brown/grey mixture of silt, clay, sand and gravel (fill) trace asphalt fragments, cobbles, compact damp. Wet

Stratum ID: 8505132
Bottom Depth(m): 1.9
Top Depth(m): 1.5
Stratum Desc: Grey, sand. Trace gravel, organics, wet

Stratum ID: 8505133
Bottom Depth(m): 3.3
Top Depth(m): 1.9
Stratum Desc: Grey sand. Fine to medium trace gravel, silt. Compact to dense, wet

---

34 | **1 of 1** | **WSW/117.5** | **274.9 / 5.00** | **lot 31 con 7 ON** | **WWIS**

Well ID: 6808253
Construction Date:
Primary Water Use: Livestock
Sec. Water Use: Domestic
Final Well Status: Water Supply
Water Type:
Casing Material:
Audit No:
Tag:
Construction Method:
Elevation (m):
Elevation Reliability:
Depth to Bedrock:
Well Depth:
Overburden/Bedrock:
Pump Rate:
Static Water Level:
Flowing (Y/N):
Flow Rate:

Data Entry Status:
Data Src: 1
Date Received: 10/24/1972
Selected Flag: Yes
Abandonment Rec:
Contractor: 2309
Form Version: 1
Owner:
Street Name:
County: WENTWORTH
Municipality: BEVERLY TOWNSHIP
Site Info:
Lot: 031
Concession: 07
Concession Name: CON
Easting NAD83:
Northing NAD83:
Zone:
UTM Reliability:

Clear/Cloudy:

Bore Hole Information

Bore Hole ID:	10485627	***Elevation:***	278.32
DP2BR:	9	***Elevrc:***	
Spatial Status:		***Zone:***	17
Code OB:	r	***East83:***	573684.3
Code OB Desc:	Bedrock	***Org CS:***	
Open Hole:		***North83:***	4801023
Cluster Kind:		***UTMRC:***	4
Date Completed:	29-SEP-72	***UTMRC Desc:***	margin of error : 30 m - 100 m
Remarks:		***Location Method:***	p4
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932687801
Layer:	2
Color:	2
General Color:	GREY
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	9
Formation End Depth:	62
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932687800
Layer:	1
Color:	6
General Color:	BROWN
Mat1:	05
Most Common Material:	CLAY
Mat2:	12
Other Materials:	STONES
Mat3:	11
Other Materials:	GRAVEL
Formation Top Depth:	0
Formation End Depth:	9
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966808253
Method Construction Code:	1
Method Construction:	Cable Tool
Other Method Construction:	

Pipe Information

Pipe ID: 11034197
Casing No: 1
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 930794254
Layer: 1
Material: 1
Open Hole or Material: STEEL
Depth From:
Depth To: 12
Casing Diameter: 6
Casing Diameter UOM: inch
Casing Depth UOM: ft

Construction Record - Casing

Casing ID: 930794255
Layer: 2
Material: 4
Open Hole or Material: OPEN HOLE
Depth From:
Depth To: 62
Casing Diameter: 6
Casing Diameter UOM: inch
Casing Depth UOM: ft

Results of Well Yield Testing

Pump Test ID: 996808253
Pump Set At:
Static Level: 24
Final Level After Pumping: 30
Recommended Pump Depth: 50
Pumping Rate: 10
Flowing Rate:
Recommended Pump Rate: 7
Levels UOM: ft
Rate UOM: GPM
Water State After Test Code: 1
Water State After Test: CLEAR
Pumping Test Method: 2
Pumping Duration HR: 1
Pumping Duration MIN: 0
Flowing: N

Draw Down & Recovery

Pump Test Detail ID: 934618567
Test Type: Draw Down
Test Duration: 30
Test Level: 30
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934354575
Test Type: Draw Down

Test Duration: 15
Test Level: 30
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934870801
Test Type: Draw Down
Test Duration: 45
Test Level: 30
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 935131319
Test Type: Draw Down
Test Duration: 60
Test Level: 30
Test Level UOM: ft

Water Details

Water ID: 933977138
Layer: 2
Kind Code: 1
Kind: FRESH
Water Found Depth: 62
Water Found Depth UOM: ft

Water Details

Water ID: 933977137
Layer: 1
Kind Code: 1
Kind: FRESH
Water Found Depth: 60
Water Found Depth UOM: ft

---

35 **1 of 1** **ENE/126.4** **257.4 / -12.42** **ON** **BORE**

Borehole ID: 891534
Use: Geotechnical/Geological Investigation
Drill Method: Hand auger
Easting: 580163
Location Accuracy:
Elev. Reliability Note:
Total Depth m: 2.4
Township: WEST FLAMBOROUGH
Lot: LOT 11
Completion Date: 15-JUL-1999
Primary Water Use:

Type: Borehole
Status: Decommissioned
UTM Zone: 17
Northing: 4803496
Orig. Ground Elev m: 269
DEM Ground Elev m: 260
Primary Name:
Concession: CON 7
Municipality:
Static Water Level: -999.9
Sec. Water Use:

--Details--

Stratum ID: 8505122
Bottom Depth(m): 2.2
Top Depth(m): 0.0
Stratum Desc: 0.2m Topsoil brown, sand fill with gravel, dense, damp

Stratum ID: 8505123
Bottom Depth(m): 2.4
Top Depth(m): 2.2
Stratum Desc: Brown, mixture of silt, sand and gravel (Fill) Damp

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
36	1 of 14	WSW/127.2	270.5 / 0.66	TRANSCANADA PIPELINES LIMITED PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 EX PLANS 62R-9684, 62R-9685, 62R-10903 HAMILTON ON	NPRI

NPRI ID:	6750	**Org ID:**	70394
Other ID:	*	**Submit Date:**	6/30/2004
No Other ID:	0	**Last Modified:**	5/29/2015 3:28:24 PM
Track ID:	77635	**Contact ID:**	
Report ID:	162894	**Cont Type:**	
Report Type:	NPRI	**Contact Title:**	
Rpt Type ID:	1	**Cont First Name:**	
Report Year:	2002	**Cont Last Name:**	
Not-Current Rpt?:	No	**Contact Position:**	
Yr of Last Filed Rpt:	2013	**Contact Fax:**	
Fac ID:	135846	**Contact Ph.:**	
Fac Name:	STATION 1301	**Cont Area Code:**	
Fac Address1:	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8	**Contact Tel.:**	
Fac Address2:	EX PLANS 62R-9684, 62R-9685, 62R-10903	**Contact Ext.:**	
Fac Postal Zip:		**Cont Fax Area Cde:**	
Facility Lat:	43.35	**Contact Fax:**	
Facility Long:	-80.1199	**Contact Email:**	
DLS (Last Filed Rpt):		**Latitude:**	43.35
Facility DLS:		**Longitude:**	-80.1199
Datum:	1983	**UTM Zone:**	
Facility Cmnts:	False	**UTM Northing:**	
URL:	www.transcanada.com	**UTM Easting:**	
No of Empl.:	1	**Waste Streams:**	False
Parent Co.:	*	**No Streams:**	0
No Parent Co.:	1	**Waste Off Sites:**	False
Pollut Prev Cmnts:	Fals	**No Off Sites:**	0
Stacks:	False	**Shutdown:**	False
No of Stacks:		**No of Shutdown:**	0
Canadian SIC Code (2 digit):			
Canadian SIC Code:			
SIC Code Description:			
American SIC Code:			
NAICS Code (2 digit):	48		
NAICS 2 Description:	Transportation and Warehousing		
NAICS Code (4 digit):	4862		
NAICS 4 Description:	Pipeline transportation of natural gas		
NAICS Code (6 digit):	486210		
NAICS 6 Description:	Pipeline transportation of natural gas		

Substance Release Report

Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	PM2.5 - Particulate Matter <= 2.5 Microns
Chem (fr):	PM2,5 - Matière particulaire <= 2,5 microns
Quantity:	1.65
Unit:	tonnes
Basis of Estimate Cd:	E E2
Basis of Estimate Desc:	E- Emission Factor - In use from 1994 to 2002 ; E2- Published Emission Factors - In use from 2003 and onward

Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air

Trans Code:	ASta
Chem:	PM10 - Particulate Matter <= 10 Microns
Chem (fr):	PM10 - Matière particulaire <= 10 microns
Quantity:	1.65
Unit:	tonnes
Basis of Estimate Cd:	E E2
Basis of Estimate Desc:	E- Emission Factor - In use from 1994 to 2002 ; E2- Published Emission Factors - In use from 2003 and onward
Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	Carbon monoxide
Chem (fr):	Monoxyde de carbone
Quantity:	49.92
Unit:	tonnes
Basis of Estimate Cd:	E E2
Basis of Estimate Desc:	E- Emission Factor - In use from 1994 to 2002 ; E2- Published Emission Factors - In use from 2003 and onward
Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	Nitrogen oxides (expressed as NO2)
Chem (fr):	Oxydes d'azote (exprimés en NO2)
Quantity:	205.36
Unit:	tonnes
Basis of Estimate Cd:	E E2
Basis of Estimate Desc:	E- Emission Factor - In use from 1994 to 2002 ; E2- Published Emission Factors - In use from 2003 and onward

36	2 of 14	WSW/127.2	270.5 / 0.66	**TRANSCANADA PIPELINES LIMITED** **PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 EX PLANS 62R-9684, 62R-9685, 62R-10903** **HAMILTON ON**	NPRI

NPRI ID:	6750	**Org ID:**	70394
Other ID:	*	**Submit Date:**	5/30/2004
No Other ID:		**Last Modified:**	5/29/2015 3:28:24 PM
Track ID:	74441	**Contact ID:**	
Report ID:	154551	**Cont Type:**	
Report Type:	NPRI	**Contact Title:**	
Rpt Type ID:	1	**Cont First Name:**	
Report Year:	2003	**Cont Last Name:**	
Not-Current Rpt?:	No	**Contact Position:**	
Yr of Last Filed Rpt:	2013	**Contact Fax:**	
Fac ID:	135846	**Contact Ph.:**	
Fac Name:	STATION 1301	**Cont Area Code:**	
Fac Address1:	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8	**Contact Tel.:**	
Fac Address2:	EX PLANS 62R-9684, 62R-9685, 62R-10903	**Contact Ext.:**	
Fac Postal Zip:		**Cont Fax Area Cde:**	
Facility Lat:	43.35	**Contact Fax:**	
Facility Long:	-80.1199	**Contact Email:**	
DLS (Last Filed Rpt):		**Latitude:**	43.35
Facility DLS:		**Longitude:**	-80.1199
Datum:	1983	**UTM Zone:**	
Facility Cmnts:	False	**UTM Northing:**	
URL:	www.transcanada.com	**UTM Easting:**	
No of Empl.:	1	**Waste Streams:**	True?
Parent Co.:	*	**No Streams:**	
No Parent Co.:	1	**Waste Off Sites:**	False
Pollut Prev Cmnts:	Fals	**No Off Sites:**	
Stacks:	True	**Shutdown:**	True
No of Stacks:		**No of Shutdown:**	9

Canadian SIC Code (2 digit):
Canadian SIC Code:
SIC Code Description:
American SIC Code:
NAICS Code (2 digit): 48
NAICS 2 Description: Transportation and Warehousing
NAICS Code (4 digit): 4862
NAICS 4 Description: Pipeline transportation of natural gas
NAICS Code (6 digit): 486210
NAICS 6 Description: Pipeline transportation of natural gas

Substance Release Report

Category Type ID: 1
Category Type Desc: Stack / Point
Category Type Desc (fr): Rejets de cheminée ou ponctuels
Grouping: Total Air
Trans Code: ASta
Chem: PM10 - Particulate Matter <= 10 Microns
Chem (fr): PM10 - Matière particulaire <= 10 microns
Quantity: 1.74
Unit: tonnes
Basis of Estimate Cd: E2
Basis of Estimate Desc: E2- Published Emission Factors - In use from 2003 and onward

Category Type ID: 1
Category Type Desc: Stack / Point
Category Type Desc (fr): Rejets de cheminée ou ponctuels
Grouping: Total Air
Trans Code: ASta
Chem: Carbon monoxide
Chem (fr): Monoxyde de carbone
Quantity: 50.33
Unit: tonnes
Basis of Estimate Cd: E2
Basis of Estimate Desc: E2- Published Emission Factors - In use from 2003 and onward

Category Type ID: 1
Category Type Desc: Stack / Point
Category Type Desc (fr): Rejets de cheminée ou ponctuels
Grouping: Total Air
Trans Code: ASta
Chem: Nitrogen oxides (expressed as NO2)
Chem (fr): Oxydes d'azote (exprimés en NO2)
Quantity: 226.11
Unit: tonnes
Basis of Estimate Cd: E2
Basis of Estimate Desc: E2- Published Emission Factors - In use from 2003 and onward

Category Type ID: 1
Category Type Desc: Stack / Point
Category Type Desc (fr): Rejets de cheminée ou ponctuels
Grouping: Total Air
Trans Code: ASta
Chem: PM2.5 - Particulate Matter <= 2.5 Microns
Chem (fr): PM2,5 - Matière particulaire <= 2,5 microns
Quantity: 1.74
Unit: tonnes
Basis of Estimate Cd: E2
Basis of Estimate Desc: E2- Published Emission Factors - In use from 2003 and onward

36	*3 of 14*	*WSW/127.2*	*270.5 / 0.66*	***TRANSCANADA PIPELINES*** ***PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 EX PLANS 62R-9684, 62R-9685, 62R-10903***	*NPRI*

HAMILTON ON

NPRI ID:	6750	***Org ID:***	70386
Other ID:	*	***Submit Date:***	5/9/2005
No Other ID:		***Last Modified:***	5/29/2015 3:28:24 PM
Track ID:	25215	***Contact ID:***	
Report ID:	83127	***Cont Type:***	
Report Type:	NPRI	***Contact Title:***	
Rpt Type ID:	1	***Cont First Name:***	
Report Year:	2004	***Cont Last Name:***	
Not-Current Rpt?:	No	***Contact Position:***	
Yr of Last Filed Rpt:	2013	***Contact Fax:***	
Fac ID:	135846	***Contact Ph.:***	
Fac Name:	STATION 1301	***Cont Area Code:***	
Fac Address1:	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8	***Contact Tel.:***	
Fac Address2:	EX PLANS 62R-9684, 62R-9685, 62R-10903	***Contact Ext.:***	
Fac Postal Zip:		***Cont Fax Area Cde:***	
Facility Lat:	43.35	***Contact Fax:***	
Facility Long:	-80.1199	***Contact Email:***	
DLS (Last Filed Rpt):		***Latitude:***	43.35
Facility DLS:		***Longitude:***	-80.1199
Datum:	1983	***UTM Zone:***	
Facility Cmnts:	True	***UTM Northing:***	
URL:	www.transcanada.com	***UTM Easting:***	
No of Empl.:	1	***Waste Streams:***	False
Parent Co.:	N	***No Streams:***	
No Parent Co.:		***Waste Off Sites:***	False
Pollut Prev Cmnts:	True	***No Off Sites:***	
Stacks:	No	***Shutdown:***	
No of Stacks:		***No of Shutdown:***	
Canadian SIC Code (2 digit):			
Canadian SIC Code:			
SIC Code Description:			
American SIC Code:			
NAICS Code (2 digit):	48		
NAICS 2 Description:	Transportation and Warehousing		
NAICS Code (4 digit):	4862		
NAICS 4 Description:	Pipeline transportation of natural gas		
NAICS Code (6 digit):	486210		
NAICS 6 Description:	Pipeline transportation of natural gas		

Substance Release Report

Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	Carbon monoxide
Chem (fr):	Monoxyde de carbone
Quantity:	49.34
Unit:	tonnes
Basis of Estimate Cd:	E2
Basis of Estimate Desc:	E2- Published Emission Factors - In use from 2003 and onward

Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	PM10 - Particulate Matter <= 10 Microns
Chem (fr):	PM10 - Matière particulaire <= 10 microns
Quantity:	1.62
Unit:	tonnes

Basis of Estimate Cd:	E2
Basis of Estimate Desc:	E2- Published Emission Factors - In use from 2003 and onward
Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	Nitrogen oxides (expressed as NO2)
Chem (fr):	Oxydes d'azote (exprimés en NO2)
Quantity:	198.83
Unit:	tonnes
Basis of Estimate Cd:	E2
Basis of Estimate Desc:	E2- Published Emission Factors - In use from 2003 and onward
Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	PM2.5 - Particulate Matter <= 2.5 Microns
Chem (fr):	PM2,5 - Matière particulaire <= 2,5 microns
Quantity:	1.62
Unit:	tonnes
Basis of Estimate Cd:	E2
Basis of Estimate Desc:	E2- Published Emission Factors - In use from 2003 and onward

36 | ***4 of 14*** | ***WSW/127.2*** | ***270.5 / 0.66*** | ***TRANSCANADA PIPELINES***
PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 EX
PLANS 62R-9684, 62R-9685, 62R-10903
HAMILTON ON | ***NPRI***

NPRI ID:	6750	**Org ID:**	70386
Other ID:	*	**Submit Date:**	5/23/2006
No Other ID:		**Last Modified:**	5/29/2015 3:28:24 PM
Track ID:	35089	**Contact ID:**	
Report ID:	96572	**Cont Type:**	
Report Type:	NPRI	**Contact Title:**	
Rpt Type ID:	1	**Cont First Name:**	
Report Year:	2005	**Cont Last Name:**	
Not-Current Rpt?:	No	**Contact Position:**	
Yr of Last Filed Rpt:	2013	**Contact Fax:**	
Fac ID:	135846	**Contact Ph.:**	
Fac Name:	STATION 1301	**Cont Area Code:**	
Fac Address1:	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8	**Contact Tel.:**	
Fac Address2:	EX PLANS 62R-9684, 62R-9685, 62R-10903	**Contact Ext.:**	
Fac Postal Zip:		**Cont Fax Area Cde:**	
Facility Lat:	43.35	**Contact Fax:**	
Facility Long:	-80.1199	**Contact Email:**	
DLS (Last Filed Rpt):		**Latitude:**	43.35
Facility DLS:		**Longitude:**	-80.1199
Datum:	1983	**UTM Zone:**	
Facility Cmnts:	False	**UTM Northing:**	
URL:	www.transcanada.com	**UTM Easting:**	
No of Empl.:	1	**Waste Streams:**	False
Parent Co.:	N	**No Streams:**	
No Parent Co.:		**Waste Off Sites:**	False
Pollut Prev Cmnts:	False	**No Off Sites:**	
Stacks:	False	**Shutdown:**	
No of Stacks:		**No of Shutdown:**	
Canadian SIC Code (2 digit):			
Canadian SIC Code:			
SIC Code Description:			
American SIC Code:			
NAICS Code (2 digit):	48		

NAICS 2 Description:	Transportation and Warehousing
NAICS Code (4 digit):	4862
NAICS 4 Description:	Pipeline transportation of natural gas
NAICS Code (6 digit):	486210
NAICS 6 Description:	Pipeline transportation of natural gas

Substance Release Report

Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	Carbon monoxide
Chem (fr):	Monoxyde de carbone
Quantity:	46.27
Unit:	tonnes
Basis of Estimate Cd:	E2
Basis of Estimate Desc:	E2- Published Emission Factors - In use from 2003 and onward

Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	Nitrogen oxides (expressed as NO2)
Chem (fr):	Oxydes d'azote (exprimés en NO2)
Quantity:	193.52
Unit:	tonnes
Basis of Estimate Cd:	E2
Basis of Estimate Desc:	E2- Published Emission Factors - In use from 2003 and onward

Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	PM10 - Particulate Matter <= 10 Microns
Chem (fr):	PM10 - Matière particulaire <= 10 microns
Quantity:	1.71
Unit:	tonnes
Basis of Estimate Cd:	E2
Basis of Estimate Desc:	E2- Published Emission Factors - In use from 2003 and onward

Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	PM2.5 - Particulate Matter <= 2.5 Microns
Chem (fr):	PM2,5 - Matière particulaire <= 2,5 microns
Quantity:	1.71
Unit:	tonnes
Basis of Estimate Cd:	E2
Basis of Estimate Desc:	E2- Published Emission Factors - In use from 2003 and onward

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36 ***5 of 14*** ***WSW/127.2*** ***270.5 / 0.66*** ***TRANSCANADA PIPELINES***
PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 NOT AVAILABLE
HAMILTON ON ***NPRI***

NPRI ID:	6750	**Org ID:**	70386
Other ID:	*	**Submit Date:**	5/29/2007
No Other ID:		**Last Modified:**	5/29/2015 3:28:24 PM

Track ID:	45309			**Contact ID:**	
Report ID:	105735			**Cont Type:**	
Report Type:	NPRI			**Contact Title:**	
Rpt Type ID:	1			**Cont First Name:**	
Report Year:	2006			**Cont Last Name:**	
Not-Current Rpt?:	No			**Contact Position:**	
Yr of Last Filed Rpt:	2013			**Contact Fax:**	
Fac ID:	135851			**Contact Ph.:**	
Fac Name:	STATION 1301 - KIRKWALL			**Cont Area Code:**	
Fac Address1:	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8			**Contact Tel.:**	
Fac Address2:	NOT AVAILABLE			**Contact Ext.:**	
Fac Postal Zip:				**Cont Fax Area Cde:**	
Facility Lat:	43.35			**Contact Fax:**	
Facility Long:	-80.1199			**Contact Email:**	
DLS (Last Filed Rpt):				**Latitude:**	43.35
Facility DLS:				**Longitude:**	-80.1199
Datum:	1983			**UTM Zone:**	
Facility Cmnts:	False			**UTM Northing:**	
URL:	www.transcanada.com			**UTM Easting:**	
No of Empl.:	1			**Waste Streams:**	True?
Parent Co.:	N			**No Streams:**	
No Parent Co.:				**Waste Off Sites:**	False
Pollut Prev Cmnts:	False			**No Off Sites:**	
Stacks:	True			**Shutdown:**	
No of Stacks:				**No of Shutdown:**	

Canadian SIC Code (2 digit):
Canadian SIC Code:
SIC Code Description:
American SIC Code:

NAICS Code (2 digit):	48
NAICS 2 Description:	Transportation and Warehousing
NAICS Code (4 digit):	4862
NAICS 4 Description:	Pipeline transportation of natural gas
NAICS Code (6 digit):	486210
NAICS 6 Description:	Pipeline transportation of natural gas

Substance Release Report

Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	PM2.5 - Particulate Matter <= 2.5 Microns
Chem (fr):	PM2,5 - Matière particulaire <= 2,5 microns
Quantity:	1.429
Unit:	tonnes
Basis of Estimate Cd:	E2
Basis of Estimate Desc:	E2- Published Emission Factors - In use from 2003 and onward

Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	Nitrogen oxides (expressed as NO2)
Chem (fr):	Oxydes d'azote (exprimés en NO2)
Quantity:	126.666
Unit:	tonnes
Basis of Estimate Cd:	E2
Basis of Estimate Desc:	E2- Published Emission Factors - In use from 2003 and onward

Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels

Grouping:	Total Air
Trans Code:	ASta
Chem:	PM10 - Particulate Matter <= 10 Microns
Chem (fr):	PM10 - Matière particulaire <= 10 microns
Quantity:	1.429
Unit:	tonnes
Basis of Estimate Cd:	E2
Basis of Estimate Desc:	E2- Published Emission Factors - In use from 2003 and onward

Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	Carbon monoxide
Chem (fr):	Monoxyde de carbone
Quantity:	27.179
Unit:	tonnes
Basis of Estimate Cd:	E2
Basis of Estimate Desc:	E2- Published Emission Factors - In use from 2003 and onward

36 | ***6 of 14*** | ***WSW/127.2*** | ***270.5 / 0.66*** | ***TRANSCANADA PIPELINES***
PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 NOT AVAILABLE
HAMILTON ON | ***NPRI***

NPRI ID:	6750	**Org ID:**	70386
Other ID:	*	**Submit Date:**	5/29/2008
No Other ID:		**Last Modified:**	5/29/2015 3:28:24 PM
Track ID:	55698	**Contact ID:**	
Report ID:	118046	**Cont Type:**	
Report Type:	NPRI	**Contact Title:**	
Rpt Type ID:	1	**Cont First Name:**	
Report Year:	2007	**Cont Last Name:**	
Not-Current Rpt?:	No	**Contact Position:**	
Yr of Last Filed Rpt:	2013	**Contact Fax:**	
Fac ID:	135851	**Contact Ph.:**	
Fac Name:	STATION 1301 - KIRKWALL	**Cont Area Code:**	
Fac Address1:	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8	**Contact Tel.:**	
Fac Address2:	NOT AVAILABLE	**Contact Ext.:**	
Fac Postal Zip:		**Cont Fax Area Cde:**	
Facility Lat:	43.35	**Contact Fax:**	
Facility Long:	-80.1199	**Contact Email:**	
DLS (Last Filed Rpt):		**Latitude:**	43.35
Facility DLS:		**Longitude:**	-80.1199
Datum:	1983	**UTM Zone:**	
Facility Cmnts:	False	**UTM Northing:**	
URL:	www.transcanada.com	**UTM Easting:**	
No of Empl.:	1	**Waste Streams:**	True?
Parent Co.:	N	**No Streams:**	
No Parent Co.:		**Waste Off Sites:**	True?
Pollut Prev Cmnts:	False	**No Off Sites:**	
Stacks:	True	**Shutdown:**	
No of Stacks:		**No of Shutdown:**	
Canadian SIC Code (2 digit):			
Canadian SIC Code:			
SIC Code Description:			
American SIC Code:			
NAICS Code (2 digit):	48		
NAICS 2 Description:	Transportation and Warehousing		
NAICS Code (4 digit):	4862		
NAICS 4 Description:	Pipeline transportation of natural gas		
NAICS Code (6 digit):	486210		
NAICS 6 Description:	Pipeline transportation of natural gas		

Substance Release Report

Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	Carbon monoxide
Chem (fr):	Monoxyde de carbone
Quantity:	36.465
Unit:	tonnes
Basis of Estimate Cd:	E2
Basis of Estimate Desc:	E2- Published Emission Factors - In use from 2003 and onward

Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	PM2.5 - Particulate Matter <= 2.5 Microns
Chem (fr):	PM2,5 - Matière particulaire <= 2,5 microns
Quantity:	1.489
Unit:	tonnes
Basis of Estimate Cd:	E2
Basis of Estimate Desc:	E2- Published Emission Factors - In use from 2003 and onward

Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	Nitrogen oxides (expressed as NO2)
Chem (fr):	Oxydes d'azote (exprimés en NO2)
Quantity:	157.721
Unit:	tonnes
Basis of Estimate Cd:	E2
Basis of Estimate Desc:	E2- Published Emission Factors - In use from 2003 and onward

Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	PM10 - Particulate Matter <= 10 Microns
Chem (fr):	PM10 - Matière particulaire <= 10 microns
Quantity:	1.489
Unit:	tonnes
Basis of Estimate Cd:	E2
Basis of Estimate Desc:	E2- Published Emission Factors - In use from 2003 and onward

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36	7 of 14	WSW/127.2	270.5 / 0.66	TRANSCANADA PIPELINES PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 NOT AVAILABLE HAMILTON ON	NPRI

NPRI ID:	6750	***Org ID:***	70386
Other ID:	*	***Submit Date:***	5/28/2009
No Other ID:		***Last Modified:***	5/29/2015 3:28:24 PM
Track ID:	65933	***Contact ID:***	
Report ID:	126710	***Cont Type:***	
Report Type:	NPRI	***Contact Title:***	
Rpt Type ID:	1	***Cont First Name:***	
Report Year:	2008	***Cont Last Name:***	
Not-Current Rpt?:	No	***Contact Position:***	

Yr of Last Filed Rpt:	2013	***Contact Fax:***	
Fac ID:	135851	***Contact Ph.:***	
Fac Name:	STATION 1301 - KIRKWALL	***Cont Area Code:***	
Fac Address1:	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8	***Contact Tel.:***	
Fac Address2:	NOT AVAILABLE	***Contact Ext.:***	
Fac Postal Zip:		***Cont Fax Area Cde:***	
Facility Lat:	43.35	***Contact Fax:***	
Facility Long:	-80.1199	***Contact Email:***	
DLS (Last Filed Rpt):		***Latitude:***	43.35
Facility DLS:		***Longitude:***	-80.1199
Datum:	1983	***UTM Zone:***	
Facility Cmnts:	No	***UTM Northing:***	
URL:	www.transcanada.com	***UTM Easting:***	
No of Empl.:	1	***Waste Streams:***	No
Parent Co.:	N	***No Streams:***	
No Parent Co.:		***Waste Off Sites:***	No
Pollut Prev Cmnts:	No	***No Off Sites:***	
Stacks:	No	***Shutdown:***	No
No of Stacks:		***No of Shutdown:***	
Canadian SIC Code (2 digit):			
Canadian SIC Code:			
SIC Code Description:			
American SIC Code:			
NAICS Code (2 digit):	48		
NAICS 2 Description:	Transportation and Warehousing		
NAICS Code (4 digit):	4862		
NAICS 4 Description:	Pipeline transportation of natural gas		
NAICS Code (6 digit):	486210		
NAICS 6 Description:	Pipeline transportation of natural gas		

Substance Release Report

Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	PM2.5 - Particulate Matter <= 2.5 Microns
Chem (fr):	PM2,5 - Matière particulaire <= 2,5 microns
Quantity:	1.377
Unit:	tonnes
Basis of Estimate Cd:	E2
Basis of Estimate Desc:	E2- Published Emission Factors - In use from 2003 and onward

Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	PM10 - Particulate Matter <= 10 Microns
Chem (fr):	PM10 - Matière particulaire <= 10 microns
Quantity:	1.377
Unit:	tonnes
Basis of Estimate Cd:	E2
Basis of Estimate Desc:	E2- Published Emission Factors - In use from 2003 and onward

Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	Carbon monoxide
Chem (fr):	Monoxyde de carbone
Quantity:	34.581
Unit:	tonnes

Basis of Estimate Cd:	E2
Basis of Estimate Desc:	E2- Published Emission Factors - In use from 2003 and onward
Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	Nitrogen oxides (expressed as NO2)
Chem (fr):	Oxydes d'azote (exprimés en NO2)
Quantity:	138.119
Unit:	tonnes
Basis of Estimate Cd:	E2
Basis of Estimate Desc:	E2- Published Emission Factors - In use from 2003 and onward

36 | ***8 of 14*** | ***WSW/127.2*** | ***270.5 / 0.66*** | ***TRANSCANADA PIPELINES***
PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 NOT AVAILABLE
HAMILTON ON | ***NPRI***

NPRI ID:	6750	**Org ID:**	70386
Other ID:	*	**Submit Date:**	5/19/2010
No Other ID:		**Last Modified:**	5/29/2015 3:28:24 PM
Track ID:	83445	**Contact ID:**	
Report ID:	137305	**Cont Type:**	
Report Type:	NPRI	**Contact Title:**	
Rpt Type ID:	1	**Cont First Name:**	
Report Year:	2009	**Cont Last Name:**	
Not-Current Rpt?:	No	**Contact Position:**	
Yr of Last Filed Rpt:	2013	**Contact Fax:**	
Fac ID:	135851	**Contact Ph.:**	
Fac Name:	STATION 1301 - KIRKWALL	**Cont Area Code:**	
Fac Address1:	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8	**Contact Tel.:**	
Fac Address2:	NOT AVAILABLE	**Contact Ext.:**	
Fac Postal Zip:		**Cont Fax Area Cde:**	
Facility Lat:	43.35	**Contact Fax:**	
Facility Long:	-80.1199	**Contact Email:**	
DLS (Last Filed Rpt):		**Latitude:**	43.35
Facility DLS:		**Longitude:**	-80.1199
Datum:	1983	**UTM Zone:**	
Facility Cmnts:	No	**UTM Northing:**	
URL:	www.transcanada.com	**UTM Easting:**	
No of Empl.:	1	**Waste Streams:**	No
Parent Co.:	N	**No Streams:**	
No Parent Co.:		**Waste Off Sites:**	No
Pollut Prev Cmnts:	No	**No Off Sites:**	
Stacks:	No	**Shutdown:**	No
No of Stacks:		**No of Shutdown:**	
Canadian SIC Code (2 digit):			
Canadian SIC Code:			
SIC Code Description:			
American SIC Code:			
NAICS Code (2 digit):	48		
NAICS 2 Description:	Transportation and Warehousing		
NAICS Code (4 digit):	4862		
NAICS 4 Description:	Pipeline transportation of natural gas		
NAICS Code (6 digit):	486210		
NAICS 6 Description:	Pipeline transportation of natural gas		

Substance Release Report

Category Type ID:	13
Category Type Desc:	All Media
Category Type Desc (fr):	Rejets à tous les médias

Grouping:	Total All Media<1t
Trans Code:	
Chem:	PM2.5 - Particulate Matter <= 2.5 Microns
Chem (fr):	PM2,5 - Matière particulaire <= 2,5 microns
Quantity:	.874
Unit:	tonnes
Basis of Estimate Cd:	
Basis of Estimate Desc:	

Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	Nitrogen oxides (expressed as NO2)
Chem (fr):	Oxydes d'azote (exprimés en NO2)
Quantity:	76.673
Unit:	tonnes
Basis of Estimate Cd:	E2
Basis of Estimate Desc:	E2- Published Emission Factors - In use from 2003 and onward

Category Type ID:	13
Category Type Desc:	All Media
Category Type Desc (fr):	Rejets à tous les médias
Grouping:	Total All Media<1t
Trans Code:	
Chem:	PM10 - Particulate Matter <= 10 Microns
Chem (fr):	PM10 - Matière particulaire <= 10 microns
Quantity:	.874
Unit:	tonnes
Basis of Estimate Cd:	
Basis of Estimate Desc:	

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36 | ***9 of 14*** | ***WSW/127.2*** | ***270.5 / 0.66*** | ***TRANSCANADA PIPELINES LTD.***
PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8 NOT AVAILABLE
HAMILTON ON | ***NPRI***

NPRI ID:	6750	**Org ID:**	101523
Other ID:	Y	**Submit Date:**	10/11/2011
No Other ID:	3	**Last Modified:**	5/29/2015 3:28:24 PM
Track ID:	95075	**Contact ID:**	
Report ID:	149127	**Cont Type:**	
Report Type:	NPRI	**Contact Title:**	
Rpt Type ID:	1	**Cont First Name:**	
Report Year:	2010	**Cont Last Name:**	
Not-Current Rpt?:	No	**Contact Position:**	
Yr of Last Filed Rpt:	2013	**Contact Fax:**	
Fac ID:	135851	**Contact Ph.:**	
Fac Name:	STATION 1301 - KIRKWALL	**Cont Area Code:**	
Fac Address1:	PT LOT 25 CON 7, PLAN 62R-8308 PTS 1-8	**Contact Tel.:**	
Fac Address2:	NOT AVAILABLE	**Contact Ext.:**	
Fac Postal Zip:		**Cont Fax Area Cde:**	
Facility Lat:	43.35	**Contact Fax:**	
Facility Long:	-80.1199	**Contact Email:**	
DLS (Last Filed Rpt):		**Latitude:**	43.35
Facility DLS:		**Longitude:**	-80.1199
Datum:	1983	**UTM Zone:**	
Facility Cmnts:	No	**UTM Northing:**	
URL:		**UTM Easting:**	
No of Empl.:	1	**Waste Streams:**	No
Parent Co.:	Y	**No Streams:**	
No Parent Co.:	1	**Waste Off Sites:**	No
Pollut Prev Cmnts:	No	**No Off Sites:**	
Stacks:	No	**Shutdown:**	No

No of Stacks:		**No of Shutdown:**	
Canadian SIC Code (2 digit):			
Canadian SIC Code:			
SIC Code Description:			
American SIC Code:			
NAICS Code (2 digit):	48		
NAICS 2 Description:	Transportation and Warehousing		
NAICS Code (4 digit):	4862		
NAICS 4 Description:	Pipeline transportation of natural gas		
NAICS Code (6 digit):	486210		
NAICS 6 Description:	Pipeline transportation of natural gas		

Substance Release Report

Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	Nitrogen oxides (expressed as NO2)
Chem (fr):	Oxydes d'azote (exprimés en NO2)
Quantity:	50.027
Unit:	tonnes
Basis of Estimate Cd:	E2
Basis of Estimate Desc:	E2- Published Emission Factors - In use from 2003 and onward

Category Type ID:	13
Category Type Desc:	All Media
Category Type Desc (fr):	Rejets à tous les médias
Grouping:	Total All Media<1t
Trans Code:	
Chem:	PM2.5 - Particulate Matter <= 2.5 Microns
Chem (fr):	PM2,5 - Matière particulaire <= 2,5 microns
Quantity:	.409
Unit:	tonnes
Basis of Estimate Cd:	
Basis of Estimate Desc:	

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36 | ***10 of 14*** | ***WSW/127.2*** | ***270.5 / 0.66*** | ***TRANSCANADA PIPELINES LTD.*** ***NOT AVAILABLE*** ***Hamilton ON*** | ***NPRI***

NPRI ID:	6750	**Org ID:**	101523
Other ID:		**Submit Date:**	6/28/2012
No Other ID:		**Last Modified:**	5/29/2015 3:28:24 PM
Track ID:	100144	**Contact ID:**	
Report ID:	4031	**Cont Type:**	
Report Type:	NPRI	**Contact Title:**	
Rpt Type ID:	1	**Cont First Name:**	
Report Year:	2011	**Cont Last Name:**	
Not-Current Rpt?:	No	**Contact Position:**	
Yr of Last Filed Rpt:	2013	**Contact Fax:**	
Fac ID:	235913	**Contact Ph.:**	
Fac Name:	Station 1301 - Kirkwall	**Cont Area Code:**	
Fac Address1:	NOT AVAILABLE	**Contact Tel.:**	
Fac Address2:		**Contact Ext.:**	
Fac Postal Zip:		**Cont Fax Area Cde:**	
Facility Lat:	43.35	**Contact Fax:**	
Facility Long:	-80.1199	**Contact Email:**	
DLS (Last Filed Rpt):		**Latitude:**	43.35
Facility DLS:		**Longitude:**	-80.1199
Datum:	1983	**UTM Zone:**	
Facility Cmnts:		**UTM Northing:**	
URL:		**UTM Easting:**	

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB

No of Empl.:	1	***Waste Streams:***	
Parent Co.:		***No Streams:***	
No Parent Co.:		***Waste Off Sites:***	
Pollut Prev Cmnts:		***No Off Sites:***	
Stacks:		***Shutdown:***	
No of Stacks:		***No of Shutdown:***	
Canadian SIC Code (2 digit):			
Canadian SIC Code:			
SIC Code Description:			
American SIC Code:			
NAICS Code (2 digit):	48		
NAICS 2 Description:	Transportation and Warehousing		
NAICS Code (4 digit):	4862		
NAICS 4 Description:	Pipeline transportation of natural gas		
NAICS Code (6 digit):	486210		
NAICS 6 Description:	Pipeline transportation of natural gas		

Substance Release Report

Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	PM2.5 - Particulate Matter <= 2.5 Microns
Chem (fr):	PM2,5 - Matière particulaire <= 2,5 microns
Quantity:	.3
Unit:	tonnes
Basis of Estimate Cd:	E2
Basis of Estimate Desc:	E2- Published Emission Factors - In use from 2003 and onward

Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	Nitrogen oxides (expressed as NO2)
Chem (fr):	Oxydes d'azote (exprimés en NO2)
Quantity:	38
Unit:	tonnes
Basis of Estimate Cd:	E2
Basis of Estimate Desc:	E2- Published Emission Factors - In use from 2003 and onward

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36	***11 of 14***	***WSW/127.2***	***270.5 / 0.66***	***TRANSCANADA PIPELINES LTD.*** ***n/a*** ***n/a ON n/a***	***NPRI***

NPRI ID:	0000006750	***Org ID:***	
Other ID:		***Submit Date:***	
No Other ID:		***Last Modified:***	
Track ID:		***Contact ID:***	
Report ID:	88868028	***Cont Type:***	MED
Report Type:		***Contact Title:***	
Rpt Type ID:		***Cont First Name:***	
Report Year:	2012	***Cont Last Name:***	
Not-Current Rpt?:		***Contact Position:***	
Yr of Last Filed Rpt:		***Contact Fax:***	
Fac ID:		***Contact Ph.:***	
Fac Name:	STATION 1301 - KIRKWALL	***Cont Area Code:***	
Fac Address1:		***Contact Tel.:***	
Fac Address2:		***Contact Ext.:***	
Fac Postal Zip:		***Cont Fax Area Cde:***	
Facility Lat:		***Contact Fax:***	
Facility Long:		***Contact Email:***	

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB

DLS (Last Filed Rpt):		***Latitude:***	43.35
Facility DLS:		***Longitude:***	-80.1199
Datum:	1983	***UTM Zone:***	
Facility Cmnts:		***UTM Northing:***	
URL:		***UTM Easting:***	
No of Empl.:	1	***Waste Streams:***	
Parent Co.:		***No Streams:***	
No Parent Co.:		***Waste Off Sites:***	
Pollut Prev Cmnts:		***No Off Sites:***	
Stacks:		***Shutdown:***	
No of Stacks:		***No of Shutdown:***	
Canadian SIC Code (2 digit):			
Canadian SIC Code:			
SIC Code Description:			
American SIC Code:			
NAICS Code (2 digit):	48		
NAICS 2 Description:	Transportation and Warehousing		
NAICS Code (4 digit):	4862		
NAICS 4 Description:	Pipeline Transportation of Natural Gas		
NAICS Code (6 digit):	486210		
NAICS 6 Description:	Pipeline Transportation of Natural Gas		

Substance Release Report

CAS No:	11104-93-1
Report ID:	88868028
Rpt Period:	2012
Subst Released:	Nitrogen oxides (expressed as NO2)
Air:	30.149
Water:	
Land:	
Total Releases:	30.149
Units:	tonnes

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
36	12 of 14	WSW/127.2	270.5 / 0.66	TRANSCANADA PIPELINES LTD. NOT AVAILABLE Hamilton ON	NPRI

NPRI ID:	6750	***Org ID:***	101523
Other ID:		***Submit Date:***	5/23/2014
No Other ID:		***Last Modified:***	5/29/2015 3:28:24 PM
Track ID:	116978	***Contact ID:***	
Report ID:	31429	***Cont Type:***	
Report Type:	DNMC	***Contact Title:***	
Rpt Type ID:	2	***Cont First Name:***	
Report Year:	2013	***Cont Last Name:***	
Not-Current Rpt?:	No	***Contact Position:***	
Yr of Last Filed Rpt:	2013	***Contact Fax:***	
Fac ID:	235913	***Contact Ph.:***	
Fac Name:	Station 1301 - Kirkwall	***Cont Area Code:***	
Fac Address1:	NOT AVAILABLE	***Contact Tel.:***	
Fac Address2:		***Contact Ext.:***	
Fac Postal Zip:		***Cont Fax Area Cde:***	
Facility Lat:	43.35	***Contact Fax:***	
Facility Long:	-80.1199	***Contact Email:***	
DLS (Last Filed Rpt):		***Latitude:***	43.35
Facility DLS:		***Longitude:***	-80.1199
Datum:	1983	***UTM Zone:***	
Facility Cmnts:		***UTM Northing:***	
URL:		***UTM Easting:***	
No of Empl.:		***Waste Streams:***	
Parent Co.:		***No Streams:***	
No Parent Co.:		***Waste Off Sites:***	
Pollut Prev Cmnts:		***No Off Sites:***	

Stacks:		**Shutdown:**	
No of Stacks:		**No of Shutdown:**	
Canadian SIC Code (2 digit):			
Canadian SIC Code:			
SIC Code Description:			
American SIC Code:			
NAICS Code (2 digit):	48		
NAICS 2 Description:	Transportation and Warehousing		
NAICS Code (4 digit):	4862		
NAICS 4 Description:	Pipeline transportation of natural gas		
NAICS Code (6 digit):	486210		
NAICS 6 Description:	Pipeline transportation of natural gas		

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36 | ***13 of 14*** | ***WSW/127.2*** | ***270.5 / 0.66*** | ***TransCanada PipeLines Ltd.***
NOT AVAILABLE
Hamilton ON | ***NPRI***

NPRI ID:	6750	**Org ID:**	104929
Other ID:		**Submit Date:**	5/30/2016
No Other ID:		**Last Modified:**	11/18/2016 8:28:05 AM
Track ID:	137167	**Contact ID:**	
Report ID:	70493	**Cont Type:**	
Report Type:	NPRI	**Contact Title:**	
Rpt Type ID:	1	**Cont First Name:**	
Report Year:	2015	**Cont Last Name:**	
Not-Current Rpt?:	No	**Contact Position:**	
Yr of Last Filed Rpt:	2013	**Contact Fax:**	
Fac ID:	235913	**Contact Ph.:**	
Fac Name:	Station 1301 - Kirkwall	**Cont Area Code:**	
Fac Address1:	NOT AVAILABLE	**Contact Tel.:**	
Fac Address2:		**Contact Ext.:**	
Fac Postal Zip:		**Cont Fax Area Cde:**	
Facility Lat:	43.35	**Contact Fax:**	
Facility Long:	-80.1199	**Contact Email:**	
DLS (Last Filed Rpt):		**Latitude:**	43.35
Facility DLS:		**Longitude:**	-80.1199
Datum:	1983	**UTM Zone:**	
Facility Cmnts:		**UTM Northing:**	
URL:		**UTM Easting:**	
No of Empl.:	1	**Waste Streams:**	
Parent Co.:		**No Streams:**	
No Parent Co.:		**Waste Off Sites:**	
Pollut Prev Cmnts:		**No Off Sites:**	
Stacks:		**Shutdown:**	
No of Stacks:		**No of Shutdown:**	
Canadian SIC Code (2 digit):			
Canadian SIC Code:			
SIC Code Description:			
American SIC Code:			
NAICS Code (2 digit):	48		
NAICS 2 Description:	Transportation and Warehousing		
NAICS Code (4 digit):	4862		
NAICS 4 Description:	Pipeline transportation of natural gas		
NAICS Code (6 digit):	486210		
NAICS 6 Description:	Pipeline transportation of natural gas		

Substance Release Report

Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	

Chem (fr):	
Quantity:	31.36
Unit:	tonnes
Basis of Estimate Cd:	E2
Basis of Estimate Desc:	E2- Published Emission Factors - In use from 2003 and onward

36 | **14 of 14** | **WSW/127.2** | **270.5 / 0.66** | **TRANSCANADA PIPELINES LTD.**
NOT AVAILABLE
Hamilton ON | **NPRI**

NPRI ID:	6750	**Org ID:**	101523
Other ID:		**Submit Date:**	5/29/2013
No Other ID:		**Last Modified:**	5/29/2015 3:28:24 PM
Track ID:	112901	**Contact ID:**	
Report ID:	88868028	**Cont Type:**	
Report Type:	NPRI	**Contact Title:**	
Rpt Type ID:	1	**Cont First Name:**	
Report Year:	2012	**Cont Last Name:**	
Not-Current Rpt?:	No	**Contact Position:**	
Yr of Last Filed Rpt:	2013	**Contact Fax:**	
Fac ID:	235913	**Contact Ph.:**	
Fac Name:	Station 1301 - Kirkwall	**Cont Area Code:**	
Fac Address1:	NOT AVAILABLE	**Contact Tel.:**	
Fac Address2:		**Contact Ext.:**	
Fac Postal Zip:		**Cont Fax Area Cde:**	
Facility Lat:	43.35	**Contact Fax:**	
Facility Long:	-80.1199	**Contact Email:**	
DLS (Last Filed Rpt):		**Latitude:**	43.35
Facility DLS:		**Longitude:**	-80.1199
Datum:	1983	**UTM Zone:**	
Facility Cmnts:		**UTM Northing:**	
URL:		**UTM Easting:**	
No of Empl.:	1	**Waste Streams:**	
Parent Co.:		**No Streams:**	
No Parent Co.:		**Waste Off Sites:**	
Pollut Prev Cmnts:		**No Off Sites:**	
Stacks:		**Shutdown:**	
No of Stacks:		**No of Shutdown:**	
Canadian SIC Code (2 digit):			
Canadian SIC Code:			
SIC Code Description:			
American SIC Code:			
NAICS Code (2 digit):	48		
NAICS 2 Description:	Transportation and Warehousing		
NAICS Code (4 digit):	4862		
NAICS 4 Description:	Pipeline transportation of natural gas		
NAICS Code (6 digit):	486210		
NAICS 6 Description:	Pipeline transportation of natural gas		

Substance Release Report

Category Type ID:	1
Category Type Desc:	Stack / Point
Category Type Desc (fr):	Rejets de cheminée ou ponctuels
Grouping:	Total Air
Trans Code:	ASta
Chem:	Nitrogen oxides (expressed as NO2)
Chem (fr):	Oxydes d'azote (exprimés en NO2)
Quantity:	30.149
Unit:	tonnes
Basis of Estimate Cd:	E2
Basis of Estimate Desc:	E2- Published Emission Factors - In use from 2003 and onward

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
37	1 of 1	ENE/127.3	258.9 / -11.00	lot 13 con 9 ON	WWIS

Well ID:	6808147	**Data Entry Status:**	
Construction Date:		**Data Src:**	1
Primary Water Use:	Domestic	**Date Received:**	7/10/1972
Sec. Water Use:	0	**Selected Flag:**	Yes
Final Well Status:	Water Supply	**Abandonment Rec:**	
Water Type:		**Contractor:**	1620
Casing Material:		**Form Version:**	1
Audit No:		**Owner:**	
Tag:		**Street Name:**	
Construction Method:		**County:**	WENTWORTH
Elevation (m):		**Municipality:**	EAST FLAMBOROUGH TOWNSHIP
Elevation Reliability:		**Site Info:**	
Depth to Bedrock:		**Lot:**	013
Well Depth:		**Concession:**	09
Overburden/Bedrock:		**Concession Name:**	CON
Pump Rate:		**Easting NAD83:**	
Static Water Level:		**Northing NAD83:**	
Flowing (Y/N):		**Zone:**	
Flow Rate:		**UTM Reliability:**	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10485528	**Elevation:**	258.84
DP2BR:	26	**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:	r	**East83:**	580394.4
Code OB Desc:	Bedrock	**Org CS:**	
Open Hole:		**North83:**	4803363
Cluster Kind:		**UTMRC:**	4
Date Completed:	19-MAY-72	**UTMRC Desc:**	margin of error : 30 m - 100 m
Remarks:		**Location Method:**	p4
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932687523
Layer:	2
Color:	
General Color:	
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	26
Formation End Depth:	37
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932687522

Layer:	1
Color:	6
General Color:	BROWN
Mat1:	05
Most Common Material:	CLAY
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	0
Formation End Depth:	26
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966808147
Method Construction Code:	1
Method Construction:	Cable Tool
Other Method Construction:	

Pipe Information

Pipe ID:	11034098
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930794076
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	26
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Casing

Casing ID:	930794077
Layer:	2
Material:	4
Open Hole or Material:	OPEN HOLE
Depth From:	
Depth To:	37
Casing Diameter:	
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pump Test ID:	996808147
Pump Set At:	
Static Level:	16
Final Level After Pumping:	20
Recommended Pump Depth:	35
Pumping Rate:	20
Flowing Rate:	
Recommended Pump Rate:	18

Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	1
Water State After Test:	CLEAR
Pumping Test Method:	2
Pumping Duration HR:	1
Pumping Duration MIN:	0
Flowing:	N

Draw Down & Recovery

Pump Test Detail ID:	934870297
Test Type:	Recovery
Test Duration:	45
Test Level:	16
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934354070
Test Type:	Recovery
Test Duration:	15
Test Level:	16
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934618063
Test Type:	Recovery
Test Duration:	30
Test Level:	16
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	935130814
Test Type:	Recovery
Test Duration:	60
Test Level:	16
Test Level UOM:	ft

Water Details

Water ID:	933977011
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	36
Water Found Depth UOM:	ft

38 ***1 of 1*** ***ENE/127.8*** ***257.5 / -12.39*** ***ON*** ***BORE***

Borehole ID:	891539	***Type:***	Borehole
Use:	Geotechnical/Geological Investigation	***Status:***	Decommissioned
Drill Method:	Hand auger	***UTM Zone:***	17
Easting:	580191	***Northing:***	4803523
Location Accuracy:		***Orig. Ground Elev m:***	256
Elev. Reliability Note:		***DEM Ground Elev m:***	259
Total Depth m:	3.5	***Primary Name:***	
Township:	EAST FLAMBOROUGH	***Concession:***	CON 9

Lot:	LOT 13	**Municipality:**	
Completion Date:	28-JUL-1999	**Static Water Level:**	.3
Primary Water Use:		**Sec. Water Use:**	

--Details--

Stratum ID:	8505134	**Top Depth(m):**	0.0
Bottom Depth(m):	0.7	**Stratum Desc:**	0.3m Topsoil, brown. Sand fill with gravel, very loose, wet.
Stratum ID:	8505135	**Top Depth(m):**	0.7
Bottom Depth(m):	1.1	**Stratum Desc:**	Black, peat, wet
Stratum ID:	8505136	**Top Depth(m):**	1.1
Bottom Depth(m):	1.7	**Stratum Desc:**	Grey/black, sand with gravel and frequent peat layers. Very loose, wet.
Stratum ID:	8505137	**Top Depth(m):**	1.7
Bottom Depth(m):	3.5	**Stratum Desc:**	Grey. Sand. Some gravel, trace silt, wet. Loose, compact

---

39 ***1 of 1*** ***ENE/128.1*** ***257.4 / -12.42*** ***ON*** ***BORE***

Borehole ID:	891536	**Type:**	Borehole
Use:	Geotechnical/Geological Investigation	**Status:**	Decommissioned
Drill Method:	Hand auger	**UTM Zone:**	17
Easting:	580158	**Northing:**	4803493
Location Accuracy:		**Orig. Ground Elev m:**	256
Elev. Reliability Note:		**DEM Ground Elev m:**	259
Total Depth m:	3	**Primary Name:**	
Township:	WEST FLAMBOROUGH	**Concession:**	CON 7
Lot:	LOT 11	**Municipality:**	
Completion Date:	28-JUL-1999	**Static Water Level:**	.6
Primary Water Use:		**Sec. Water Use:**	

--Details--

Stratum ID:	8505125	**Top Depth(m):**	0.0
Bottom Depth(m):	1.5	**Stratum Desc:**	0.15m Topsoil. Brown, sand fill, with gravel, trace cobbles. Compact, wet
Stratum ID:	8505126	**Top Depth(m):**	1.5
Bottom Depth(m):	2.4	**Stratum Desc:**	brown/Black. Mixture of silty, clay, sand and organics (Fill) Loose to compact, wet
Stratum ID:	8505127	**Top Depth(m):**	2.4
Bottom Depth(m):	3.0	**Stratum Desc:**	Brown, sand and gravel with frequent clayey silt till-like layers compact, wet

---

40 ***1 of 1*** ***ENE/132.0*** ***257.4 / -12.42*** ***ON*** ***BORE***

Borehole ID:	891532	**Type:**	Borehole
Use:	Geotechnical/Geological Investigation	**Status:**	Decommissioned
Drill Method:	Hollow stem auger	**UTM Zone:**	17
Easting:	580164	**Northing:**	4803504
Location Accuracy:		**Orig. Ground Elev m:**	260
Elev. Reliability Note:		**DEM Ground Elev m:**	260
Total Depth m:	10.3	**Primary Name:**	
Township:	WEST FLAMBOROUGH	**Concession:**	CON 7
Lot:	LOT 11	**Municipality:**	
Completion Date:	09-JUL-1999	**Static Water Level:**	4.4

Primary Water Use: ***Sec. Water Use:***

--Details--

Stratum ID:	8505111	***Top Depth(m):***	0.0
Bottom Depth(m):	1.2	***Stratum Desc:***	Brown, sand fill with gravel damp
Stratum ID:	8505112	***Top Depth(m):***	1.2
Bottom Depth(m):	2.5	***Stratum Desc:***	Brown, mixture of silt, clay and gravel (Fill) loose, damp
Stratum ID:	8505113	***Top Depth(m):***	2.5
Bottom Depth(m):	4.1	***Stratum Desc:***	Black/Brown, mixture of gravel, sand, silt and topsoil (fill) compact, damp
Stratum ID:	8505114	***Top Depth(m):***	2.5
Bottom Depth(m):	4.1	***Stratum Desc:***	Grey/Black mixture of gravel, sand, silt and topsoil (Fill) compact, damp
Stratum ID:	8505115	***Top Depth(m):***	4.1
Bottom Depth(m):	5.0	***Stratum Desc:***	Grey/black. Sand with frequent peat layers very loose, wet.
Stratum ID:	8505116	***Top Depth(m):***	5.0
Bottom Depth(m):	8.2	***Stratum Desc:***	Grey, sand and gravel, trace silt, wet. Occasional silty layers. Loose to compact to dense
Stratum ID:	8505117	***Top Depth(m):***	8.2
Bottom Depth(m):	10.3	***Stratum Desc:***	Grey, heterogeneous mixture of silt, sand and gravel (glacial Till) wet. Loose to dense to very dense

---

41 ***1 of 1*** ***ENE/137.0*** ***264.8 / -5.08*** ***lot 6 con 7 ON*** ***WWIS***

Well ID:	6809552	***Data Entry Status:***	
Construction Date:		***Data Src:***	1
Primary Water Use:	Domestic	***Date Received:***	1/28/1977
Sec. Water Use:	0	***Selected Flag:***	Yes
Final Well Status:	Water Supply	***Abandonment Rec:***	
Water Type:		***Contractor:***	4005
Casing Material:		***Form Version:***	1
Audit No:		***Owner:***	
Tag:		***Street Name:***	
Construction Method:		***County:***	WENTWORTH
Elevation (m):		***Municipality:***	WEST FLAMBOROUGH TOWNSHIP
Elevation Reliability:		***Site Info:***	
Depth to Bedrock:		***Lot:***	006
Well Depth:		***Concession:***	07
Overburden/Bedrock:		***Concession Name:***	CON
Pump Rate:		***Easting NAD83:***	
Static Water Level:		***Northing NAD83:***	
Flowing (Y/N):		***Zone:***	
Flow Rate:		***UTM Reliability:***	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10486895	***Elevation:***	266.11
DP2BR:	33	***Elevrc:***	
Spatial Status:		***Zone:***	17
Code OB:	r	***East83:***	578454.4
Code OB Desc:	Bedrock	***Org CS:***	

Open Hole:
Cluster Kind:
Date Completed: 10-DEC-76
Remarks:
Elevrc Desc:
Location Source Date:
Improvement Location Source:
Improvement Location Method:
Source Revision Comment:
Supplier Comment:

North83: 4802763
UTMRC: 4
UTMRC Desc: margin of error : 30 m - 100 m
Location Method: p4

Overburden and Bedrock Materials Interval

Formation ID: 932691857
Layer: 1
Color: 6
General Color: BROWN
Mat1: 28
Most Common Material: SAND
Mat2: 77
Other Materials: LOOSE
Mat3:
Other Materials:
Formation Top Depth: 0
Formation End Depth: 31
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 932691858
Layer: 2
Color: 6
General Color: BROWN
Mat1: 28
Most Common Material: SAND
Mat2: 11
Other Materials: GRAVEL
Mat3: 77
Other Materials: LOOSE
Formation Top Depth: 31
Formation End Depth: 33
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 932691859
Layer: 3
Color: 2
General Color: GREY
Mat1: 15
Most Common Material: LIMESTONE
Mat2: 73
Other Materials: HARD
Mat3:
Other Materials:
Formation Top Depth: 33
Formation End Depth: 37
Formation End Depth UOM: ft

Method of Construction & Well Use

Method Construction ID:	966809552
Method Construction Code:	1
Method Construction:	Cable Tool
Other Method Construction:	

Pipe Information

Pipe ID:	11035465
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930796206
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	34
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Casing

Casing ID:	930796207
Layer:	2
Material:	4
Open Hole or Material:	OPEN HOLE
Depth From:	
Depth To:	37
Casing Diameter:	
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pump Test ID:	996809552
Pump Set At:	
Static Level:	17
Final Level After Pumping:	22
Recommended Pump Depth:	30
Pumping Rate:	25
Flowing Rate:	
Recommended Pump Rate:	10
Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	1
Water State After Test:	CLEAR
Pumping Test Method:	2
Pumping Duration HR:	3
Pumping Duration MIN:	0
Flowing:	N

Draw Down & Recovery

Pump Test Detail ID:	934349748
Test Type:	Recovery

Test Duration: 15
Test Level: 17
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934874240
Test Type: Recovery
Test Duration: 45
Test Level: 17
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934613688
Test Type: Recovery
Test Duration: 30
Test Level: 17
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 935143551
Test Type: Recovery
Test Duration: 60
Test Level: 17
Test Level UOM: ft

Water Details

Water ID: 933978751
Layer: 1
Kind Code: 1
Kind: FRESH
Water Found Depth: 35
Water Found Depth UOM: ft

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42 | **1 of 1** | **W/139.1** | **276.6 / 6.76** | **lot 35 con 7 ON** | **WWIS**

Well ID: 6810002
Construction Date:
Primary Water Use: Livestock
Sec. Water Use: Domestic
Final Well Status: Water Supply
Water Type:
Casing Material:
Audit No:
Tag:
Construction Method:
Elevation (m):
Elevation Reliability:
Depth to Bedrock:
Well Depth:
Overburden/Bedrock:
Pump Rate:
Static Water Level:
Flowing (Y/N):
Flow Rate:
Clear/Cloudy:

Data Entry Status:
Data Src: 1
Date Received: 11/9/1979
Selected Flag: Yes
Abandonment Rec:
Contractor: 4005
Form Version: 1
Owner:
Street Name:
County: WENTWORTH
Municipality: BEVERLY TOWNSHIP
Site Info:
Lot: 035
Concession: 07
Concession Name: CON
Easting NAD83:
Northing NAD83:
Zone:
UTM Reliability:

Bore Hole Information

Bore Hole ID:	10487332	***Elevation:***	277.41
DP2BR:	35	***Elevrc:***	
Spatial Status:		***Zone:***	17
Code OB:	r	***East83:***	575274.3
Code OB Desc:	Bedrock	***Org CS:***	
Open Hole:		***North83:***	4802023
Cluster Kind:		***UTMRC:***	4
Date Completed:	15-OCT-79	***UTMRC Desc:***	margin of error : 30 m - 100 m
Remarks:		***Location Method:***	p4
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932693342
Layer:	4
Color:	2
General Color:	GREY
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	73
Other Materials:	HARD
Mat3:	
Other Materials:	
Formation Top Depth:	35
Formation End Depth:	90
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932693341
Layer:	3
Color:	2
General Color:	GREY
Mat1:	28
Most Common Material:	SAND
Mat2:	11
Other Materials:	GRAVEL
Mat3:	77
Other Materials:	LOOSE
Formation Top Depth:	26
Formation End Depth:	35
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932693340
Layer:	2
Color:	2
General Color:	GREY
Mat1:	05
Most Common Material:	CLAY
Mat2:	81
Other Materials:	SANDY

Mat3: 77
Other Materials: LOOSE
Formation Top Depth: 9
Formation End Depth: 26
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 932693339
Layer: 1
Color: 6
General Color: BROWN
Mat1: 05
Most Common Material: CLAY
Mat2: 81
Other Materials: SANDY
Mat3: 77
Other Materials: LOOSE
Formation Top Depth: 0
Formation End Depth: 9
Formation End Depth UOM: ft

Method of Construction & Well Use

Method Construction ID: 966810002
Method Construction Code: 1
Method Construction: Cable Tool
Other Method Construction:

Pipe Information

Pipe ID: 11035902
Casing No: 1
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 930796860
Layer: 2
Material: 4
Open Hole or Material: OPEN HOLE
Depth From:
Depth To: 90
Casing Diameter:
Casing Diameter UOM: inch
Casing Depth UOM: ft

Construction Record - Casing

Casing ID: 930796859
Layer: 1
Material: 1
Open Hole or Material: STEEL
Depth From:
Depth To: 35
Casing Diameter: 6
Casing Diameter UOM: inch
Casing Depth UOM: ft

Results of Well Yield Testing

Pump Test ID:	996810002
Pump Set At:	
Static Level:	35
Final Level After Pumping:	78
Recommended Pump Depth:	88
Pumping Rate:	8
Flowing Rate:	
Recommended Pump Rate:	7
Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	1
Water State After Test:	CLEAR
Pumping Test Method:	2
Pumping Duration HR:	2
Pumping Duration MIN:	0
Flowing:	N

Draw Down & Recovery

Pump Test Detail ID:	934623463
Test Type:	Recovery
Test Duration:	30
Test Level:	37
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	935145254
Test Type:	Recovery
Test Duration:	60
Test Level:	35
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934351366
Test Type:	Recovery
Test Duration:	15
Test Level:	46
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934875381
Test Type:	Recovery
Test Duration:	45
Test Level:	35
Test Level UOM:	ft

Water Details

Water ID:	933979271
Layer:	1
Kind Code:	3
Kind:	SULPHUR
Water Found Depth:	87
Water Found Depth UOM:	ft

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
43	1 of 1	ENE/139.7	262.9 / -6.95	lot 10 con 7 ON	WWIS

Well ID:	6810186	**Data Entry Status:**	
Construction Date:		**Data Src:**	1
Primary Water Use:	Domestic	**Date Received:**	1/16/1981
Sec. Water Use:	0	**Selected Flag:**	Yes
Final Well Status:	Water Supply	**Abandonment Rec:**	
Water Type:		**Contractor:**	4005
Casing Material:		**Form Version:**	1
Audit No:		**Owner:**	
Tag:		**Street Name:**	
Construction Method:		**County:**	WENTWORTH
Elevation (m):		**Municipality:**	WEST FLAMBOROUGH TOWNSHIP
Elevation Reliability:		**Site Info:**	
Depth to Bedrock:		**Lot:**	010
Well Depth:		**Concession:**	07
Overburden/Bedrock:		**Concession Name:**	CON
Pump Rate:		**Easting NAD83:**	
Static Water Level:		**Northing NAD83:**	
Flowing (Y/N):		**Zone:**	
Flow Rate:		**UTM Reliability:**	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10487515	**Elevation:**	262.73
DP2BR:	39	**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:	r	**East83:**	579874.4
Code OB Desc:	Bedrock	**Org CS:**	
Open Hole:		**North83:**	4802983
Cluster Kind:		**UTMRC:**	4
Date Completed:	12-JAN-80	**UTMRC Desc:**	margin of error : 30 m - 100 m
Remarks:		**Location Method:**	p4
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932693950
Layer:	1
Color:	6
General Color:	BROWN
Mat1:	28
Most Common Material:	SAND
Mat2:	11
Other Materials:	GRAVEL
Mat3:	77
Other Materials:	LOOSE
Formation Top Depth:	0
Formation End Depth:	21
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932693952

Layer:	3
Color:	2
General Color:	GREY
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	73
Other Materials:	HARD
Mat3:	
Other Materials:	
Formation Top Depth:	39
Formation End Depth:	41
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932693951
Layer:	2
Color:	2
General Color:	GREY
Mat1:	28
Most Common Material:	SAND
Mat2:	11
Other Materials:	GRAVEL
Mat3:	77
Other Materials:	LOOSE
Formation Top Depth:	21
Formation End Depth:	39
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966810186
Method Construction Code:	1
Method Construction:	Cable Tool
Other Method Construction:	

Pipe Information

Pipe ID:	11036085
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930797117
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	39
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Casing

Casing ID:	930797118
Layer:	2
Material:	4

Open Hole or Material: OPEN HOLE
Depth From:
Depth To: 41
Casing Diameter:
Casing Diameter UOM: inch
Casing Depth UOM: ft

Results of Well Yield Testing

Pump Test ID: 996810186
Pump Set At:
Static Level: 23
Final Level After Pumping: 25
Recommended Pump Depth: 35
Pumping Rate: 30
Flowing Rate:
Recommended Pump Rate: 10
Levels UOM: ft
Rate UOM: GPM
Water State After Test Code: 2
Water State After Test: CLOUDY
Pumping Test Method: 2
Pumping Duration HR: 1
Pumping Duration MIN: 0
Flowing: N

Draw Down & Recovery

Pump Test Detail ID: 934624573
Test Type: Recovery
Test Duration: 30
Test Level: 23
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934351928
Test Type: Recovery
Test Duration: 15
Test Level: 23
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 935146365
Test Type: Recovery
Test Duration: 60
Test Level: 23
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934875934
Test Type: Recovery
Test Duration: 45
Test Level: 23
Test Level UOM: ft

Water Details

Water ID: 933979525

Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	40
Water Found Depth UOM:	ft

44 **1 of 1** **SW/166.5** **270.9 / 1.00** **lot 33 con 7 ON** **WWIS**

Well ID:	6810279	**Data Entry Status:**	
Construction Date:		**Data Src:**	1
Primary Water Use:	Domestic	**Date Received:**	9/30/1981
Sec. Water Use:	0	**Selected Flag:**	Yes
Final Well Status:	Water Supply	**Abandonment Rec:**	
Water Type:		**Contractor:**	4602
Casing Material:		**Form Version:**	1
Audit No:		**Owner:**	
Tag:		**Street Name:**	
Construction Method:		**County:**	WENTWORTH
Elevation (m):		**Municipality:**	BEVERLY TOWNSHIP
Elevation Reliability:		**Site Info:**	
Depth to Bedrock:		**Lot:**	033
Well Depth:		**Concession:**	07
Overburden/Bedrock:		**Concession Name:**	CON
Pump Rate:		**Easting NAD83:**	
Static Water Level:		**Northing NAD83:**	
Flowing (Y/N):		**Zone:**	
Flow Rate:		**UTM Reliability:**	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10487605	**Elevation:**	271.33
DP2BR:	16	**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:	r	**East83:**	574894.3
Code OB Desc:	Bedrock	**Org CS:**	
Open Hole:		**North83:**	4800703
Cluster Kind:		**UTMRC:**	4
Date Completed:	11-MAY-81	**UTMRC Desc:**	margin of error : 30 m - 100 m
Remarks:		**Location Method:**	p4
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932694241
Layer:	2
Color:	
General Color:	
Mat1:	05
Most Common Material:	CLAY
Mat2:	11
Other Materials:	GRAVEL
Mat3:	
Other Materials:	
Formation Top Depth:	12
Formation End Depth:	16

Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 932694240
Layer: 1
Color: 6
General Color: BROWN
Mat1: 05
Most Common Material: CLAY
Mat2: 13
Other Materials: BOULDERS
Mat3:
Other Materials:
Formation Top Depth: 0
Formation End Depth: 12
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 932694242
Layer: 3
Color: 2
General Color: GREY
Mat1: 15
Most Common Material: LIMESTONE
Mat2:
Other Materials:
Mat3:
Other Materials:
Formation Top Depth: 16
Formation End Depth: 49
Formation End Depth UOM: ft

Method of Construction & Well Use

Method Construction ID: 966810279
Method Construction Code: 1
Method Construction: Cable Tool
Other Method Construction:

Pipe Information

Pipe ID: 11036175
Casing No: 1
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 930797236
Layer: 2
Material: 4
Open Hole or Material: OPEN HOLE
Depth From:
Depth To: 49
Casing Diameter:
Casing Diameter UOM: inch
Casing Depth UOM: ft

Construction Record - Casing

Casing ID:	930797235
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	16
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pump Test ID:	996810279
Pump Set At:	
Static Level:	16
Final Level After Pumping:	43
Recommended Pump Depth:	47
Pumping Rate:	18
Flowing Rate:	
Recommended Pump Rate:	15
Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	2
Water State After Test:	CLOUDY
Pumping Test Method:	2
Pumping Duration HR:	1
Pumping Duration MIN:	0
Flowing:	N

Draw Down & Recovery

Pump Test Detail ID:	934352010
Test Type:	Draw Down
Test Duration:	15
Test Level:	43
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	935146429
Test Type:	Draw Down
Test Duration:	60
Test Level:	43
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934624635
Test Type:	Draw Down
Test Duration:	30
Test Level:	43
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934867096
Test Type:	Draw Down
Test Duration:	45

Test Level: 43
Test Level UOM: ft

Water Details

Water ID: 933979632
Layer: 2
Kind Code: 1
Kind: FRESH
Water Found Depth: 43
Water Found Depth UOM: ft

Water Details

Water ID: 933979631
Layer: 1
Kind Code: 1
Kind: FRESH
Water Found Depth: 21
Water Found Depth UOM: ft

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45 | **1 of 1** | **WSW/183.7** | **271.8 / 1.97** | **lot 30 con 7 ON** | **WWIS**

Well ID: 6809041
Construction Date:
Primary Water Use: Domestic
Sec. Water Use: 0
Final Well Status: Water Supply
Water Type:
Casing Material:
Audit No:
Tag:
Construction Method:
Elevation (m):
Elevation Reliability:
Depth to Bedrock:
Well Depth:
Overburden/Bedrock:
Pump Rate:
Static Water Level:
Flowing (Y/N):
Flow Rate:
Clear/Cloudy:

Data Entry Status:
Data Src: 1
Date Received: 12/30/1974
Selected Flag: Yes
Abandonment Rec:
Contractor: 4208
Form Version: 1
Owner:
Street Name:
County: WENTWORTH
Municipality: BEVERLY TOWNSHIP
Site Info:
Lot: 030
Concession: 07
Concession Name: CON
Easting NAD83:
Northing NAD83:
Zone:
UTM Reliability:

Bore Hole Information

Bore Hole ID: 10486394
DP2BR: 0
Spatial Status:
Code OB: r
Code OB Desc: Bedrock
Open Hole:
Cluster Kind:
Date Completed: 13-AUG-74
Remarks:
Elevrc Desc:
Location Source Date:
Improvement Location Source:
Improvement Location Method:
Source Revision Comment:
Supplier Comment:

Elevation: 271.98
Elevrc:
Zone: 17
East83: 573439.3
Org CS:
North83: 4800903
UTMRC: 4
UTMRC Desc: margin of error : 30 m - 100 m
Location Method: p4

Overburden and Bedrock Materials Interval

Formation ID:	932690327
Layer:	2
Color:	2
General Color:	GREY
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	5
Formation End Depth:	36
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932690326
Layer:	1
Color:	2
General Color:	GREY
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	0
Formation End Depth:	5
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966809041
Method Construction Code:	2
Method Construction:	Rotary (Convent.)
Other Method Construction:	

Pipe Information

Pipe ID:	11034964
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930795481
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	10
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Casing

Casing ID:	930795482
Layer:	2
Material:	4
Open Hole or Material:	OPEN HOLE
Depth From:	
Depth To:	36
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pump Test ID:	996809041
Pump Set At:	
Static Level:	15
Final Level After Pumping:	35
Recommended Pump Depth:	35
Pumping Rate:	8
Flowing Rate:	
Recommended Pump Rate:	8
Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	1
Water State After Test:	CLEAR
Pumping Test Method:	1
Pumping Duration HR:	1
Pumping Duration MIN:	0
Flowing:	N

Draw Down & Recovery

Pump Test Detail ID:	934356861
Test Type:	Recovery
Test Duration:	15
Test Level:	15
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934620824
Test Type:	Recovery
Test Duration:	30
Test Level:	15
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	935142488
Test Type:	Recovery
Test Duration:	60
Test Level:	15
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934873038
Test Type:	Recovery
Test Duration:	45
Test Level:	15

Test Level UOM: ft

Water Details

Water ID: 933978113
Layer: 1
Kind Code: 1
Kind: FRESH
Water Found Depth: 33
Water Found Depth UOM: ft

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46 | ***1 of 1*** | ***W/191.6*** | ***274.5 / 4.69*** | ***lot 34 con 7 ON*** | ***WWIS***

Well ID: 6800950
Construction Date:
Primary Water Use: Domestic
Sec. Water Use: 0
Final Well Status: Water Supply
Water Type:
Casing Material:
Audit No:
Tag:
Construction Method:
Elevation (m):
Elevation Reliability:
Depth to Bedrock:
Well Depth:
Overburden/Bedrock:
Pump Rate:
Static Water Level:
Flowing (Y/N):
Flow Rate:
Clear/Cloudy:

Data Entry Status:
Data Src: 1
Date Received: 7/26/1965
Selected Flag: Yes
Abandonment Rec:
Contractor: 1205
Form Version: 1
Owner:
Street Name:
County: WENTWORTH
Municipality: BEVERLY TOWNSHIP
Site Info:
Lot: 034
Concession: 07
Concession Name: CON
Easting NAD83:
Northing NAD83:
Zone:
UTM Reliability:

Bore Hole Information

Bore Hole ID: 10478468
DP2BR: 0
Spatial Status:
Code OB: r
Code OB Desc: Bedrock
Open Hole:
Cluster Kind:
Date Completed: 26-MAY-65
Remarks:
Elevrc Desc:
Location Source Date:
Improvement Location Source:
Improvement Location Method:
Source Revision Comment:
Supplier Comment:

Elevation: 271.32
Elevrc:
Zone: 17
East83: 574782.3
Org CS:
North83: 4801934
UTMRC: 5
UTMRC Desc: margin of error : 100 m - 300 m
Location Method: p5

Overburden and Bedrock Materials Interval

Formation ID: 932665827
Layer: 1
Color: 6
General Color: BROWN
Mat1: 15
Most Common Material: LIMESTONE

Mat2:
Other Materials:
Mat3:
Other Materials:
Formation Top Depth: 0
Formation End Depth: 62
Formation End Depth UOM: ft

Method of Construction & Well Use

Method Construction ID: 966800950
Method Construction Code: 1
Method Construction: Cable Tool
Other Method Construction:

Pipe Information

Pipe ID: 11027038
Casing No: 1
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 930781207
Layer: 1
Material: 1
Open Hole or Material: STEEL
Depth From:
Depth To: 15
Casing Diameter: 6
Casing Diameter UOM: inch
Casing Depth UOM: ft

Construction Record - Casing

Casing ID: 930781208
Layer: 2
Material: 4
Open Hole or Material: OPEN HOLE
Depth From:
Depth To: 62
Casing Diameter: 6
Casing Diameter UOM: inch
Casing Depth UOM: ft

Results of Well Yield Testing

Pump Test ID: 996800950
Pump Set At:
Static Level: 12
Final Level After Pumping: 12
Recommended Pump Depth: 50
Pumping Rate: 12
Flowing Rate:
Recommended Pump Rate: 5
Levels UOM: ft
Rate UOM: GPM
Water State After Test Code: 1
Water State After Test: CLEAR
Pumping Test Method: 1

Pumping Duration HR: 1
Pumping Duration MIN: 0
Flowing: N

Water Details

Water ID: 933969524
Layer: 1
Kind Code: 1
Kind: FRESH
Water Found Depth: 61
Water Found Depth UOM: ft

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47 | **1 of 1** | **ENE/193.9** | **264.9 / -5.00** | **lot 36 con 7 ON** | **WWIS**

Well ID: 6813531
Construction Date:
Primary Water Use: Domestic
Sec. Water Use:
Final Well Status: Water Supply
Water Type:
Casing Material:
Audit No: 227093
Tag:
Construction Method:
Elevation (m):
Elevation Reliability:
Depth to Bedrock:
Well Depth:
Overburden/Bedrock:
Pump Rate:
Static Water Level:
Flowing (Y/N):
Flow Rate:
Clear/Cloudy:

Data Entry Status:
Data Src: 1
Date Received: 9/20/2001
Selected Flag: Yes
Abandonment Rec:
Contractor: 4005
Form Version: 1
Owner:
Street Name:
County: WENTWORTH
Municipality: WEST FLAMBOROUGH TOWNSHIP
Site Info:
Lot: 036
Concession: 07
Concession Name: CON
Easting NAD83:
Northing NAD83:
Zone:
UTM Reliability:

Bore Hole Information

Bore Hole ID: 10523120
DP2BR: 48
Spatial Status:
Code OB: r
Code OB Desc: Bedrock
Open Hole:
Cluster Kind:
Date Completed: 10-SEP-01
Remarks:
Elevrc Desc:
Location Source Date:
Improvement Location Source:
Improvement Location Method:
Source Revision Comment:
Supplier Comment:

Elevation: 264.8
Elevrc:
Zone: 17
East83: 578305.9
Org CS:
North83: 4802676
UTMRC: 5
UTMRC Desc: margin of error : 100 m - 300 m
Location Method: gis

Overburden and Bedrock Materials Interval

Formation ID: 932854996
Layer: 1
Color:
General Color:

Mat1:	24
Most Common Material:	PREV. DRILLED
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	0
Formation End Depth:	48
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932854997
Layer:	2
Color:	2
General Color:	GREY
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	73
Other Materials:	HARD
Mat3:	
Other Materials:	
Formation Top Depth:	48
Formation End Depth:	62
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966813531
Method Construction Code:	5
Method Construction:	Air Percussion
Other Method Construction:	

Pipe Information

Pipe ID:	11071690
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930802276
Layer:	1
Material:	4
Open Hole or Material:	OPEN HOLE
Depth From:	
Depth To:	
Casing Diameter:	5
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pump Test ID:	996813531
Pump Set At:	
Static Level:	18
Final Level After Pumping:	49
Recommended Pump Depth:	
Pumping Rate:	25

Flowing Rate:	
Recommended Pump Rate:	
Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	
Water State After Test:	
Pumping Test Method:	
Pumping Duration HR:	1
Pumping Duration MIN:	
Flowing:	N

Draw Down & Recovery

Pump Test Detail ID:	934883776
Test Type:	Recovery
Test Duration:	45
Test Level:	18
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934353193
Test Type:	Recovery
Test Duration:	15
Test Level:	18
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934624220
Test Type:	Recovery
Test Duration:	30
Test Level:	18
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	935144867
Test Type:	Recovery
Test Duration:	60
Test Level:	18
Test Level UOM:	ft

Water Details

Water ID:	934015601
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	57
Water Found Depth UOM:	ft

48	***1 of 1***	***ENE/207.0***	***262.5 / -7.36***	***lot 13 con 9 ON***	***WWIS***

Well ID:	6803040	***Data Entry Status:***	
Construction Date:		***Data Src:***	1
Primary Water Use:	Domestic	***Date Received:***	10/26/1966
Sec. Water Use:	0	***Selected Flag:***	Yes
Final Well Status:	Water Supply	***Abandonment Rec:***	
Water Type:		***Contractor:***	4602

Casing Material:		***Form Version:***	1
Audit No:		***Owner:***	
Tag:		***Street Name:***	
Construction Method:		***County:***	WENTWORTH
Elevation (m):		***Municipality:***	EAST FLAMBOROUGH TOWNSHIP
Elevation Reliability:		***Site Info:***	
Depth to Bedrock:		***Lot:***	013
Well Depth:		***Concession:***	09
Overburden/Bedrock:		***Concession Name:***	CON
Pump Rate:		***Easting NAD83:***	
Static Water Level:		***Northing NAD83:***	
Flowing (Y/N):		***Zone:***	
Flow Rate:		***UTM Reliability:***	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10480501	***Elevation:***	261.82
DP2BR:	57	***Elevrc:***	
Spatial Status:		***Zone:***	17
Code OB:	r	***East83:***	580181.4
Code OB Desc:	Bedrock	***Org CS:***	
Open Hole:		***North83:***	4803621
Cluster Kind:		***UTMRC:***	5
Date Completed:	12-SEP-66	***UTMRC Desc:***	margin of error : 100 m - 300 m
Remarks:		***Location Method:***	p5
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932672180
Layer:	2
Color:	2
General Color:	GREY
Mat1:	05
Most Common Material:	CLAY
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	12
Formation End Depth:	34
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932672181
Layer:	3
Color:	2
General Color:	GREY
Mat1:	05
Most Common Material:	CLAY
Mat2:	12
Other Materials:	STONES
Mat3:	
Other Materials:	

Formation Top Depth: 34
Formation End Depth: 57
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 932672182
Layer: 4
Color: 2
General Color: GREY
Mat1: 15
Most Common Material: LIMESTONE
Mat2:
Other Materials:
Mat3:
Other Materials:
Formation Top Depth: 57
Formation End Depth: 64
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 932672179
Layer: 1
Color: 6
General Color: BROWN
Mat1: 05
Most Common Material: CLAY
Mat2:
Other Materials:
Mat3:
Other Materials:
Formation Top Depth: 0
Formation End Depth: 12
Formation End Depth UOM: ft

Method of Construction & Well Use

Method Construction ID: 966803040
Method Construction Code: 1
Method Construction: Cable Tool
Other Method Construction:

Pipe Information

Pipe ID: 11029071
Casing No: 1
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 930784819
Layer: 2
Material: 4
Open Hole or Material: OPEN HOLE
Depth From:
Depth To: 64
Casing Diameter: 6

Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Casing

Casing ID:	930784818
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	58
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pump Test ID:	996803040
Pump Set At:	
Static Level:	10
Final Level After Pumping:	64
Recommended Pump Depth:	62
Pumping Rate:	5
Flowing Rate:	
Recommended Pump Rate:	5
Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	2
Water State After Test:	CLOUDY
Pumping Test Method:	1
Pumping Duration HR:	2
Pumping Duration MIN:	0
Flowing:	N

Water Details

Water ID:	933971597
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	62
Water Found Depth UOM:	ft

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49 | ***1 of 1*** | ***WSW/213.5*** | ***272.9 / 3.00*** | ***lot 30 con 7 ON*** | ***WWIS***

Well ID:	6813584	**Data Entry Status:**	
Construction Date:		**Data Src:**	1
Primary Water Use:	Domestic	**Date Received:**	12/10/2001
Sec. Water Use:		**Selected Flag:**	Yes
Final Well Status:	Water Supply	**Abandonment Rec:**	
Water Type:		**Contractor:**	4005
Casing Material:		**Form Version:**	1
Audit No:	227146	**Owner:**	
Tag:		**Street Name:**	
Construction Method:		**County:**	WENTWORTH
Elevation (m):		**Municipality:**	BEVERLY TOWNSHIP
Elevation Reliability:		**Site Info:**	
Depth to Bedrock:		**Lot:**	030
Well Depth:		**Concession:**	07
Overburden/Bedrock:		**Concession Name:**	CON
Pump Rate:		**Easting NAD83:**	

Static Water Level:
Flowing (Y/N):
Flow Rate:
Clear/Cloudy:
Northing NAD83:
Zone:
UTM Reliability:

Bore Hole Information

Bore Hole ID:	10523172	***Elevation:***	272.95
DP2BR:	0	***Elevrc:***	
Spatial Status:		***Zone:***	17
Code OB:	r	***East83:***	573461.9
Code OB Desc:	Bedrock	***Org CS:***	
Open Hole:		***North83:***	4800961
Cluster Kind:		***UTMRC:***	5
Date Completed:	21-NOV-01	***UTMRC Desc:***	margin of error : 100 m - 300 m
Remarks:		***Location Method:***	gis
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932855152
Layer:	1
Color:	2
General Color:	GREY
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	0
Formation End Depth:	70
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966813584
Method Construction Code:	4
Method Construction:	Rotary (Air)
Other Method Construction:	

Pipe Information

Pipe ID:	11071742
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930802360
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	

Depth To:
Casing Diameter: 6
Casing Diameter UOM: inch
Casing Depth UOM: ft

Construction Record - Casing

Casing ID: 930802361
Layer: 2
Material: 4
Open Hole or Material: OPEN HOLE
Depth From:
Depth To:
Casing Diameter: 6
Casing Diameter UOM: inch
Casing Depth UOM: ft

Results of Well Yield Testing

Pump Test ID: 996813584
Pump Set At:
Static Level: 12
Final Level After Pumping: 65
Recommended Pump Depth:
Pumping Rate: 12
Flowing Rate:
Recommended Pump Rate:
Levels UOM: ft
Rate UOM: GPM
Water State After Test Code:
Water State After Test:
Pumping Test Method: 1
Pumping Duration HR: 1
Pumping Duration MIN:
Flowing: N

Draw Down & Recovery

Pump Test Detail ID: 935144898
Test Type: Recovery
Test Duration: 60
Test Level: 12
Test Level UOM: ft

Water Details

Water ID: 934015667
Layer: 1
Kind Code: 1
Kind: FRESH
Water Found Depth: 53
Water Found Depth UOM: ft

Water Details

Water ID: 934015668
Layer: 2
Kind Code: 1
Kind: FRESH
Water Found Depth: 66
Water Found Depth UOM: ft

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
50	1 of 1	SSW/215.7	287.9 / 18.08	lot 4 con 7 STRABANE ON	WWIS

Well ID:	6814308	**Data Entry Status:**	
Construction Date:		**Data Src:**	
Primary Water Use:	Livestock	**Date Received:**	8/12/2005
Sec. Water Use:		**Selected Flag:**	Yes
Final Well Status:	Water Supply	**Abandonment Rec:**	
Water Type:		**Contractor:**	4005
Casing Material:		**Form Version:**	3
Audit No:	Z22322	**Owner:**	
Tag:	A022063	**Street Name:**	1437 MIDDLETOWN RD
Construction Method:		**County:**	WENTWORTH
Elevation (m):		**Municipality:**	BEVERLY TOWNSHIP
Elevation Reliability:		**Site Info:**	
Depth to Bedrock:		**Lot:**	004
Well Depth:		**Concession:**	07
Overburden/Bedrock:		**Concession Name:**	CON
Pump Rate:		**Easting NAD83:**	
Static Water Level:		**Northing NAD83:**	
Flowing (Y/N):		**Zone:**	
Flow Rate:		**UTM Reliability:**	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	11327517	**Elevation:**	288.51
DP2BR:	65	**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:	r	**East83:**	575849
Code OB Desc:	Bedrock	**Org CS:**	UTM83
Open Hole:		**North83:**	4801860
Cluster Kind:		**UTMRC:**	4
Date Completed:	22-JUL-05	**UTMRC Desc:**	margin of error : 30 m - 100 m
Remarks:		**Location Method:**	wwr
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	933036247
Layer:	2
Color:	2
General Color:	GREY
Mat1:	11
Most Common Material:	GRAVEL
Mat2:	28
Other Materials:	SAND
Mat3:	
Other Materials:	
Formation Top Depth:	10.66
Formation End Depth:	19.81
Formation End Depth UOM:	m

Overburden and Bedrock Materials Interval

Formation ID:	933036249
Layer:	4
Color:	2
General Color:	GREY
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	32
Formation End Depth:	57.91
Formation End Depth UOM:	m

Overburden and Bedrock Materials Interval

Formation ID:	933036248
Layer:	3
Color:	6
General Color:	BROWN
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	19.81
Formation End Depth:	32
Formation End Depth UOM:	m

Overburden and Bedrock Materials Interval

Formation ID:	933036246
Layer:	1
Color:	6
General Color:	BROWN
Mat1:	05
Most Common Material:	CLAY
Mat2:	81
Other Materials:	SANDY
Mat3:	11
Other Materials:	GRAVEL
Formation Top Depth:	0
Formation End Depth:	10.66
Formation End Depth UOM:	m

Annular Space/Abandonment Sealing Record

Plug ID:	933274795
Layer:	1
Plug From:	0
Plug To:	6
Plug Depth UOM:	m

Method of Construction & Well Use

Method Construction ID:	966814308
Method Construction Code:	5

Method Construction: Air Percussion
Other Method Construction:

Pipe Information

Pipe ID: 11342372
Casing No: 1
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 930872386
Layer: 2
Material: 4
Open Hole or Material: OPEN HOLE
Depth From: 19.81
Depth To: 57.91
Casing Diameter:
Casing Diameter UOM: cm
Casing Depth UOM: m

Construction Record - Casing

Casing ID: 930872385
Layer: 1
Material: 1
Open Hole or Material: STEEL
Depth From: -.75
Depth To: 19.81
Casing Diameter: 15.2
Casing Diameter UOM: cm
Casing Depth UOM: m

Results of Well Yield Testing

Pump Test ID: 11353153
Pump Set At: 56
Static Level: 22.86
Final Level After Pumping: 54.86
Recommended Pump Depth: 56.5
Pumping Rate: 45.46
Flowing Rate:
Recommended Pump Rate: 45.46
Levels UOM: m
Rate UOM: LPM
Water State After Test Code: 1
Water State After Test: CLEAR
Pumping Test Method: 1
Pumping Duration HR: 1
Pumping Duration MIN: 0
Flowing:

Draw Down & Recovery

Pump Test Detail ID: 11433528
Test Type: Recovery
Test Duration: 50
Test Level: 23.31
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 11433532
Test Type: Draw Down
Test Duration: 5
Test Level: 39.62
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 11433552
Test Type: Draw Down
Test Duration: 4
Test Level: 36.88
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 11433529
Test Type: Draw Down
Test Duration: 60
Test Level: 54.86
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 11433534
Test Type: Draw Down
Test Duration: 15
Test Level: 47.54
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 11433536
Test Type: Draw Down
Test Duration: 3
Test Level: 35.69
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 11433541
Test Type: Recovery
Test Duration: 4
Test Level: 44.5
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 11433549
Test Type: Draw Down
Test Duration: 30
Test Level: 53.85
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 11433543
Test Type: Recovery

Test Duration: 10
Test Level: 35.35
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 11433545
Test Type: Draw Down
Test Duration: 20
Test Level: 50.59
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 11433550
Test Type: Recovery
Test Duration: 30
Test Level: 24.38
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 11433527
Test Type: Draw Down
Test Duration: 10
Test Level: 41.43
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 11433538
Test Type: Draw Down
Test Duration: 2
Test Level: 31.18
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 11433542
Test Type: Recovery
Test Duration: 5
Test Level: 42.97
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 11433535
Test Type: Recovery
Test Duration: 3
Test Level: 46.02
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 11433530
Test Type: Recovery
Test Duration: 60
Test Level: 22.86
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 11433537
Test Type: Recovery
Test Duration: 2
Test Level: 48.46
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 11433544
Test Type: Recovery
Test Duration: 15
Test Level: 36.78
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 11433548
Test Type: Recovery
Test Duration: 25
Test Level: 26.82
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 11433531
Test Type: Draw Down
Test Duration: 50
Test Level: 54.71
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 11433533
Test Type: Recovery
Test Duration: 40
Test Level: 23.77
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 11433539
Test Type: Recovery
Test Duration: 1
Test Level: 51.08
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 11433540
Test Type: Draw Down
Test Duration: 1
Test Level: 28.86
Test Level UOM: m

Draw Down & Recovery

Pump Test Detail ID: 11433546

Test Type:	Recovery
Test Duration:	20
Test Level:	27.73
Test Level UOM:	m

Draw Down & Recovery

Pump Test Detail ID:	11433547
Test Type:	Draw Down
Test Duration:	25
Test Level:	52.66
Test Level UOM:	m

Draw Down & Recovery

Pump Test Detail ID:	11433551
Test Type:	Draw Down
Test Duration:	40
Test Level:	54.49
Test Level UOM:	m

Water Details

Water ID:	934063431
Layer:	2
Kind Code:	
Kind:	
Water Found Depth:	56.99
Water Found Depth UOM:	m

Water Details

Water ID:	934063432
Layer:	1
Kind Code:	
Kind:	
Water Found Depth:	27.43
Water Found Depth UOM:	m

Hole Diameter

Hole ID:	11548559
Diameter:	15.2
Depth From:	6
Depth To:	57.91
Hole Depth UOM:	m
Hole Diameter UOM:	cm

Hole Diameter

Hole ID:	11548560
Diameter:	25.4
Depth From:	0
Depth To:	6
Hole Depth UOM:	m
Hole Diameter UOM:	cm

51	***1 of 1***	***WSW/216.6***	***273.8 / 3.97***	***lot 31 con 7 ON***	***WWIS***

Well ID:	6809021	**Data Entry Status:**	
Construction Date:		**Data Src:**	1
Primary Water Use:	Domestic	**Date Received:**	12/2/1974
Sec. Water Use:	0	**Selected Flag:**	Yes
Final Well Status:	Water Supply	**Abandonment Rec:**	
Water Type:		**Contractor:**	1620
Casing Material:		**Form Version:**	1
Audit No:		**Owner:**	
Tag:		**Street Name:**	
Construction Method:		**County:**	WENTWORTH
Elevation (m):		**Municipality:**	BEVERLY TOWNSHIP
Elevation Reliability:		**Site Info:**	
Depth to Bedrock:		**Lot:**	031
Well Depth:		**Concession:**	07
Overburden/Bedrock:		**Concession Name:**	CON
Pump Rate:		**Easting NAD83:**	
Static Water Level:		**Northing NAD83:**	
Flowing (Y/N):		**Zone:**	
Flow Rate:		**UTM Reliability:**	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10486374	**Elevation:**	274.36
DP2BR:	11	**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:	r	**East83:**	573554.3
Code OB Desc:	Bedrock	**Org CS:**	
Open Hole:		**North83:**	4801043
Cluster Kind:		**UTMRC:**	4
Date Completed:	19-AUG-74	**UTMRC Desc:**	margin of error : 30 m - 100 m
Remarks:		**Location Method:**	p4
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932690275
Layer:	1
Color:	6
General Color:	BROWN
Mat1:	05
Most Common Material:	CLAY
Mat2:	13
Other Materials:	BOULDERS
Mat3:	
Other Materials:	
Formation Top Depth:	0
Formation End Depth:	11
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932690276
Layer:	2
Color:	0
General Color:	

Mat1: 15
Most Common Material: LIMESTONE
Mat2:
Other Materials:
Mat3:
Other Materials:
Formation Top Depth: 11
Formation End Depth: 60
Formation End Depth UOM: ft

Method of Construction & Well Use

Method Construction ID: 966809021
Method Construction Code: 1
Method Construction: Cable Tool
Other Method Construction:

Pipe Information

Pipe ID: 11034944
Casing No: 1
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 930795452
Layer: 1
Material: 1
Open Hole or Material: STEEL
Depth From:
Depth To: 13
Casing Diameter: 6
Casing Diameter UOM: inch
Casing Depth UOM: ft

Construction Record - Casing

Casing ID: 930795453
Layer: 2
Material: 4
Open Hole or Material: OPEN HOLE
Depth From:
Depth To: 60
Casing Diameter: 6
Casing Diameter UOM: inch
Casing Depth UOM: ft

Results of Well Yield Testing

Pump Test ID: 996809021
Pump Set At:
Static Level: 30
Final Level After Pumping: 55
Recommended Pump Depth: 58
Pumping Rate: 3
Flowing Rate:
Recommended Pump Rate: 3
Levels UOM: ft
Rate UOM: GPM
Water State After Test Code: 1

Water State After Test:	CLEAR
Pumping Test Method:	2
Pumping Duration HR:	1
Pumping Duration MIN:	0
Flowing:	N

Draw Down & Recovery

Pump Test Detail ID:	934620805
Test Type:	Recovery
Test Duration:	30
Test Level:	30
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934356842
Test Type:	Recovery
Test Duration:	15
Test Level:	40
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934872602
Test Type:	Recovery
Test Duration:	45
Test Level:	30
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	935142469
Test Type:	Recovery
Test Duration:	60
Test Level:	30
Test Level UOM:	ft

Water Details

Water ID:	933978091
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	58
Water Found Depth UOM:	ft

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52 ***1 of 1*** ***SSE/220.4*** ***285.7 / 15.84*** ***lot 1 con 7 ON*** ***WWIS***

Well ID:	6806821	***Data Entry Status:***	
Construction Date:		***Data Src:***	1
Primary Water Use:	Domestic	***Date Received:***	9/25/1968
Sec. Water Use:	0	***Selected Flag:***	Yes
Final Well Status:	Water Supply	***Abandonment Rec:***	
Water Type:		***Contractor:***	1205
Casing Material:		***Form Version:***	1
Audit No:		***Owner:***	
Tag:		***Street Name:***	
Construction Method:		***County:***	WENTWORTH
Elevation (m):		***Municipality:***	WEST FLAMBOROUGH TOWNSHIP

Elevation Reliability:		**Site Info:**	
Depth to Bedrock:		**Lot:**	001
Well Depth:		**Concession:**	07
Overburden/Bedrock:		**Concession Name:**	CON
Pump Rate:		**Easting NAD83:**	
Static Water Level:		**Northing NAD83:**	
Flowing (Y/N):		**Zone:**	
Flow Rate:		**UTM Reliability:**	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10484261	**Elevation:**	286.24
DP2BR:	67	**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:	r	**East83:**	576034.3
Code OB Desc:	Bedrock	**Org CS:**	
Open Hole:		**North83:**	4801893
Cluster Kind:		**UTMRC:**	4
Date Completed:	12-SEP-68	**UTMRC Desc:**	margin of error : 30 m - 100 m
Remarks:		**Location Method:**	p4
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932683431
Layer:	3
Color:	6
General Color:	BROWN
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	67
Formation End Depth:	90
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932683430
Layer:	2
Color:	
General Color:	
Mat1:	08
Most Common Material:	FINE SAND
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	40
Formation End Depth:	67
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932683429
Layer:	1
Color:	
General Color:	
Mat1:	05
Most Common Material:	CLAY
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	0
Formation End Depth:	40
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966806821
Method Construction Code:	1
Method Construction:	Cable Tool
Other Method Construction:	

Pipe Information

Pipe ID:	11032831
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930791889
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	68
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Casing

Casing ID:	930791890
Layer:	2
Material:	4
Open Hole or Material:	OPEN HOLE
Depth From:	
Depth To:	90
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pump Test ID:	996806821
Pump Set At:	
Static Level:	32
Final Level After Pumping:	69

Recommended Pump Depth:	87
Pumping Rate:	9
Flowing Rate:	
Recommended Pump Rate:	4
Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	2
Water State After Test:	CLOUDY
Pumping Test Method:	1
Pumping Duration HR:	1
Pumping Duration MIN:	0
Flowing:	N

Water Details

Water ID:	933975544
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	70
Water Found Depth UOM:	ft

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53 ***1 of 1*** ***SSW/225.2*** ***272.1 / 2.27*** ***lot 34 con 7 ON*** ***WWIS***

Well ID:	6800951	***Data Entry Status:***	
Construction Date:		***Data Src:***	1
Primary Water Use:	Domestic	***Date Received:***	12/22/1964
Sec. Water Use:	0	***Selected Flag:***	Yes
Final Well Status:	Water Supply	***Abandonment Rec:***	
Water Type:		***Contractor:***	4602
Casing Material:		***Form Version:***	1
Audit No:		***Owner:***	
Tag:		***Street Name:***	
Construction Method:		***County:***	WENTWORTH
Elevation (m):		***Municipality:***	BEVERLY TOWNSHIP
Elevation Reliability:		***Site Info:***	
Depth to Bedrock:		***Lot:***	034
Well Depth:		***Concession:***	07
Overburden/Bedrock:		***Concession Name:***	CON
Pump Rate:		***Easting NAD83:***	
Static Water Level:		***Northing NAD83:***	
Flowing (Y/N):		***Zone:***	
Flow Rate:		***UTM Reliability:***	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10478469	***Elevation:***	271.85
DP2BR:	5	***Elevrc:***	
Spatial Status:		***Zone:***	17
Code OB:	r	***East83:***	575061.3
Code OB Desc:	Bedrock	***Org CS:***	
Open Hole:		***North83:***	4800732
Cluster Kind:		***UTMRC:***	5
Date Completed:	09-DEC-64	***UTMRC Desc:***	margin of error : 100 m - 300 m
Remarks:		***Location Method:***	p5
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932665829
Layer:	2
Color:	6
General Color:	BROWN
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	5
Formation End Depth:	48
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932665828
Layer:	1
Color:	
General Color:	
Mat1:	02
Most Common Material:	TOPSOIL
Mat2:	11
Other Materials:	GRAVEL
Mat3:	
Other Materials:	
Formation Top Depth:	0
Formation End Depth:	5
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966800951
Method Construction Code:	1
Method Construction:	Cable Tool
Other Method Construction:	

Pipe Information

Pipe ID:	11027039
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930781209
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	6
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Casing

Casing ID:	930781210
Layer:	2
Material:	4
Open Hole or Material:	OPEN HOLE
Depth From:	
Depth To:	48
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pump Test ID:	996800951
Pump Set At:	
Static Level:	7
Final Level After Pumping:	48
Recommended Pump Depth:	46
Pumping Rate:	2
Flowing Rate:	
Recommended Pump Rate:	2
Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	1
Water State After Test:	CLEAR
Pumping Test Method:	1
Pumping Duration HR:	1
Pumping Duration MIN:	30
Flowing:	N

Water Details

Water ID:	933969525
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	22
Water Found Depth UOM:	ft

Water Details

Water ID:	933969526
Layer:	2
Kind Code:	1
Kind:	FRESH
Water Found Depth:	28
Water Found Depth UOM:	ft

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54 ***1 of 1*** ***NNW/226.1*** ***269.0 / -0.88*** ***lot 1 con 7 ON*** ***WWIS***

Well ID:	6806873	***Data Entry Status:***	
Construction Date:		***Data Src:***	1
Primary Water Use:	Domestic	***Date Received:***	1/9/1969
Sec. Water Use:	0	***Selected Flag:***	Yes
Final Well Status:	Water Supply	***Abandonment Rec:***	
Water Type:		***Contractor:***	4208
Casing Material:		***Form Version:***	1
Audit No:		***Owner:***	
Tag:		***Street Name:***	
Construction Method:		***County:***	WENTWORTH

Elevation (m):		***Municipality:***	WEST FLAMBOROUGH TOWNSHIP
Elevation Reliability:		***Site Info:***	
Depth to Bedrock:		***Lot:***	001
Well Depth:		***Concession:***	07
Overburden/Bedrock:		***Concession Name:***	CON
Pump Rate:		***Easting NAD83:***	
Static Water Level:		***Northing NAD83:***	
Flowing (Y/N):		***Zone:***	
Flow Rate:		***UTM Reliability:***	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10484312	***Elevation:***	269.63
DP2BR:	23	***Elevrc:***	
Spatial Status:		***Zone:***	17
Code OB:	r	***East83:***	575894.3
Code OB Desc:	Bedrock	***Org CS:***	
Open Hole:		***North83:***	4802323
Cluster Kind:		***UTMRC:***	4
Date Completed:	17-SEP-68	***UTMRC Desc:***	margin of error : 30 m - 100 m
Remarks:		***Location Method:***	p4
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932683581
Layer:	1
Color:	
General Color:	
Mat1:	23
Most Common Material:	PREVIOUSLY DUG
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	0
Formation End Depth:	14
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932683584
Layer:	4
Color:	
General Color:	
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	27
Formation End Depth:	54
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932683582
Layer:	2
Color:	
General Color:	
Mat1:	14
Most Common Material:	HARDPAN
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	14
Formation End Depth:	23
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932683583
Layer:	3
Color:	
General Color:	
Mat1:	17
Most Common Material:	SHALE
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	23
Formation End Depth:	27
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966806873
Method Construction Code:	1
Method Construction:	Cable Tool
Other Method Construction:	

Pipe Information

Pipe ID:	11032882
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930791983
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	27
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Casing

Casing ID:	930791984
Layer:	2
Material:	4
Open Hole or Material:	OPEN HOLE
Depth From:	
Depth To:	54
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pump Test ID:	996806873
Pump Set At:	
Static Level:	6
Final Level After Pumping:	40
Recommended Pump Depth:	40
Pumping Rate:	8
Flowing Rate:	
Recommended Pump Rate:	8
Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	1
Water State After Test:	CLEAR
Pumping Test Method:	1
Pumping Duration HR:	1
Pumping Duration MIN:	0
Flowing:	N

Water Details

Water ID:	933975605
Layer:	2
Kind Code:	1
Kind:	FRESH
Water Found Depth:	50
Water Found Depth UOM:	ft

Water Details

Water ID:	933975604
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	28
Water Found Depth UOM:	ft

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55 ***1 of 1*** ***S/235.0*** ***286.9 / 17.01*** ***lot 36 con 7 ON*** ***WWIS***

Well ID:	6808740	***Data Entry Status:***	
Construction Date:		***Data Src:***	1
Primary Water Use:	Livestock	***Date Received:***	1/29/1974
Sec. Water Use:	0	***Selected Flag:***	Yes
Final Well Status:	Water Supply	***Abandonment Rec:***	
Water Type:		***Contractor:***	4208
Casing Material:		***Form Version:***	1
Audit No:		***Owner:***	
Tag:		***Street Name:***	
Construction Method:		***County:***	WENTWORTH

Elevation (m):		***Municipality:***	BEVERLY TOWNSHIP
Elevation Reliability:		***Site Info:***	
Depth to Bedrock:		***Lot:***	036
Well Depth:		***Concession:***	07
Overburden/Bedrock:		***Concession Name:***	CON
Pump Rate:		***Easting NAD83:***	
Static Water Level:		***Northing NAD83:***	
Flowing (Y/N):		***Zone:***	
Flow Rate:		***UTM Reliability:***	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10486101	***Elevation:***	288.61
DP2BR:	70	***Elevrc:***	
Spatial Status:		***Zone:***	17
Code OB:	r	***East83:***	575950.3
Code OB Desc:	Bedrock	***Org CS:***	
Open Hole:		***North83:***	4801865
Cluster Kind:		***UTMRC:***	4
Date Completed:	15-SEP-73	***UTMRC Desc:***	margin of error : 30 m - 100 m
Remarks:		***Location Method:***	p4
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932689363
Layer:	1
Color:	2
General Color:	GREY
Mat1:	05
Most Common Material:	CLAY
Mat2:	12
Other Materials:	STONES
Mat3:	
Other Materials:	
Formation Top Depth:	0
Formation End Depth:	70
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932689364
Layer:	2
Color:	2
General Color:	GREY
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	70
Formation End Depth:	145
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966808740
Method Construction Code:	2
Method Construction:	Rotary (Convent.)
Other Method Construction:	

Pipe Information

Pipe ID:	11034671
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930795059
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	70
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pump Test ID:	996808740
Pump Set At:	
Static Level:	60
Final Level After Pumping:	145
Recommended Pump Depth:	145
Pumping Rate:	2
Flowing Rate:	
Recommended Pump Rate:	
Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	1
Water State After Test:	CLEAR
Pumping Test Method:	1
Pumping Duration HR:	1
Pumping Duration MIN:	0
Flowing:	N

Draw Down & Recovery

Pump Test Detail ID:	934872007
Test Type:	Recovery
Test Duration:	45
Test Level:	111
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934355801
Test Type:	Recovery
Test Duration:	15
Test Level:	138
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	935141444
Test Type:	Recovery
Test Duration:	60
Test Level:	99
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934619783
Test Type:	Recovery
Test Duration:	30
Test Level:	123
Test Level UOM:	ft

Water Details

Water ID:	933977728
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	140
Water Found Depth UOM:	ft

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56 ***1 of 3*** ***WSW/237.9*** ***283.8 / 13.99*** ***lot 31 con 7 ON*** ***WWIS***

Well ID:	6813022	***Data Entry Status:***	
Construction Date:		***Data Src:***	1
Primary Water Use:	Domestic	***Date Received:***	10/5/1998
Sec. Water Use:		***Selected Flag:***	Yes
Final Well Status:	Water Supply	***Abandonment Rec:***	
Water Type:		***Contractor:***	4005
Casing Material:		***Form Version:***	1
Audit No:	190991	***Owner:***	
Tag:		***Street Name:***	
Construction Method:		***County:***	WENTWORTH
Elevation (m):		***Municipality:***	BEVERLY TOWNSHIP
Elevation Reliability:		***Site Info:***	
Depth to Bedrock:		***Lot:***	031
Well Depth:		***Concession:***	07
Overburden/Bedrock:		***Concession Name:***	CON
Pump Rate:		***Easting NAD83:***	
Static Water Level:		***Northing NAD83:***	
Flowing (Y/N):		***Zone:***	
Flow Rate:		***UTM Reliability:***	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10490335	***Elevation:***	279.3
DP2BR:	130	***Elevrc:***	
Spatial Status:		***Zone:***	17
Code OB:	r	***East83:***	573668.3
Code OB Desc:	Bedrock	***Org CS:***	
Open Hole:		***North83:***	4801167
Cluster Kind:		***UTMRC:***	9
Date Completed:	10-SEP-98	***UTMRC Desc:***	unknown UTM
Remarks:		***Location Method:***	lot
Elevrc Desc:			

Location Source Date:
Improvement Location Source:
Improvement Location Method:
Source Revision Comment:
Supplier Comment:

Overburden and Bedrock Materials Interval

Formation ID: 932703603
Layer: 4
Color: 2
General Color: GREY
Mat1: 05
Most Common Material: CLAY
Mat2: 85
Other Materials: SOFT
Mat3:
Other Materials:
Formation Top Depth: 115
Formation End Depth: 130
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 932703602
Layer: 3
Color: 2
General Color: GREY
Mat1: 05
Most Common Material: CLAY
Mat2: 73
Other Materials: HARD
Mat3:
Other Materials:
Formation Top Depth: 75
Formation End Depth: 115
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 932703600
Layer: 1
Color: 6
General Color: BROWN
Mat1: 05
Most Common Material: CLAY
Mat2: 28
Other Materials: SAND
Mat3:
Other Materials:
Formation Top Depth: 0
Formation End Depth: 18
Formation End Depth UOM: ft

Overburden and Bedrock Materials Interval

Formation ID: 932703601
Layer: 2

Color:	2
General Color:	GREY
Mat1:	05
Most Common Material:	CLAY
Mat2:	85
Other Materials:	SOFT
Mat3:	
Other Materials:	
Formation Top Depth:	18
Formation End Depth:	75
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932703604
Layer:	5
Color:	2
General Color:	GREY
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	73
Other Materials:	HARD
Mat3:	
Other Materials:	
Formation Top Depth:	130
Formation End Depth:	170
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966813022
Method Construction Code:	5
Method Construction:	Air Percussion
Other Method Construction:	

Pipe Information

Pipe ID:	11038905
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930801465
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	130
Casing Diameter:	7
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Casing

Casing ID:	930801466
Layer:	2
Material:	4
Open Hole or Material:	OPEN HOLE

Depth From:	
Depth To:	170
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pump Test ID:	996813022
Pump Set At:	
Static Level:	
Final Level After Pumping:	165
Recommended Pump Depth:	165
Pumping Rate:	3
Flowing Rate:	
Recommended Pump Rate:	1
Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	2
Water State After Test:	CLOUDY
Pumping Test Method:	1
Pumping Duration HR:	0
Pumping Duration MIN:	30
Flowing:	N

Draw Down & Recovery

Pump Test Detail ID:	934623043
Test Type:	Draw Down
Test Duration:	30
Test Level:	165
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934351590
Test Type:	Draw Down
Test Duration:	15
Test Level:	165
Test Level UOM:	ft

Water Details

Water ID:	933983383
Layer:	1
Kind Code:	5
Kind:	Not stated
Water Found Depth:	140
Water Found Depth UOM:	ft

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56 ***2 of 3*** ***WSW/237.9*** ***283.8 / 13.99*** ***lot 31 con 7 ON*** ***WWIS***

Well ID:	6813044	***Data Entry Status:***	
Construction Date:		***Data Src:***	1
Primary Water Use:	Public	***Date Received:***	12/1/1998
Sec. Water Use:		***Selected Flag:***	Yes
Final Well Status:	Water Supply	***Abandonment Rec:***	
Water Type:		***Contractor:***	4005
Casing Material:		***Form Version:***	1
Audit No:	198300	***Owner:***	
Tag:		***Street Name:***	

Construction Method:		***County:***	WENTWORTH
Elevation (m):		***Municipality:***	BEVERLY TOWNSHIP
Elevation Reliability:		***Site Info:***	
Depth to Bedrock:		***Lot:***	031
Well Depth:		***Concession:***	07
Overburden/Bedrock:		***Concession Name:***	CON
Pump Rate:		***Easting NAD83:***	
Static Water Level:		***Northing NAD83:***	
Flowing (Y/N):		***Zone:***	
Flow Rate:		***UTM Reliability:***	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10490357	***Elevation:***	279.3
DP2BR:	9	***Elevrc:***	
Spatial Status:		***Zone:***	17
Code OB:	r	***East83:***	573668.3
Code OB Desc:	Bedrock	***Org CS:***	
Open Hole:		***North83:***	4801167
Cluster Kind:		***UTMRC:***	9
Date Completed:	09-SEP-98	***UTMRC Desc:***	unknown UTM
Remarks:		***Location Method:***	lot
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932703685
Layer:	3
Color:	2
General Color:	GREY
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	73
Other Materials:	HARD
Mat3:	
Other Materials:	
Formation Top Depth:	9
Formation End Depth:	100
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932703683
Layer:	1
Color:	6
General Color:	BROWN
Mat1:	05
Most Common Material:	CLAY
Mat2:	28
Other Materials:	SAND
Mat3:	13
Other Materials:	BOULDERS
Formation Top Depth:	0
Formation End Depth:	8
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932703684
Layer:	2
Color:	6
General Color:	BROWN
Mat1:	28
Most Common Material:	SAND
Mat2:	11
Other Materials:	GRAVEL
Mat3:	
Other Materials:	
Formation Top Depth:	8
Formation End Depth:	9
Formation End Depth UOM:	ft

Annular Space/Abandonment Sealing Record

Plug ID:	933211873
Layer:	1
Plug From:	0
Plug To:	25
Plug Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966813044
Method Construction Code:	5
Method Construction:	Air Percussion
Other Method Construction:	

Pipe Information

Pipe ID:	11038927
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930801502
Layer:	1
Material:	1
Open Hole or Material:	STEEL
Depth From:	
Depth To:	25
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Casing

Casing ID:	930801503
Layer:	2
Material:	4
Open Hole or Material:	OPEN HOLE
Depth From:	

Depth To: 100
Casing Diameter: 6
Casing Diameter UOM: inch
Casing Depth UOM: ft

Results of Well Yield Testing

Pump Test ID: 996813044
Pump Set At:
Static Level: 6
Final Level After Pumping: 8
Recommended Pump Depth: 45
Pumping Rate: 75
Flowing Rate:
Recommended Pump Rate: 70
Levels UOM: ft
Rate UOM: GPM
Water State After Test Code: 1
Water State After Test: CLEAR
Pumping Test Method: 1
Pumping Duration HR: 1
Pumping Duration MIN: 0
Flowing: N

Draw Down & Recovery

Pump Test Detail ID: 934351605
Test Type: Recovery
Test Duration: 15
Test Level: 6
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934623057
Test Type: Recovery
Test Duration: 30
Test Level: 6
Test Level UOM: ft

Water Details

Water ID: 933983415
Layer: 3
Kind Code: 5
Kind: Not stated
Water Found Depth: 61
Water Found Depth UOM: ft

Water Details

Water ID: 933983413
Layer: 1
Kind Code: 5
Kind: Not stated
Water Found Depth: 28
Water Found Depth UOM: ft

Water Details

Water ID: 933983414

Layer:	2
Kind Code:	5
Kind:	Not stated
Water Found Depth:	39
Water Found Depth UOM:	ft

56 **3 of 3** **WSW/237.9** **283.8 / 13.99** **lot 31 con 7 ON** **WWIS**

Well ID:	6811497	**Data Entry Status:**	
Construction Date:		**Data Src:**	1
Primary Water Use:	Domestic	**Date Received:**	9/8/1988
Sec. Water Use:		**Selected Flag:**	Yes
Final Well Status:	Water Supply	**Abandonment Rec:**	
Water Type:		**Contractor:**	4005
Casing Material:		**Form Version:**	1
Audit No:	31190	**Owner:**	
Tag:		**Street Name:**	
Construction Method:		**County:**	WENTWORTH
Elevation (m):		**Municipality:**	BEVERLY TOWNSHIP
Elevation Reliability:		**Site Info:**	
Depth to Bedrock:		**Lot:**	031
Well Depth:		**Concession:**	07
Overburden/Bedrock:		**Concession Name:**	CON
Pump Rate:		**Easting NAD83:**	
Static Water Level:		**Northing NAD83:**	
Flowing (Y/N):		**Zone:**	
Flow Rate:		**UTM Reliability:**	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10488811	**Elevation:**	279.3
DP2BR:	59	**Elevrc:**	
Spatial Status:		**Zone:**	17
Code OB:	r	**East83:**	573668.3
Code OB Desc:	Bedrock	**Org CS:**	
Open Hole:		**North83:**	4801167
Cluster Kind:		**UTMRC:**	9
Date Completed:	26-AUG-88	**UTMRC Desc:**	unknown UTM
Remarks:		**Location Method:**	lot
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932698407
Layer:	2
Color:	2
General Color:	GREY
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	73
Other Materials:	HARD
Mat3:	
Other Materials:	
Formation Top Depth:	59
Formation End Depth:	90

Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932698406
Layer:	1
Color:	
General Color:	
Mat1:	24
Most Common Material:	PREV. DRILLED
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	0
Formation End Depth:	59
Formation End Depth UOM:	ft

Method of Construction & Well Use

Method Construction ID:	966811497
Method Construction Code:	2
Method Construction:	Rotary (Convent.)
Other Method Construction:	

Pipe Information

Pipe ID:	11037381
Casing No:	1
Comment:	
Alt Name:	

Construction Record - Casing

Casing ID:	930799046
Layer:	2
Material:	4
Open Hole or Material:	OPEN HOLE
Depth From:	
Depth To:	90
Casing Diameter:	
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Construction Record - Casing

Casing ID:	930799045
Layer:	1
Material:	2
Open Hole or Material:	GALVANIZED
Depth From:	
Depth To:	59
Casing Diameter:	6
Casing Diameter UOM:	inch
Casing Depth UOM:	ft

Results of Well Yield Testing

Pump Test ID:	996811497

Pump Set At:	
Static Level:	20
Final Level After Pumping:	70
Recommended Pump Depth:	87
Pumping Rate:	12
Flowing Rate:	
Recommended Pump Rate:	10
Levels UOM:	ft
Rate UOM:	GPM
Water State After Test Code:	2
Water State After Test:	CLOUDY
Pumping Test Method:	2
Pumping Duration HR:	1
Pumping Duration MIN:	0
Flowing:	N

Draw Down & Recovery

Pump Test Detail ID:	935140431
Test Type:	Draw Down
Test Duration:	60
Test Level:	70
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934355889
Test Type:	Draw Down
Test Duration:	15
Test Level:	70
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934879312
Test Type:	Draw Down
Test Duration:	45
Test Level:	70
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934627423
Test Type:	Draw Down
Test Duration:	30
Test Level:	70
Test Level UOM:	ft

Water Details

Water ID:	933981207
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	85
Water Found Depth UOM:	ft

57	***1 of 1***	***ENE/237.9***	***264.6 / -5.27***	***lot 7 con 7 ON***	***WWIS***

Well ID: 6807838 ***Data Entry Status:***

Construction Date:		***Data Src:***	1
Primary Water Use:	Domestic	***Date Received:***	8/20/1971
Sec. Water Use:	0	***Selected Flag:***	Yes
Final Well Status:	Water Supply	***Abandonment Rec:***	
Water Type:		***Contractor:***	1620
Casing Material:		***Form Version:***	1
Audit No:		***Owner:***	
Tag:		***Street Name:***	
Construction Method:		***County:***	WENTWORTH
Elevation (m):		***Municipality:***	WEST FLAMBOROUGH TOWNSHIP
Elevation Reliability:		***Site Info:***	
Depth to Bedrock:		***Lot:***	007
Well Depth:		***Concession:***	07
Overburden/Bedrock:		***Concession Name:***	CON
Pump Rate:		***Easting NAD83:***	
Static Water Level:		***Northing NAD83:***	
Flowing (Y/N):		***Zone:***	
Flow Rate:		***UTM Reliability:***	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10485237	***Elevation:***	264.66
DP2BR:	24	***Elevrc:***	
Spatial Status:		***Zone:***	17
Code OB:	r	***East83:***	578434.4
Code OB Desc:	Bedrock	***Org CS:***	
Open Hole:		***North83:***	4803143
Cluster Kind:		***UTMRC:***	4
Date Completed:	26-JUL-71	***UTMRC Desc:***	margin of error : 30 m - 100 m
Remarks:		***Location Method:***	p4
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932686606
Layer:	2
Color:	
General Color:	
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	
Other Materials:	
Mat3:	
Other Materials:	
Formation Top Depth:	24
Formation End Depth:	33
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932686605
Layer:	1
Color:	6
General Color:	BROWN
Mat1:	05

Most Common Material: CLAY
Mat2:
Other Materials:
Mat3:
Other Materials:
Formation Top Depth: 0
Formation End Depth: 24
Formation End Depth UOM: ft

Method of Construction & Well Use

Method Construction ID: 966807838
Method Construction Code: 1
Method Construction: Cable Tool
Other Method Construction:

Pipe Information

Pipe ID: 11033807
Casing No: 1
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 930793574
Layer: 2
Material: 4
Open Hole or Material: OPEN HOLE
Depth From:
Depth To: 33
Casing Diameter:
Casing Diameter UOM: inch
Casing Depth UOM: ft

Construction Record - Casing

Casing ID: 930793573
Layer: 1
Material: 1
Open Hole or Material: STEEL
Depth From:
Depth To: 24
Casing Diameter: 6
Casing Diameter UOM: inch
Casing Depth UOM: ft

Results of Well Yield Testing

Pump Test ID: 996807838
Pump Set At:
Static Level: 5
Final Level After Pumping: 15
Recommended Pump Depth: 25
Pumping Rate: 20
Flowing Rate:
Recommended Pump Rate: 10
Levels UOM: ft
Rate UOM: GPM
Water State After Test Code: 1
Water State After Test: CLEAR

Pumping Test Method:	2
Pumping Duration HR:	1
Pumping Duration MIN:	0
Flowing:	N

Draw Down & Recovery

Pump Test Detail ID:	934352998
Test Type:	Recovery
Test Duration:	15
Test Level:	5
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934869229
Test Type:	Recovery
Test Duration:	45
Test Level:	5
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	935139070
Test Type:	Recovery
Test Duration:	60
Test Level:	5
Test Level UOM:	ft

Draw Down & Recovery

Pump Test Detail ID:	934616992
Test Type:	Recovery
Test Duration:	30
Test Level:	5
Test Level UOM:	ft

Water Details

Water ID:	933976652
Layer:	1
Kind Code:	1
Kind:	FRESH
Water Found Depth:	33
Water Found Depth UOM:	ft

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58 | ***1 of 1*** | ***SSW/238.7*** | ***270.7 / 0.85*** | ***lot 36 con 7 ON*** | ***WWIS***

Well ID:	6810831	**Data Entry Status:**	
Construction Date:		**Data Src:**	1
Primary Water Use:	Domestic	**Date Received:**	6/27/1985
Sec. Water Use:		**Selected Flag:**	Yes
Final Well Status:	Water Supply	**Abandonment Rec:**	
Water Type:		**Contractor:**	4005
Casing Material:		**Form Version:**	1
Audit No:		**Owner:**	
Tag:		**Street Name:**	
Construction Method:		**County:**	WENTWORTH
Elevation (m):		**Municipality:**	BEVERLY TOWNSHIP
Elevation Reliability:		**Site Info:**	

Depth to Bedrock:		***Lot:***	036
Well Depth:		***Concession:***	07
Overburden/Bedrock:		***Concession Name:***	CON
Pump Rate:		***Easting NAD83:***	
Static Water Level:		***Northing NAD83:***	
Flowing (Y/N):		***Zone:***	
Flow Rate:		***UTM Reliability:***	
Clear/Cloudy:			

Bore Hole Information

Bore Hole ID:	10488152	***Elevation:***	269.94
DP2BR:	1	***Elevrc:***	
Spatial Status:		***Zone:***	17
Code OB:	r	***East83:***	575783.3
Code OB Desc:	Bedrock	***Org CS:***	
Open Hole:		***North83:***	4801675
Cluster Kind:		***UTMRC:***	9
Date Completed:	14-JUN-85	***UTMRC Desc:***	unknown UTM
Remarks:		***Location Method:***	lot
Elevrc Desc:			
Location Source Date:			
Improvement Location Source:			
Improvement Location Method:			
Source Revision Comment:			
Supplier Comment:			

Overburden and Bedrock Materials Interval

Formation ID:	932696083
Layer:	2
Color:	2
General Color:	GREY
Mat1:	15
Most Common Material:	LIMESTONE
Mat2:	73
Other Materials:	HARD
Mat3:	
Other Materials:	
Formation Top Depth:	1
Formation End Depth:	59
Formation End Depth UOM:	ft

Overburden and Bedrock Materials Interval

Formation ID:	932696082
Layer:	1
Color:	6
General Color:	BROWN
Mat1:	28
Most Common Material:	SAND
Mat2:	77
Other Materials:	LOOSE
Mat3:	
Other Materials:	
Formation Top Depth:	0
Formation End Depth:	1
Formation End Depth UOM:	ft

Method of Construction & Well

Use

Method Construction ID: 966810831
Method Construction Code: 1
Method Construction: Cable Tool
Other Method Construction:

Pipe Information

Pipe ID: 11036722
Casing No: 1
Comment:
Alt Name:

Construction Record - Casing

Casing ID: 930798002
Layer: 1
Material: 1
Open Hole or Material: STEEL
Depth From:
Depth To: 20
Casing Diameter: 6
Casing Diameter UOM: inch
Casing Depth UOM: ft

Construction Record - Casing

Casing ID: 930798003
Layer: 2
Material: 4
Open Hole or Material: OPEN HOLE
Depth From:
Depth To: 59
Casing Diameter:
Casing Diameter UOM: inch
Casing Depth UOM: ft

Results of Well Yield Testing

Pump Test ID: 996810831
Pump Set At:
Static Level: 10
Final Level After Pumping: 56
Recommended Pump Depth: 56
Pumping Rate: 4
Flowing Rate:
Recommended Pump Rate: 4
Levels UOM: ft
Rate UOM: GPM
Water State After Test Code: 1
Water State After Test: CLEAR
Pumping Test Method: 2
Pumping Duration HR: 1
Pumping Duration MIN: 0
Flowing: N

Draw Down & Recovery

Pump Test Detail ID: 934868735
Test Type: Draw Down
Test Duration: 45

Test Level: 56
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934353719
Test Type: Draw Down
Test Duration: 15
Test Level: 56
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 934625724
Test Type: Draw Down
Test Duration: 30
Test Level: 56
Test Level UOM: ft

Draw Down & Recovery

Pump Test Detail ID: 935147512
Test Type: Draw Down
Test Duration: 60
Test Level: 56
Test Level UOM: ft

Water Details

Water ID: 933980327
Layer: 1
Kind Code: 1
Kind: FRESH
Water Found Depth: 40
Water Found Depth UOM: ft

Water Details

Water ID: 933980328
Layer: 2
Kind Code: 1
Kind: FRESH
Water Found Depth: 55
Water Found Depth UOM: ft

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59 | ***1 of 1*** | ***SSE/243.8*** | ***285.7 / 15.83*** | ***1434 Middletown Road Millgrove ON L0R 1V0*** | ***EHS***

Order ID: 621135
Order No: 20180904100
Customer ID: 128988
Company ID: 80428
Status: C
Report Code: 1CAN
Report Type: Site Report
Report Date: 05-SEP-18
Report Requested by: Anderson, Dennis
Nearest Intersection:
Previous Site Name:
Additional Info Ordered:

Date Received: 04-SEP-18
Lot/Building Size:
Municipality:
Client Prov/State: ON
Search Radius (km): .001
Large Radius: .003
X: -80.061235
Y: 43.365874

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
60	1 of 1	ENE/247.0	259.9 / -10.00	955 4th Concession Road West Hamilton ON	EHS

Order ID:	107799	**Date Received:**	7/23/2007
Order No:	20070723029	**Lot/Building Size:**	
Customer ID:	52567	**Municipality:**	Hamilton-Wentworth
Company ID:	26	**Client Prov/State:**	
Status:	C	**Search Radius (km):**	0.25
Report Code:	4CAN	**Large Radius:**	0.25
Report Type:	CAN - Custom Report	**X:**	-80.028594
Report Date:	8/1/2007	**Y:**	43.37764
Report Requested by:	Conestoga-Rovers & Associates		
Nearest Intersection:	Brock Road		
Previous Site Name:			
Additional Info Ordered:			

Unplottable Summary

Total: 25 Unplottable sites

DB	Company Name/Site Name	Address	City	Postal
CA	Belmac Estate Properties Inc.		Hamilton ON	
CA	REG. MUN. OF HAMILTON-WENTWORTH	HWY. #6	FLAMBOROUGH ON	
CA		Brock Street	Hamilton ON	
ECA	City of Hamilton	Brock Street	Hamilton ON	L8P 4Y5
GEN	Ministry of Transportation Ontario	Hwy 6 C2005-2019	Hamilton ON	
PRT	PIONEER PETROLEUMS ATTN LOLA LAURIE	PT LOT 13 CON 7 HWY 6	FLAMBOROUGH ON	
PRT	G WUERFEL SERVICE CENTRE & GENERAL STORE	LOT 13 CON 7 HWY 6	HAMILTON ON	
PRT	G WUERFEL SERVICE CENTRE & GENERAL STORE	PT LOT 13 CON 7 HWY 6	FLAMBOROUGH ON	
PTTW	Parkbridge G/P Inc.	Site address: 1264 8th Concession Road West, Lot 33, Concession 7, Town of Flamborough (former geographic township of Beverly), City of Hamilton	Flamborough ON	
PTTW	Belmac Estate Properties Inc.	Property of Belmac Estate Properties Inc. 1294 8th Concession Road West, Lot 32, Concession 7, Original Geographic Township of Beverly, City of Hamilton	BEVERLY ON	
PTTW	New Country Investors Ltd.	Ponderosa Nature Resort Wells Lot: 43, Concession: 7, 1218 Concession 8 West, Hamilton CITY OF HAMILTON	ON	
PTTW	Parkbridge G/P Inc.	Property of Parkbridge G/P Inc. Lot: 33, Concession: 7, Beverly, City of Hamilton BEVERLY	ON	
SPL	FARM	2 KM ALONG BRANT ROAD #4 SCOTLAND MOTOR VEHICLE (OPERATING FLUID)	HAMILTON-WENTWORTH R.M. ON	
SPL	BFI Canada Inc.	south Hwy 6, 1 km north of 403	Hamilton ON	
SPL	Element Bulk Logistics Inc.<UNOFFICIAL>	Hwy 6, Lincoln-Alexander Pkwy & Red Hill Xprsway	Hamilton ON	

SPL	SHELL CANADA PRODUCTS LTD.	HWY 6 NORTH OF FREELTON TANK TRUCK (CARGO)	FLAMBOROUGH TOWN ON
SPL	SUN-CANADIAN PIPE LINE COMPANY	SUN CANADIAN PIPELINE LTD. HIGHWAY 6 PIPELINE	FLAMBOROUGH TOWN ON
SPL	RYDER TRUCK RENTAL CANADA LTD.	ON HWY 6 AT BOTTOM OF CLAPPISON HILL. MOTOR VEHICLE (OPERATING FLUID)	FLAMBOROUGH TOWN ON
SPL	PROVOST BULK CARRIERS INC.	EAST SIDE RR #1,BETWEEN CON. 6 AND 7 , HIGHWAY 6, MILL GROVE TANK TRUCK (CARGO)	HAMILTON-WENTWORTH R.M. ON
SPL	Maple Leaf Foods Inc.	Northbound Hwy # 6, South of Hwy # 4 at Clappison Corner, Dundas<UNOFFICIAL>	Hamilton ON
SPL	TRANSPORT TRUCK	HWY 6 NORTHBOUND, RIGHT LANE AT CLAPPISON'S CORNERS MOTOR VEHICLE (OPERATING FLUID)	FLAMBOROUGH TOWN ON
SPL	Maple Leaf Foods Inc.	Highway 6 North, Flamborough EAST SHOULDER, CATCHBASINS & OUTFALL ON CLAPPISON'S HILL<UNOFFICIAL>	Hamilton ON
SPL	FARM	CONC 5 OFF HWY 6 OUTSKIRTS OF WATERDOWN	FLAMBOROUGH TOWN ON
SPL	TRANSPORT TRUCK	ON HWY. #6 NORTH, .4 KM NORTH OF CONC. 7 IN EAST FLAMBOROUGH TWP. MOTOR VEHICLE (OPERATING FLUID)	FLAMBOROUGH TOWN ON
SPL	SPIE CONSTRUCTION	BROCK ROAD	FLAMBOROUGH TOWN ON

Unplottable Report

Site: ***Belmac Estate Properties Inc.***
Hamilton ON

Database: ***CA***

Certificate #:	5241-6S3QQ2
Application Year:	2006
Issue Date:	8/16/2006
Approval Type:	Municipal and Private Sewage Works
Status:	Approved
Application Type:	
Client Name:	
Client Address:	
Client City:	
Client Postal Code:	
Project Description:	
Contaminants:	
Emission Control:	

Site: ***REG. MUN. OF HAMILTON-WENTWORTH***
HWY. #6 FLAMBOROUGH ON

Database: ***CA***

Certificate #:	7-0094-85-006
Application Year:	85
Issue Date:	3/15/85
Approval Type:	Municipal water
Status:	Approved
Application Type:	
Client Name:	
Client Address:	
Client City:	
Client Postal Code:	
Project Description:	
Contaminants:	
Emission Control:	

Site:
Brock Street Hamilton ON

Database: ***CA***

Certificate #:	7211-4YBHUL
Application Year:	01
Issue Date:	7/11/01
Approval Type:	Municipal & Private water
Status:	Approved
Application Type:	New Certificate of Approval
Client Name:	Corporation of the City of Hamilton
Client Address:	71 Main Street West
Client City:	Hamilton
Client Postal Code:	L8P 4Y5
Project Description:	Construction of watermains on Brock Street.
Contaminants:	
Emission Control:	

Site: ***City of Hamilton***
Brock Street Hamilton ON L8P 4Y5

Database: ***ECA***

Approval No: 7211-4YBHUL ***SWP Area Name:***

Approval Date: 2001-07-11
Status: Approved
Record Type: ECA
Link Source: IDS
Approval Type: ECA-Municipal and Private Water Works
Project Type: Municipal and Private Water Works
Address: Brock Street
Full Address:
Full PDF Link:
MOE District:
City:
Longitude:
Latitude:

Site: ***Ministry of Transportation Ontario***
Hwy 6 C2005-2019 Hamilton ON

Database: ***GEN***

Generator No.: ON6145621
Status:
Approval Years: 2009
Contam. Facility:
MHSW Facility:
SIC Code: 237310
SIC Description: Highway Street and Bridge Construction
PO Box No.:
Country:
Choice of Contact:
Co Admin:
Phone No. Admin:

--Details--
Waste Code: 251
Waste Description: OIL SKIMMINGS & SLUDGES

Site: ***PIONEER PETROLEUMS ATTN LOLA LAURIE***
PT LOT 13 CON 7 HWY 6 FLAMBOROUGH ON

Database: ***PRT***

Location ID: 4906
Type: retail
Expiry Date: 1993-02-28
Capacity (L): 20000
Licence #: 0030093001

Site: ***G WUERFEL SERVICE CENTRE & GENERAL STORE***
LOT 13 CON 7 HWY 6 HAMILTON ON

Database: ***PRT***

Location ID: 5960
Type: retail
Expiry Date: 1995-12-31
Capacity (L): 127193
Licence #: 0011816001

Site: ***G WUERFEL SERVICE CENTRE & GENERAL STORE***
PT LOT 13 CON 7 HWY 6 FLAMBOROUGH ON

Database: ***PRT***

Location ID: 4906
Type: retail
Expiry Date: 1994-11-30
Capacity (L): 126700
Licence #: 0076407584

Site: ***Parkbridge G/P Inc.***
Site address: 1264 8th Concession Road West, Lot 33, Concession 7, Town of Flamborough (former geographic township of Beverly), City of Hamilton Flamborough ON

Database: ***PTTW***

EBR Registry No.: IA06E0451
Ministry Ref. No.: 3062-6NHT2:
Notice Type: Instrument Decision
Notice Date: July 10, 2006

Proposal Date: April 13, 2006
Year: 2006
Proponent Address: 85 Theme Park Drive, Wasaga Beach Ontario, L0L 2P0
Instrument Type: (OWRA s. 34) - Permit to Take Water
Location Other:

Location:

Site address: 1264 8th Concession Road West, Lot 33, Concession 7, Town of Flamborough (former geographic township of Beverly), City of Hamilton Flamborough

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Site: ***Belmac Estate Properties Inc.***
Property of Belmac Estate Properties Inc. 1294 8th Concession Road West, Lot 32, Concession 7, Original Geographic Township of Beverly, City of Hamilton BEVERLY ON

Database: ***PTTW***

EBR Registry No.: 010-6549
Ministry Ref. No.: 3532-7Q7NLG
Notice Type: Instrument Decision
Notice Date: February 26, 2010
Proposal Date: April 28, 2009
Year: 2009
Proponent Address: 690 River Road West, Wasaga Beach Ontario, Canada L9Z 2P1
Instrument Type: (OWRA s. 34) - Permit to Take Water
Location Other:

Location:

Property of Belmac Estate Properties Inc. 1294 8th Concession Road West, Lot 32, Concession 7, Original Geographic Township of Beverly, City of Hamilton BEVERLY

Site: ***New Country Investors Ltd.***
Ponderosa Nature Resort Wells Lot: 43, Concession: 7, 1218 Concession 8 West, Hamilton CITY OF HAMILTON ON

Database: ***PTTW***

EBR Registry No.: 011-4875
Ministry Ref. No.: 3556-8MEKHK
Notice Type: Instrument Decision
Notice Date: July 04, 2016
Proposal Date: November 04, 2011
Year: 2011
Proponent Address: 1218 Concession , 8 West, Puslinch Ontario, Canada N0B 2J0
Instrument Type: (OWRA s. 34) - Permit to Take Water
Location Other:

Location:

Ponderosa Nature Resort Wells Lot: 43, Concession: 7, 1218 Concession 8 West, Hamilton CITY OF HAMILTON

Site: ***Parkbridge G/P Inc.***
Property of Parkbridge G/P Inc. Lot: 33, Concession: 7, Beverly, City of Hamilton BEVERLY ON

Database: ***PTTW***

EBR Registry No.: 010-6324
Ministry Ref. No.: 4236-7Q7R2D
Notice Type: Instrument Decision
Notice Date: June 10, 2009
Proposal Date: March 31, 2009
Year: 2009
Proponent Address: 85 Theme Park Drive, Wasaga Beach Ontario, L0L 2P0
Instrument Type: (OWRA s. 34) - Permit to Take Water
Location Other:

Location:

Property of Parkbridge G/P Inc. Lot: 33, Concession: 7, Beverly, City of Hamilton BEVERLY

Site: ***FARM***
2 KM ALONG BRANT ROAD #4 SCOTLAND MOTOR VEHICLE (OPERATING FLUID) HAMILTON-WENTWORTH R.M. ON

Database: ***SPL***

Ref No:	68217	***Discharger Report:***	
Site No:		***Material Group:***	
Incident Dt:	3/20/1992	***Client Type:***	
Year:		***Sector Type:***	
Incident Cause:	VALVE/FITTING LEAK OR FAILURE	***Source Type:***	
Incident Event:		***Nearest Watercourse:***	
Contaminant Code:		***Site Name:***	
Contaminant Name:		***Site Address:***	
Contaminant Limit 1:		***Site District Office:***	
Contam Limit Freq 1:		***Site County/District:***	
Contaminant UN No 1:		***Site Postal Code:***	
Contaminant Qty:		***Site Region:***	
Environment Impact:	NOT ANTICIPATED	***Site Municipality:***	16000
Nature of Impact:		***Site Lot:***	
Receiving Medium:	LAND	***Site Conc:***	
Receiving Env:		***Northing:***	
Health/Env Conseq:		***Easting:***	SCOTLAND AGRO-MART, MOE
MOE Response:		***Site Geo Ref Accu:***	
Dt MOE Arvl on Scn:		***Site Geo Ref Meth:***	
MOE Reported Dt:	3/20/1992	***Site Map Datum:***	
Dt Document Closed:			
Agency Involved:			
SAC Action Class:			
Incident Reason:	UNKNOWN		
Incident Summary:	FARM SPREADER-160 KG UREAFROM SPREADER ALONG RD FOR 2 KM,CLEANUP ONGOING.		

Site: ***BFI Canada Inc.***
south Hwy 6, 1 km north of 403 Hamilton ON

Database: ***SPL***

Ref No:	7433-7VFQ36	***Discharger Report:***	
Site No:		***Material Group:***	
Incident Dt:		***Client Type:***	
Year:		***Sector Type:***	Other
Incident Cause:	Unknown	***Source Type:***	
Incident Event:		***Nearest Watercourse:***	
Contaminant Code:	43	***Site Name:***	falling waste<UNOFFICIAL>
Contaminant Name:	GARBAGE	***Site Address:***	
Contaminant Limit 1:		***Site District Office:***	
Contam Limit Freq 1:		***Site County/District:***	
Contaminant UN No 1:		***Site Postal Code:***	
Contaminant Qty:	40 lb	***Site Region:***	
Environment Impact:	Not Anticipated	***Site Municipality:***	Hamilton
Nature of Impact:	Human Health/Safety; Other Impact(s)	***Site Lot:***	
Receiving Medium:		***Site Conc:***	
Receiving Env:		***Northing:***	
Health/Env Conseq:		***Easting:***	
MOE Response:	No Field Response	***Site Geo Ref Accu:***	
Dt MOE Arvl on Scn:		***Site Geo Ref Meth:***	
MOE Reported Dt:	8/31/2009	***Site Map Datum:***	
Dt Document Closed:	11/21/2009		
Agency Involved:			
SAC Action Class:	Land Spills		
Incident Reason:	Spill		
Incident Summary:	BFI Waste: 4 bags of waste fall from truck		

Site: ***Element Bulk Logistics Inc.<UNOFFICIAL>***
Hwy 6, Lincoln-Alexander Pkwy & Red Hill Xprsway Hamilton ON

Database: ***SPL***

Ref No:	2018-A7QV68	***Discharger Report:***	
Site No:	NA	***Material Group:***	
Incident Dt:	2016/03/04	***Client Type:***	
Year:		***Sector Type:***	Miscellaneous Industrial
Incident Cause:		***Source Type:***	
Incident Event:	Leak/Break	***Nearest Watercourse:***	
Contaminant Code:	14	***Site Name:***	Roof Asphalt Flux to roads between Nanticoke & Hamilton<UNOFFICIAL>
Contaminant Name:	ASPHALT SEALER	***Site Address:***	Hwy 6, Lincoln-Alexander Pkwy & Red Hill Xprsway
Contaminant Limit 1:		***Site District Office:***	
Contam Limit Freq 1:		***Site County/District:***	
Contaminant UN No 1:		***Site Postal Code:***	
Contaminant Qty:	1 other - see incident description	***Site Region:***	
Environment Impact:		***Site Municipality:***	Hamilton
Nature of Impact:		***Site Lot:***	
Receiving Medium:		***Site Conc:***	
Receiving Env:	Land	***Northing:***	
Health/Env Conseq:		***Easting:***	
MOE Response:	No	***Site Geo Ref Accu:***	
Dt MOE Arvl on Scn:		***Site Geo Ref Meth:***	
MOE Reported Dt:	2016/03/04	***Site Map Datum:***	
Dt Document Closed:			
Agency Involved:			
SAC Action Class:	Land Spills		
Incident Reason:	Unknown / N/A		
Incident Summary:	Element Bulk Logistics: liquid asphalt between Nanticoke & Hamilton		

Site: ***SHELL CANADA PRODUCTS LTD.***
HWY 6 NORTH OF FREELTON TANK TRUCK (CARGO) FLAMBOROUGH TOWN ON

Database: ***SPL***

Ref No:	75785	***Discharger Report:***	
Site No:		***Material Group:***	
Incident Dt:	9/4/1992	***Client Type:***	
Year:		***Sector Type:***	
Incident Cause:	TRUCK/TRAILER OVERTURN	***Source Type:***	
Incident Event:		***Nearest Watercourse:***	
Contaminant Code:		***Site Name:***	
Contaminant Name:		***Site Address:***	
Contaminant Limit 1:		***Site District Office:***	
Contam Limit Freq 1:		***Site County/District:***	
Contaminant UN No 1:		***Site Postal Code:***	
Contaminant Qty:		***Site Region:***	
Environment Impact:	CONFIRMED	***Site Municipality:***	16404
Nature of Impact:	Soil contamination	***Site Lot:***	
Receiving Medium:	LAND	***Site Conc:***	
Receiving Env:		***Northing:***	
Health/Env Conseq:		***Easting:***	FIRE DEPT., OPP
MOE Response:		***Site Geo Ref Accu:***	
Dt MOE Arvl on Scn:		***Site Geo Ref Meth:***	
MOE Reported Dt:	9/4/1992	***Site Map Datum:***	
Dt Document Closed:			
Agency Involved:			
SAC Action Class:			
Incident Reason:	ERROR		
Incident Summary:	SHELL TANK TRUCK- EXPLOSION AND FIRE. SOME GASOLINE TO GROUND.		

Site: ***SUN-CANADIAN PIPE LINE COMPANY***
SUN CANADIAN PIPELINE LTD. HIGHWAY 6 PIPELINE FLAMBOROUGH TOWN ON

Database: ***SPL***

Ref No:	92723	***Discharger Report:***	
Site No:		***Material Group:***	
Incident Dt:	10/22/1993	***Client Type:***	

Year:		***Sector Type:***	
Incident Cause:	VALVE/FITTING LEAK OR FAILURE	***Source Type:***	
Incident Event:		***Nearest Watercourse:***	
Contaminant Code:		***Site Name:***	
Contaminant Name:		***Site Address:***	
Contaminant Limit 1:		***Site District Office:***	
Contam Limit Freq 1:		***Site County/District:***	
Contaminant UN No 1:		***Site Postal Code:***	
Contaminant Qty:		***Site Region:***	
Environment Impact:	CONFIRMED	***Site Municipality:***	16404
Nature of Impact:	Soil contamination	***Site Lot:***	
Receiving Medium:	LAND	***Site Conc:***	
Receiving Env:		***Northing:***	
Health/Env Conseq:		***Easting:***	
MOE Response:		***Site Geo Ref Accu:***	
Dt MOE Arvl on Scn:		***Site Geo Ref Meth:***	
MOE Reported Dt:	10/25/1993	***Site Map Datum:***	
Dt Document Closed:			
Agency Involved:			
SAC Action Class:			
Incident Reason:	EQUIPMENT FAILURE		
Incident Summary:	SUN CANADIAN PIPELINE - 23L FURNACE OIL/GASOLINE TO SOIL: FLANGE LEAK		

Site: ***RYDER TRUCK RENTAL CANADA LTD.***
ON HWY 6 AT BOTTOM OF CLAPPISON HILL. MOTOR VEHICLE (OPERATING FLUID) FLAMBOROUGH TOWN ON

Database: ***SPL***

Ref No:	180610	***Discharger Report:***	
Site No:		***Material Group:***	
Incident Dt:	5/10/2000	***Client Type:***	
Year:		***Sector Type:***	
Incident Cause:	PIPE/HOSE LEAK	***Source Type:***	
Incident Event:		***Nearest Watercourse:***	
Contaminant Code:		***Site Name:***	
Contaminant Name:		***Site Address:***	
Contaminant Limit 1:		***Site District Office:***	
Contam Limit Freq 1:		***Site County/District:***	
Contaminant UN No 1:		***Site Postal Code:***	
Contaminant Qty:		***Site Region:***	
Environment Impact:	POSSIBLE	***Site Municipality:***	16404
Nature of Impact:	Multi Media Pollution	***Site Lot:***	
Receiving Medium:	LAND / WATER	***Site Conc:***	
Receiving Env:		***Northing:***	
Health/Env Conseq:		***Easting:***	
MOE Response:		***Site Geo Ref Accu:***	
Dt MOE Arvl on Scn:		***Site Geo Ref Meth:***	
MOE Reported Dt:	5/10/2000	***Site Map Datum:***	
Dt Document Closed:			
Agency Involved:			
SAC Action Class:			
Incident Reason:	EQUIPMENT FAILURE		
Incident Summary:	RYDER TRUCK-UKN QTY DIESEL TO DITCH & STORM SEWER.		

Site: ***PROVOST BULK CARRIERS INC.***
EAST SIDE RR #1,BETWEEN CON. 6 AND 7 , HIGHWAY 6, MILL GROVE TANK TRUCK (CARGO) HAMILTON-WENTWORTH R.M. ON

Database: ***SPL***

Ref No:	8454	***Discharger Report:***	
Site No:		***Material Group:***	
Incident Dt:	8/20/1988	***Client Type:***	
Year:		***Sector Type:***	
Incident Cause:	CONTAINER OVERFLOW	***Source Type:***	
Incident Event:		***Nearest Watercourse:***	
Contaminant Code:		***Site Name:***	
Contaminant Name:		***Site Address:***	
Contaminant Limit 1:		***Site District Office:***	
Contam Limit Freq 1:		***Site County/District:***	

Contaminant UN No 1:		***Site Postal Code:***	
Contaminant Qty:		***Site Region:***	
Environment Impact:		***Site Municipality:***	16000
Nature of Impact:		***Site Lot:***	
Receiving Medium:	LAND	***Site Conc:***	
Receiving Env:		***Northing:***	
Health/Env Conseq:		***Easting:***	
MOE Response:		***Site Geo Ref Accu:***	
Dt MOE Arvl on Scn:		***Site Geo Ref Meth:***	
MOE Reported Dt:	8/22/1988	***Site Map Datum:***	
Dt Document Closed:			
Agency Involved:			
SAC Action Class:			
Incident Reason:	UNKNOWN		
Incident Summary:	PROVOST CARTAGE-20 L DIESEL FUEL TO GROUND. 88/08/20		

Site: ***Maple Leaf Foods Inc.***
Northbound Hwy # 6, South of Hwy # 4 at Clappison Corner, Dundas<UNOFFICIAL> Hamilton ON

Database: ***SPL***

Ref No:	5712-6EQE2X	***Discharger Report:***	0
Site No:		***Material Group:***	Waste
Incident Dt:	7/28/2005	***Client Type:***	
Year:		***Sector Type:***	Other
Incident Cause:	Other Transport Accident	***Source Type:***	
Incident Event:		***Nearest Watercourse:***	
Contaminant Code:		***Site Name:***	Northbound Hwy # 6, South of Hwy # 4 at Clappison Corner, Dundas<UNOFFICIAL>
Contaminant Name:	OFFAL	***Site Address:***	
Contaminant Limit 1:		***Site District Office:***	Hamilton
Contam Limit Freq 1:		***Site County/District:***	
Contaminant UN No 1:		***Site Postal Code:***	
Contaminant Qty:		***Site Region:***	
Environment Impact:	Possible	***Site Municipality:***	Hamilton
Nature of Impact:	Soil Contamination	***Site Lot:***	
Receiving Medium:	Land	***Site Conc:***	
Receiving Env:		***Northing:***	
Health/Env Conseq:		***Easting:***	
MOE Response:		***Site Geo Ref Accu:***	
Dt MOE Arvl on Scn:		***Site Geo Ref Meth:***	
MOE Reported Dt:	7/28/2005	***Site Map Datum:***	
Dt Document Closed:			
Agency Involved:			
SAC Action Class:	Spills to Highways (usually highway accidents)		
Incident Reason:	Error- Operator error		
Incident Summary:	Rothsay-Offal onto Hwy # 6,MVA,cleaning		

Site: ***TRANSPORT TRUCK***
HWY 6 NORTHBOUND, RIGHT LANE AT CLAPPISON'S CORNERS MOTOR VEHICLE (OPERATING FLUID)
FLAMBOROUGH TOWN ON

Database: ***SPL***

Ref No:	163815	***Discharger Report:***	
Site No:		***Material Group:***	
Incident Dt:	1/19/1999	***Client Type:***	
Year:		***Sector Type:***	
Incident Cause:	OTHER CONTAINER LEAK	***Source Type:***	
Incident Event:		***Nearest Watercourse:***	
Contaminant Code:		***Site Name:***	
Contaminant Name:		***Site Address:***	
Contaminant Limit 1:		***Site District Office:***	
Contam Limit Freq 1:		***Site County/District:***	
Contaminant UN No 1:		***Site Postal Code:***	
Contaminant Qty:		***Site Region:***	
Environment Impact:	POSSIBLE	***Site Municipality:***	16404
Nature of Impact:	Soil contamination	***Site Lot:***	
Receiving Medium:	LAND	***Site Conc:***	
Receiving Env:		***Northing:***	

Health/Env Conseq:		***Easting:***	MTO,OPP
MOE Response:		***Site Geo Ref Accu:***	
Dt MOE Arvl on Scn:		***Site Geo Ref Meth:***	
MOE Reported Dt:	1/19/1999	***Site Map Datum:***	
Dt Document Closed:			
Agency Involved:			
SAC Action Class:			
Incident Reason:	DAMAGE BY MOVING EQUIPMENT		
Incident Summary:	HARMAC TRANSPORT:150L DIESEL SPILLED TO HWY FROM PUNCTURED SADDLE TK.		

Site: ***Maple Leaf Foods Inc.***
Highway 6 North, Flamborough EAST SHOULDER, CATCHBASINS & OUTFALL ON CLAPPISON'S HILL<UNOFFICIAL> Hamilton ON

Database: ***SPL***

Ref No:	7756-6U7QXJ	***Discharger Report:***	
Site No:		***Material Group:***	Oils
Incident Dt:	10/2/2006	***Client Type:***	
Year:		***Sector Type:***	Transport Truck
Incident Cause:	Overflow (Tanks Lagoons)	***Source Type:***	
Incident Event:		***Nearest Watercourse:***	
Contaminant Code:	14	***Site Name:***	HIGHWAY 6 NORTH, FLAMBOROUGH
Contaminant Name:	GREASE (N.O.S.)	***Site Address:***	HIGHWAY 6 NORTH, FLAMBOROUGH
Contaminant Limit 1:		***Site District Office:***	Hamilton - District
Contam Limit Freq 1:		***Site County/District:***	
Contaminant UN No 1:		***Site Postal Code:***	
Contaminant Qty:	3620 kg	***Site Region:***	
Environment Impact:	Confirmed	***Site Municipality:***	Hamilton
Nature of Impact:	Soil Contamination; Surface Water Pollution	***Site Lot:***	
Receiving Medium:	Land & Water	***Site Conc:***	
Receiving Env:		***Northing:***	
Health/Env Conseq:		***Easting:***	
MOE Response:		***Site Geo Ref Accu:***	
Dt MOE Arvl on Scn:		***Site Geo Ref Meth:***	
MOE Reported Dt:	10/2/2006	***Site Map Datum:***	
Dt Document Closed:			
Agency Involved:			
SAC Action Class:			
Incident Reason:	Equipment/Vehicles		
Incident Summary:	Rothsay Dundas: Grease Spill, Hwy 6 N		

Site: ***FARM***
CONC 5 OFF HWY 6 OUTSKIRTS OF WATERDOWN FLAMBOROUGH TOWN ON

Database: ***SPL***

Ref No:	34191	***Discharger Report:***	
Site No:		***Material Group:***	
Incident Dt:	5/4/1990	***Client Type:***	
Year:		***Sector Type:***	
Incident Cause:	OTHER CAUSE (N.O.S.)	***Source Type:***	
Incident Event:		***Nearest Watercourse:***	
Contaminant Code:		***Site Name:***	
Contaminant Name:		***Site Address:***	
Contaminant Limit 1:		***Site District Office:***	
Contam Limit Freq 1:		***Site County/District:***	
Contaminant UN No 1:		***Site Postal Code:***	
Contaminant Qty:		***Site Region:***	
Environment Impact:	POSSIBLE	***Site Municipality:***	16404
Nature of Impact:	Soil contamination	***Site Lot:***	
Receiving Medium:	LAND / AIR	***Site Conc:***	
Receiving Env:		***Northing:***	
Health/Env Conseq:		***Easting:***	
MOE Response:		***Site Geo Ref Accu:***	
Dt MOE Arvl on Scn:		***Site Geo Ref Meth:***	
MOE Reported Dt:	5/4/1990	***Site Map Datum:***	
Dt Document Closed:			
Agency Involved:			
SAC Action Class:			

Incident Reason: FIRE/EXPLOSION
Incident Summary: 30 BAGS OF FUNGICIDE (DITHANE M45) INVOLVED INBARN FIRE.

Site: ***TRANSPORT TRUCK***
ON HWY. #6 NORTH, .4 KM NORTH OF CONC. 7 IN EAST FLAMBOROUGH TWP. MOTOR VEHICLE (OPERATING FLUID) FLAMBOROUGH TOWN ON

Database: ***SPL***

Ref No:	138205	***Discharger Report:***	
Site No:		***Material Group:***	
Incident Dt:	3/14/1997	***Client Type:***	
Year:		***Sector Type:***	
Incident Cause:	OTHER CONTAINER LEAK	***Source Type:***	
Incident Event:		***Nearest Watercourse:***	
Contaminant Code:		***Site Name:***	
Contaminant Name:		***Site Address:***	
Contaminant Limit 1:		***Site District Office:***	
Contam Limit Freq 1:		***Site County/District:***	
Contaminant UN No 1:		***Site Postal Code:***	
Contaminant Qty:		***Site Region:***	
Environment Impact:	POSSIBLE	***Site Municipality:***	16404
Nature of Impact:	Soil contamination	***Site Lot:***	
Receiving Medium:	LAND	***Site Conc:***	
Receiving Env:		***Northing:***	
Health/Env Conseq:		***Easting:***	OPP, MTO
MOE Response:		***Site Geo Ref Accu:***	
Dt MOE Arvl on Scn:		***Site Geo Ref Meth:***	
MOE Reported Dt:	3/14/1997	***Site Map Datum:***	
Dt Document Closed:			
Agency Involved:			
SAC Action Class:			

Incident Reason: ERROR
Incident Summary: TRANSPORT TRUCK - 100 L OF DIESEL FUEL TO HWY. FROM SADDLE TANK(S).

Site: ***SPIE CONSTRUCTION***
BROCK ROAD FLAMBOROUGH TOWN ON

Database: ***SPL***

Ref No:	41450	***Discharger Report:***	
Site No:		***Material Group:***	
Incident Dt:	9/29/1990	***Client Type:***	
Year:		***Sector Type:***	
Incident Cause:	OTHER CONTAINER LEAK	***Source Type:***	
Incident Event:		***Nearest Watercourse:***	
Contaminant Code:		***Site Name:***	
Contaminant Name:		***Site Address:***	
Contaminant Limit 1:		***Site District Office:***	
Contam Limit Freq 1:		***Site County/District:***	
Contaminant UN No 1:		***Site Postal Code:***	
Contaminant Qty:		***Site Region:***	
Environment Impact:	CONFIRMED	***Site Municipality:***	16404
Nature of Impact:	Soil contamination	***Site Lot:***	
Receiving Medium:	LAND	***Site Conc:***	
Receiving Env:		***Northing:***	
Health/Env Conseq:		***Easting:***	M.O.E.
MOE Response:		***Site Geo Ref Accu:***	
Dt MOE Arvl on Scn:		***Site Geo Ref Meth:***	
MOE Reported Dt:	9/29/1990	***Site Map Datum:***	
Dt Document Closed:			
Agency Involved:			
SAC Action Class:			

Incident Reason: UNKNOWN
Incident Summary: SPIE CONSTRUCTION- DIESEL FUEL TO DITCH.

Appendix: Database Descriptions

Environmental Risk Information Services (ERIS) can search the following databases. The extent of historical information varies with each database and current information is determined by what is publicly available to ERIS at the time of update. ***Note:*** *Databases denoted with " * " indicates that the database will no longer be updated. See the individual database description for more information.*

Abandoned Aggregate Inventory: Provincial AAGR

The MAAP Program maintains a database of abandoned pits and quarries. Please note that the database is only referenced by lot and concession and city/town location. The database provides information regarding the location, type, size, land use, status and general comments.*

Government Publication Date: Sept 2002*

Aggregate Inventory: Provincial AGR

The Ontario Ministry of Natural Resources maintains a database of all active pits and quarries. The database provides information regarding the registered owner/operator, location name, operation type, approval type, and maximum annual tonnage.

Government Publication Date: Up to Sep 2018

Abandoned Mine Information System: Provincial AMIS

The Abandoned Mines Information System contains data on known abandoned and inactive mines located on both Crown and privately held lands. The information was provided by the Ministry of Northern Development and Mines (MNDM), with the following disclaimer: "the database provided has been compiled from various sources, and the Ministry of Northern Development and Mines makes no representation and takes no responsibility that such information is accurate, current or complete". Reported information includes official mine name, status, background information, mine start/end date, primary commodity, mine features, hazards and remediation.

Government Publication Date: 1800-Nov 2016

Anderson's Waste Disposal Sites: Private ANDR

The information provided in this database was collected by examining various historical documents which aimed to characterize the likely position of former waste disposal sites from 1860 to present. The research initiative behind the creation of this database was to identify those sites that are missing from the Ontario MOE Waste Disposal Site Inventory, as well as to provide revisions and corrections to the positions and descriptions of sites currently listed in the MOE inventory. In addition to historic waste disposal facilities, the database also identifies certain auto wreckers and scrap yards that have been extrapolated from documentary sources. Please note that the data is not warranted to be complete, exhaustive or authoritative. The information was collected for research purposes only.

Government Publication Date: 1860s-Present

Automobile Wrecking & Supplies: Private AUWR

This database provides an inventory of known locations that are involved in the scrap metal, automobile wrecking/recycling, and automobile parts & supplies industry. Information is provided on the company name, location and business type.

Government Publication Date: 1999-Jul 31, 2018

Borehole: Provincial BORE

A borehole is the generalized term for any narrow shaft drilled in the ground, either vertically or horizontally. The information here includes geotechnical investigations or environmental site assessments, mineral exploration, or as a pilot hole for installing piers or underground utilities. Information is from many sources such as the Ministry of Transportation (MTO) boreholes from engineering reports and projects from the 1950 to 1990's in Southern Ontario. Boreholes from the Ontario Geological Survey (OGS) including The Urban Geology Analysis Information System (UGAIS) and the York Peel Durham Toronto (YPDT) database of the Conservation Authority Moraine Coalition. This database will include fields such as location, stratigraphy, depth, elevation, year drilled, etc. For all water well data or oil and gas well data for Ontario please refer to WWIS and OOGW.

Government Publication Date: 1875-Jul 2014

Certificates of Approval: Provincial CA

This database contains the following types of approvals: Air & Noise, Industrial Sewage, Municipal & Private Sewage, Waste Management Systems and Renewable Energy Approvals. The MOE in Ontario states that any facility that releases emissions to the atmosphere, discharges contaminants to ground or surface water, provides potable water supplies, or stores, transports or disposes of waste, must have a Certificate of Approval before it can operate lawfully. Fields include approval number, business name, address, approval date, approval type and status. This database will no longer be updated, as CofA's have been replaced by either Environmental Activity and Sector Registry (EASR) or Environmental Compliance Approval (ECA). Please refer to those individual databases for any information after Oct.31, 2011.

Government Publication Date: 1985-Oct 30, 2011*

Commercial Fuel Oil Tanks: Provincial CFOT

List of commercial underground fuel oil tanks made available by the Fuels Safety Program of the Technical Standards & Safety Authority (TSSA). Ontario Regulation 213/01 of the Technical Standards and Safety Act (2000) requires that all underground tanks be registered with the TSSA. Note: the Fuels Safety Division does not register waste oil tanks in apartments, office buildings, residences, etc., or aboveground gas or diesel tanks. Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of commercial fuel tanks in the province. The TSSA updates information in its system on an ongoing basis; this listing is a copy of the data captured at one moment in time and is hence limited by the record date provided here.

Government Publication Date: Feb 28, 2017

Chemical Register: Private CHEM

This database includes information from both a one time study conducted in 1992 and private source and is a listing of facilities that manufacture or distribute chemicals. The production of these chemical substances may involve one or more chemical reactions and/or chemical separation processes (i.e. fractionation, solvent extraction, crystallization, etc.).

Government Publication Date: 1999-Jul 31, 2018

Compressed Natural Gas Stations: Private CNG

Canada has a network of public access compressed natural gas (CNG) refuelling stations. These stations dispense natural gas in compressed form at 3,000 pounds per square inch (psi), the pressure which is allowed within the current Canadian codes and standards. The majority of natural gas refuelling is located at existing retail gasoline that have a separate refuelling island for natural gas. This list of stations is made available by the Canadian Natural Gas Vehicle Alliance.

Government Publication Date: Dec 2012 - Jul 2018

Inventory of Coal Gasification Plants and Coal Tar Sites: Provincial COAL

This inventory includes both the "Inventory of Coal Gasification Plant Waste Sites in Ontario-April 1987" and the Inventory of Industrial Sites Producing or Using Coal Tar and Related Tars in Ontario-November 1988) collected by the MOE. It identifies industrial sites that produced and continue to produce or use coal tar and other related tars. Detailed information is available and includes: facility type, size, land use, information on adjoining properties, soil condition, site operators/occupants, site description, potential environmental impacts and historic maps available. This was a one-time inventory.*

Government Publication Date: Apr 1987 and Nov 1988*

Compliance and Convictions: Provincial CONV

This database summarizes the fines and convictions handed down by the Ontario courts beginning in 1989. Companies and individuals named here have been found guilty of environmental offenses in Ontario courts of law.

Government Publication Date: 1989-Sep 2018

Certificates of Property Use: Provincial CPU

This is a subset taken from Ontario's Environmental Registry (EBR) database. It will include all CPU's on the registry such as (EPA s. 168.6) - Certificate of Property Use.

Government Publication Date: 1994-Jul 31, 2018

Drill Hole Database: Provincial DRL

The Ontario Drill Hole Database contains information on more than 113,000 percussion, overburden, sonic and diamond drill holes from assessment files on record with the department of Mines and Minerals. Please note that limited data is available for southern Ontario, as it was the last area to be completed. The database was created when surveys submitted to the Ministry were converted in the Assessment File Research Image Database (AFRI) project. However, the degree of accuracy (coordinates) as to the exact location of drill holes is dependent upon the source document submitted to the MNDM. Levels of accuracy used to locate holes are: centering on the mining claim; a sketch of the mining claim; a 1:50,000 map; a detailed company map; or from submitted a "Report of Work".

Government Publication Date: 1886-Nov 30, 2017

Dry Cleaning Facilities: Federal DRYCLEANERS

List of dry cleaning facilities made available by Environment and Climate Change Canada. Environment and Climate Change Canada's Tetrachloroethylene (Use in Dry Cleaning and Reporting Requirements) Regulations (SOR/2003-79) are intended to reduce releases of tetrachloroethylene to the environment from dry cleaning facilities.

Government Publication Date: Jan 2004-Dec 2016

Environmental Activity and Sector Registry: Provincial EASR

On October 31, 2011, a smarter, faster environmental approvals system came into effect in Ontario. The EASR allows businesses to register certain activities with the ministry, rather than apply for an approval. The registry is available for common systems and processes, to which preset rules of operation can be applied. The EASR is currently available for: heating systems, standby power systems and automotive refinishing. Businesses whose activities aren't subject to the EASR may apply for an ECA (Environmental Compliance Approval), Please see our ECA database.

Government Publication Date: Oct 2011-Sep 30, 2018

Environmental Registry: Provincial EBR

The Environmental Registry lists proposals, decisions and exceptions regarding policies, Acts, instruments, or regulations that could significantly affect the environment. Through the Registry, thirteen provincial ministries notify the public of upcoming proposals and invite their comments. For example, if a local business is requesting a permit, license, or certificate of approval to release substances into the air or water; these are notified on the registry. Data includes: Approval for discharge into the natural environment other than water (i.e. Air) - EPA s. 9, Approval for sewage works - OWRA s. 53(1), and EPA s. 27 - Approval for a waste disposal site. For information regarding Permit to Take Water (PTTW), Certificate of Property Use (CPU) and (ORD) Orders please refer to those individual databases.

Government Publication Date: 1994-Jul 31, 2018

Environmental Compliance Approval: Provincial ECA

On October 31, 2011, a smarter, faster environmental approvals system came into effect in Ontario. In the past, a business had to apply for multiple approvals (known as certificates of approval) for individual processes and pieces of equipment. Today, a business either registers itself, or applies for a single approval, depending on the types of activities it conducts. Businesses whose activities aren't subject to the EASR may apply for an ECA. A single ECA addresses all of a business's emissions, discharges and wastes. Separate approvals for air, noise and waste are no longer required. This database will also include Renewable Energy Approvals. For certificates of approval prior to Nov 1st, 2011, please refer to the CA database. For all Waste Disposal Sites please refer to the WDS database.

Government Publication Date: Oct 2011-Sep 30, 2018

Environmental Effects Monitoring: Federal EEM

The Environmental Effects Monitoring program assesses the effects of effluent from industrial or other sources on fish, fish habitat and human usage of fisheries resources. Since 1992, pulp and paper mills have been required to conduct EEM studies under the Pulp and Paper Effluent Regulations. This database provides information on the mill name, geographical location and sub-lethal toxicity data.

Government Publication Date: 1992-2007*

ERIS Historical Searches: Private EHS

ERIS has compiled a database of all environmental risk reports completed since March 1999. Available fields for this database include: site location, date of report, type of report, and search radius. As per all other databases, the ERIS database can be referenced on both the map and "Statistical Profile" page.

Government Publication Date: 1999-Jul 31, 2018

Environmental Issues Inventory System: Federal EIIS

The Environmental Issues Inventory System was developed through the implementation of the Environmental Issues and Remediation Plan. This plan was established to determine the location and severity of contaminated sites on inhabited First Nation reserves, and where necessary, to remediate those that posed a risk to health and safety; and to prevent future environmental problems. The EIIS provides information on the reserve under investigation, inventory number, name of site, environmental issue, site action (Remediation, Site Assessment), and date investigation completed.

Government Publication Date: 1992-2001*

Emergency Management Historical Event: Provincial EMHE

List of locations of historical occurrences of emergency events, including those assigned to the Ministry of Natural Resources by Order-In-Council (OIC) under the Emergency Management and Civil Protection Act, as well as events where MNR provided requested emergency response assistance. Many of these events will have involved community evacuations, significant structural loss, and/or involvement of MNR emergency response staff. These events fall into one of ten (10) type categories: Dam Failure; Drought / Low Water; Erosion; Flood; Forest Fire; Soil and Bedrock Instability; Petroleum Resource Center Event, EMO Requested Assistance, Continuity of Operations Event, Other Requested Assistance. EMHE record details are reproduced by ERIS under License with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2017.

Government Publication Date: Dec 31, 2016

List of TSSA Expired Facilities: Provincial EXP

List of facilities and tanks - for which there was once a registration - no longer registered with the Fuels Safety Program of the Technical Standards and Safety Authority (TSSA). Includes private fuel outlets, bulk plants, fuel oil tanks, gasoline stations, marinas, propane filling stations, liquid fuel tanks, piping systems, etc. Tanks which have been removed from the ground are included in the expired facilities inventory held by the TSSA. Notes: the Fuels Safety Division did not register private fuel underground/aboveground storage tanks prior to January of 1990, or furnace oil tanks prior to May 1, 2002; nor does the Division register waste oil tanks in apartments, office buildings, residences, etc., or aboveground gas or diesel tanks. Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of expired tanks/tank facilities in the province. The TSSA updates information in its system on an ongoing basis; this listing is hence limited by the record date provided here.

Government Publication Date: Feb 28, 2017

Federal Convictions: Federal FCON

Environment Canada maintains a database referred to as the "Environmental Registry" that details prosecutions under the Canadian Environmental Protection Act (CEPA) and the Fisheries Act (FA). Information is provided on the company name, location, charge date, offence and penalty.

Government Publication Date: 1988-Jun 2007*

Contaminated Sites on Federal Land: Federal FCS

The Federal Contaminated Sites Inventory includes information on known federal contaminated sites under the custodianship of departments, agencies and consolidated Crown corporations as well as those that are being or have been investigated to determine whether they have contamination arising from past use that could pose a risk to human health or the environment. The inventory also includes non-federal contaminated sites for which the Government of Canada has accepted some or all financial responsibility. It does not include sites where contamination has been caused by, and which are under the control of, enterprise Crown corporations, private individuals, firms or other levels of government.

Government Publication Date: Jun 2000-May 2018

Fisheries & Oceans Fuel Tanks: Federal FOFT

Fisheries & Oceans Canada maintains an inventory of aboveground & underground fuel storage tanks located on Fisheries & Oceans property or controlled by DFO. Our inventory provides information on the site name, location, tank owner, tank operator, facility type, storage tank location, tank contents & capacity, and date of tank installation.

Government Publication Date: 1964-Sep 2017

Fuel Storage Tank: Provincial FST

List of registered private and retail fuel storage tanks made available by the Fuels Safety Program of the Technical Standards & Safety Authority (TSSA). Ontario Regulation 213/01 of the Technical Standards and Safety Act (2000) requires that all underground tanks be registered with the TSSA. Notes: the Fuels Safety Division did not register private fuel underground/aboveground storage tanks prior to January of 1990, or furnace oil tanks prior to May 1, 2002; nor does the Division register waste oil tanks in apartments, office buildings, residences, etc., or aboveground gas or diesel tanks. Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of fuel storage tanks/tank facilities in the province. The TSSA updates information in its system on an ongoing basis; this listing is hence limited by the record date provided here.

Government Publication Date: Feb 28, 2017

Fuel Storage Tank - Historic: Provincial FSTH

The Fuels Safety Branch of the Ontario Ministry of Consumer and Commercial Relations maintained a database of all registered private fuel storage tanks. Public records of private fuel storage tanks are only available since the registration became effective in September 1989. This information is now collected by the Technical Standards and Safety Authority.

Government Publication Date: Pre-Jan 2010*

Ontario Regulation 347 Waste Generators Summary: Provincial GEN

Regulation 347 of the Ontario EPA defines a waste generation site as any site, equipment and/or operation involved in the production, collection, handling and/or storage of regulated wastes. A generator of regulated waste is required to register the waste generation site and each waste produced, collected, handled, or stored at the site. This database contains the registration number, company name and address of registered generators including the types of hazardous wastes generated. It includes data on waste generating facilities such as: drycleaners, waste treatment and disposal facilities, machine shops, electric power distribution etc. This information is a summary of all years from 1986 including the most currently available data. Some records may contain, within the company name, the phrase "See & Use..." followed by a series of letters and numbers. This occurs when one company is amalgamated with or taken over by another registered company. The number listed as "See & Use", refers to the new ownership and the other identification number refers to the original ownership. This phrase serves as a link between the 2 companies until operations have been fully transferred.

Government Publication Date: 1986-June 30, 2018

Greenhouse Gas Emissions from Large Facilities: Federal GHG

List of greenhouse gas emissions from large facilities made available by Environment Canada. Greenhouse gas emissions in kilotonnes of carbon dioxide equivalents (kt CO2 eq).

Government Publication Date: 2013-Dec 2016

TSSA Historic Incidents: Provincial HINC

List of historic incidences of spills and leaks of diesel, fuel oil, gasoline, natural gas, propane, and hydrogen recorded by the TSSA in their previous incident tracking system. The TSSA's Fuels Safety Program administers the Technical Standards & Safety Act 2000, providing fuel-related safety services associated with the safe transportation, storage, handling and use of fuels such as gasoline, diesel, propane, natural gas and hydrogen. Under this Act, the TSSA regulates fuel suppliers, storage facilities, transport trucks, pipelines, contractors and equipment or appliances that use fuels. Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of historical fuel spills and leaks in the province. This listing is a copy of the data captured at one moment in time and is hence limited by the record date provided here.

Government Publication Date: 2006-June 2009*

Indian & Northern Affairs Fuel Tanks: Federal IAFT

The Department of Indian & Northern Affairs Canada (INAC) maintains an inventory of aboveground & underground fuel storage tanks located on both federal and crown land. Our inventory provides information on the reserve name, location, facility type, site/facility name, tank type, material & ID number, tank contents & capacity, and date of tank installation.

Government Publication Date: 1950-Aug 2003*

TSSA Incidents: Provincial INC

List of spills and leaks of diesel, fuel oil, gasoline, natural gas, propane, and hydrogen reported to the Spills Action Centre (SAC) and made available by the Technical Standards and Safety Authority (TSSA). Under the Technical Standards & Safety Act (2000), the TSSA regulates fuel suppliers, storage facilities, transport trucks, pipelines, contractors, and equipment or appliances that use fuels. Includes incidents from fuel-related hazards such as spills, fires, and explosions. Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of fuel-related leaks, spills, and incidents in the province. The TSSA updates information in its system on an ongoing basis; this listing is hence limited by the record date provided here.

Government Publication Date: Feb 28, 2017

Landfill Inventory Management Ontario: Provincial LIMO

The Landfill Inventory Management Ontario (LIMO) database is updated every year, as the ministry compiles new and updated information. The inventory will include small and large landfills. Additionally, each year the ministry will request operators of the larger landfills complete a landfill data collection form that will be used to update LIMO and will include the following information from the previous operating year. This will include additional information such as estimated amount of total waste received, landfill capacity, estimated total remaining landfill capacity, fill rates, engineering designs, reporting and monitoring details, size of location, service area, approved waste types, leachate of site treatment, contaminant attenuation zone and more. The small landfills will include information such as site owner, site location and certificate of approval # and status.

Government Publication Date: Sep 30, 2017

Canadian Mine Locations: Private MINE

This information is collected from the Canadian & American Mines Handbook. The Mines database is a national database that provides over 290 listings on mines (listed as public companies) dealing primarily with precious metals and hard rocks. Listed are mines that are currently in operation, closed, suspended, or are still being developed (advanced projects). Their locations are provided as geographic coordinates (x, y and/or longitude, latitude). As of 2002, data pertaining to Canadian smelters and refineries has been appended to this database.

Government Publication Date: 1998-2009*

Environmental Penalty Annual Report: Provincial MISA PENALTY

This database contains data from Ontario's annual environmental penalty report published by the Ministry of the Environment and Climate Change. These reports provide information on environmental penalties for land or water violations issued to companies in one of the nine industrial sectors covered by the Municipal Industrial Strategy for Abatement (MISA) regulations.

Government Publication Date: Jan 1, 2011 - Dec 31, 2017

Mineral Occurrences: Provincial MNR

In the early 70's, the Ministry of Northern Development and Mines created an inventory of approximately 19,000 mineral occurrences in Ontario, in regard to metallic and industrial minerals, as well as some information on building stones and aggregate deposits. Please note that the "Horizontal Positional Accuracy" is approximately +/- 200 m. Many reference elements for each record were derived from field sketches using pace or chain/tape measurements against claim posts or topographic features in the area. The primary limiting factor for the level of positional accuracy is the scale of the source material. The testing of horizontal accuracy of the source materials was accomplished by comparing the plan metric (X and Y) coordinates of that point with the coordinates of the same point as defined from a source of higher accuracy.

Government Publication Date: 1846-Jan 2018

National Analysis of Trends in Emergencies System (NATES): Federal NATE

In 1974 Environment Canada established the National Analysis of Trends in Emergencies System (NATES) database, for the voluntary reporting of significant spill incidents. The data was to be used to assist in directing the work of the emergencies program. NATES ran from 1974 to 1994. Extensive information is available within this database including company names, place where the spill occurred, date of spill, cause, reason and source of spill, damage incurred, and amount, concentration, and volume of materials released.

Government Publication Date: 1974-1994*

Non-Compliance Reports: Provincial NCPL

The Ministry of the Environment provides information about non-compliant discharges of contaminants to air and water that exceed legal allowable limits, from regulated industrial and municipal facilities. A reported non-compliance failure may be in regard to a Control Order, Certificate of Approval, Sectoral Regulation or specific regulation/act.

Government Publication Date: Dec 31, 2016

National Defense & Canadian Forces Fuel Tanks: Federal NDFT

The Department of National Defense and the Canadian Forces maintains an inventory of all aboveground & underground fuel storage tanks located on DND lands. Our inventory provides information on the base name, location, tank type & capacity, tank contents, tank class, date of tank installation, date tank last used, and status of tank as of May 2001. This database will no longer be updated due to the new National Security protocols which have prohibited any release of this database.

Government Publication Date: Up to May 2001*

National Defense & Canadian Forces Spills: Federal NDSP

The Department of National Defense and the Canadian Forces maintains an inventory of spills to land and water. All spill sites have been classified under the "Transportation of Dangerous Goods Act - 1992". Our inventory provides information on the facility name, location, spill ID #, spill date, type of spill, as well as the quantity of substance spilled & recovered.

Government Publication Date: Mar 1999-Apr 2018

National Defence & Canadian Forces Waste Disposal Sites: Federal NDWD

The Department of National Defence and the Canadian Forces maintains an inventory of waste disposal sites located on DND lands. Where available, our inventory provides information on the base name, location, type of waste received, area of site, depth of site, year site opened/closed and status.

Government Publication Date: 2001-Apr 2007*

National Energy Board Pipeline Incidents: Federal NEBI

Locations of pipeline incidents from 2008 to present, made available by the National Energy Board (NEB). Includes incidents reported under the Onshore Pipeline Regulations and the Processing Plant Regulations related to pipelines under federal jurisdiction, does not include incident data related to pipelines under provincial or territorial jurisdiction.

Government Publication Date: 2008-Jun 30, 2018

National Energy Board Wells: Federal NEBW

The NEBW database contains information on onshore & offshore oil and gas wells that are outside provincial jurisdiction(s) and are thereby regulated by the National Energy Board. Data is provided regarding the operator, well name, well ID No./UWI, status, classification, well depth, spud and release date.

Government Publication Date: 1920-Feb 2003*

National Environmental Emergencies System (NEES): Federal NEES

In 2000, the Emergencies program implemented NEES, a reporting system for spills of hazardous substances. For the most part, this system only captured data from the Atlantic Provinces, some from Quebec and Ontario and a portion from British Columbia. Data for Alberta, Saskatchewan, Manitoba and the Territories was not captured. However, NEES is also a repository for previous Environment Canada spill datasets. NEES is composed of the historic datasets ' or Trends ' which dates from approximately 1974 to present. NEES Trends is a compilation of historic databases, which were merged and includes data from NATES (National Analysis of Trends in Emergencies System), ARTS (Atlantic Regional Trends System), and NEES. In 2001, the Emergencies Program determined that variations in reporting regimes and requirements between federal and provincial agencies made national spill reporting and trend analysis difficult to achieve. As a consequence, the department has focused efforts on capturing data on spills of substances which fall under its legislative authority only (CEPA and FA). As such, the NEES database will be decommissioned in December 2004.

Government Publication Date: 1974-2003*

National PCB Inventory: Federal NPCB

Environment Canada's National PCB inventory includes information on in-use PCB containing equipment in Canada including federal, provincial and private facilities. Federal out-of-service PCB containing equipment and PCB waste owned by the federal government or by federally regulated industries such as airlines, railway companies, broadcasting companies, telephone and telecommunications companies, pipeline companies, etc. are also listed. Although it is not Environment Canada's mandate to collect data on non-federal PCB waste, the National PCB inventory includes some information on provincial and private PCB waste and storage sites. Some addresses provided may be Head Office addresses and are not necessarily the location of where the waste is being used or stored.

Government Publication Date: 1988-2008*

National Pollutant Release Inventory: Federal NPRI

Environment Canada has defined the National Pollutant Release Inventory ("NPRI") as a federal government initiative designed to collect comprehensive national data regarding releases to air, water, or land, and waste transfers for recycling for more than 300 listed substances.

Government Publication Date: 1993-May 2017

Oil and Gas Wells: Private OGW

The Nickle's Energy Group (publisher of the Daily Oil Bulletin) collects information on drilling activity including operator and well statistics. The well information database includes name, location, class, status and depth. The main Nickle's database is updated on a daily basis, however, this database is updated on a monthly basis. More information is available at www.nickles.com.

Government Publication Date: 1988-April 30, 2018

Ontario Oil and Gas Wells: Provincial OOGW

In 1998, the MNR handed over to the Ontario Oil, Gas and Salt Resources Corporation, the responsibility of maintaining a database of oil and gas wells drilled in Ontario. The OGSR Library has over 20,000+ wells in their database. Information available for all wells in the ERIS database include well owner/operator, location, permit issue date, and well cap date, license No., status, depth and the primary target (rock unit) of the well being drilled. All geology/stratigraphy table information, plus all water table information is also provide for each well record.

Government Publication Date: 1800-May 2018

Inventory of PCB Storage Sites: Provincial OPCB

The Ontario Ministry of Environment, Waste Management Branch, maintains an inventory of PCB storage sites within the province. Ontario Regulation 11/82 (Waste Management - PCB) and Regulation 347 (Generator Waste Management) under the Ontario EPA requires the registration of inactive PCB storage equipment and/or disposal sites of PCB waste with the Ontario Ministry of Environment. This database contains information on: 1) waste quantities; 2) major and minor sites storing liquid or solid waste; and 3) a waste storage inventory.

Government Publication Date: 1987-Oct 2004; 2012-Dec 2013

Orders: Provincial ORD

This is a subset taken from Ontario's Environmental Registry (EBR) database. It will include all Orders on the registry such as (EPA s. 17) - Order for remedial work, (EPA s. 18) - Order for preventative measures, (EPA s. 43) - Order for removal of waste and restoration of site, (EPA s. 44) - Order for conformity with Act for waste disposal sites, (EPA s. 136) - Order for performance of environmental measures.

Government Publication Date: 1994-Jul 31, 2018

Canadian Pulp and Paper: Private PAP

This information is part of the Pulp and Paper Canada Directory. The Directory provides a comprehensive listing of the locations of pulp and paper mills and the products that they produce.

Government Publication Date: 1999, 2002, 2004, 2005, 2009-2014

Parks Canada Fuel Storage Tanks: Federal PCFT

Canadian Heritage maintains an inventory of known fuel storage tanks operated by Parks Canada, in both National Parks and at National Historic Sites. The database details information on site name, location, tank install/removal date, capacity, fuel type, facility type, tank design and owner/operator.

Government Publication Date: 1920-Jan 2005*

Pesticide Register: Provincial PES

The Ontario Ministry of the Environment and Climate Change maintains a database of licensed operators and vendors of registered pesticides.

Government Publication Date: 1988-Mar 2018

TSSA Pipeline Incidents: Provincial PINC

List of pipeline incidents (strikes, leaks, spills) made available by the Technical Standards and Safety Authority (TSSA). Under the Technical Standards & Safety Act (2000), the TSSA regulates fuel suppliers, storage facilities, transport trucks, pipelines, contractors, and equipment or appliances that use fuels. Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of pipeline incidents in the province. The TSSA updates information in its system on an ongoing basis; this listing is hence limited by the record date provided here.

Government Publication Date: Feb 28, 2017

Private and Retail Fuel Storage Tanks: Provincial PRT

The Fuels Safety Branch of the Ontario Ministry of Consumer and Commercial Relations maintained a database of all registered private fuel storage tanks and licensed retail fuel outlets. This database includes an inventory of locations that have gasoline, oil, waste oil, natural gas and/or propane storage tanks on their property. The MCCR no longer collects this information. This information is now collected by the Technical Standards and Safety Authority (TSSA).

Government Publication Date: 1989-1996*

Permit to Take Water: Provincial PTTW

This is a subset taken from Ontario's Environmental Registry (EBR) database. It will include all PTTW's on the registry such as OWRA s. 34 - Permit to take water.

Government Publication Date: 1994-Jul 31, 2018

Ontario Regulation 347 Waste Receivers Summary: Provincial REC

Part V of the Ontario Environmental Protection Act ("EPA") regulates the disposal of regulated waste through an operating waste management system or a waste disposal site operated or used pursuant to the terms and conditions of a Certificate of Approval or a Provisional Certificate of Approval. Regulation 347 of the Ontario EPA defines a waste receiving site as any site or facility to which waste is transferred by a waste carrier. A receiver of regulated waste is required to register the waste receiving facility. This database represents registered receivers of regulated wastes, identified by registration number, company name and address, and includes receivers of waste such as: landfills, incinerators, transfer stations, PCB storage sites, sludge farms and water pollution control plants. This information is a summary of all years from 1986 including the most currently available data.

Government Publication Date: 1986-2016

Record of Site Condition: Provincial RSC

The Record of Site Condition (RSC) is part of the Ministry of the Environment's Brownfields Environmental Site Registry. Protection from environmental cleanup orders for property owners is contingent upon documentation known as a record of site condition (RSC) being filed in the Environmental Site Registry. In order to file an RSC, the property must have been properly assessed and shown to meet the soil, sediment and groundwater standards appropriate for the use (such as residential) proposed to take place on the property. The Record of Site Condition Regulation (O. Reg. 153/04) details requirements related to site assessment and clean up.
RSCs filed after July 1, 2011 will also be included as part of the new (O.Reg. 511/09).

Government Publication Date: 1997-Sept 2001, Oct 2004-Sep 2018

Retail Fuel Storage Tanks: Private RST

This database includes an inventory of retail fuel outlet locations (including marinas) that have on their property gasoline, oil, waste oil, natural gas and / or propane storage tanks.

Government Publication Date: 1999-Jul 31, 2018

Scott's Manufacturing Directory: Private SCT

Scott's Directories is a data bank containing information on over 200,000 manufacturers across Canada. Even though Scott's listings are voluntary, it is the most comprehensive database of Canadian manufacturers available. Information concerning a company's address, plant size, and main products are included in this database.

Government Publication Date: 1992-Mar 2011*

Ontario Spills: Provincial SPL

This database identifies information such as location (approximate), type and quantity of contaminant, date of spill, environmental impact, cause, nature of impact, etc. Information from 1988-2002 was part of the ORIS (Occurrence Reporting Information System). The SAC (Spills Action Centre) handles all spills reported in Ontario. Regulations for spills in Ontario are part of the MOE's Environmental Protection Act, Part X.

Government Publication Date: 1988-Jul 2018

Wastewater Discharger Registration Database: Provincial SRDS

Information under this heading is combination of the following 2 programs. The Municipal/Industrial Strategy for Abatement (MISA) division of the Ontario Ministry of Environment maintained a database of all direct dischargers of toxic pollutants within nine sectors including: Electric Power Generation; Mining; Petroleum Refining; Organic Chemicals; Inorganic Chemicals; Pulp & Paper; Metal Casting; Iron & Steel; and Quarries. All sampling information is now collected and stored within the Sample Result Data Store (SRDS).

Government Publication Date: 1990-Dec 31, 2016

Anderson's Storage Tanks: Private TANK

The information provided in this database was collected by examining various historical documents, which identified the location of former storage tanks, containing substances such as fuel, water, gas, oil, and other various types of miscellaneous products. Information is available in regard to business operating at tank site, tank location, permit year, permit & installation type, no. of tanks installed & configuration and tank capacity. Data contained within this database pertains only to the city of Toronto and is not warranted to be complete, exhaustive or authoritative. The information was collected for research purposes only.

Government Publication Date: 1915-1953*

Transport Canada Fuel Storage Tanks: Federal TCFT

List of fuel storage tanks currently or previously owned or operated by Transport Canada. This inventory also includes tanks on The Pickering Lands, which refers to 7,530 hectares (18,600 acres) of land in Pickering, Markham, and Uxbridge owned by the Government of Canada since 1972; properties on this land has been leased by the government since 1975, and falls under the Site Management Policy of Transport Canada, but is administered by Public Works and Government Services Canada. This inventory provides information on the site name, location, tank age, capacity and fuel type.

Government Publication Date: 1970-Aug 2017

TSSA Variances for Abandonment of Underground Storage Tanks: Provincial VAR

List of variances granted for abandoned tanks. Under the Technical Standards and Safety Authority (TSSA) Liquid Fuels Handling Code and Fuel Oil Code, all underground storage tanks must be removed within two years of disuse. If removal of a tank is not feasible, an application may be sought for a variance from this code requirement.
Records are not verified for accuracy or completeness. This is not a comprehensive or complete inventory of tank variances in the province. The TSSA updates information in its system on an ongoing basis; this listing is hence limited by the record date provided here.

Government Publication Date: Feb 28, 2017

Waste Disposal Sites - MOE CA Inventory: Provincial WDS

The Ontario Ministry of Environment, Waste Management Branch, maintains an inventory of known open (active or inactive) and closed disposal sites in the Province of Ontario. Active sites maintain a Certificate of Approval, are approved to receive and are receiving waste. Inactive sites maintain Certificate(s) of Approval but are not receiving waste. Closed sites are not receiving waste. The data contained within this database was compiled from the MOE's Certificate of Approval database. Locations of these sites may be cross-referenced to the Anderson database described under ERIS's Private Source Database section, by the CA number. All new Environmental Compliance Approvals handed out after Oct 31, 2011 for Waste Disposal Sites will still be found in this database.

Government Publication Date: Oct 2011-Sep 30, 2018

Waste Disposal Sites - MOE 1991 Historical Approval Inventory: Provincial WDSH

In June 1991, the Ontario Ministry of Environment, Waste Management Branch, published the "June 1991 Waste Disposal Site Inventory", of all known active and closed waste disposal sites as of October 30st, 1990. For each "active" site as of October 31st 1990, information is provided on site location, site/CA number, waste type, site status and site classification. For each "closed" site as of October 31st 1990, information is provided on site location, site/CA number, closure date and site classification. Locations of these sites may be cross-referenced to the Anderson database described under ERIS's Private Source Database section, by the CA number.

Government Publication Date: Up to Oct 1990*

Water Well Information System: Provincial WWIS

This database describes locations and characteristics of water wells found within Ontario in accordance with Regulation 903. It includes such information as coordinates, construction date, well depth, primary and secondary use, pump rate, static water level, well status, etc. Also included are detailed stratigraphy information, approximate depth to bedrock and the approximate depth to the water table.

Government Publication Date: Dec 31, 2017

Definitions

Database Descriptions: This section provides a detailed explanation for each database including: source, information available, time coverage, and acronyms used. They are listed in alphabetic order.

Detail Report: This is the section of the report which provides the most detail for each individual record. Records are summarized by location, starting with the project property followed by records in closest proximity.

Distance: The distance value is the distance between plotted points, not necessarily the distance between the sites' boundaries. All values are an approximation.

Direction: The direction value is the compass direction of the site in respect to the project property and/or center point of the report.

Elevation: The elevation value is taken from the location at which the records for the site address have been plotted. All values are an approximation. Source: Google Elevation API.

Executive Summary: This portion of the report is divided into 3 sections:

'Report Summary'- Displays a chart indicating how many records fall on the project property and, within the report search radii.

'Site Report Summary'-Project Property'- This section lists all the records which fall on the project property. For more details, see the 'Detail Report' section.

'Site Report Summary-Surrounding Properties'- This section summarizes all records on adjacent properties, listing them in order of proximity from the project property. For more details, see the 'Detail Report' section.

Map Key: The map key number is assigned according to closest proximity from the project property. Map Key numbers always start at #1. The project property will always have a map key of '1' if records are available. If there is a number in brackets beside the main number, this will indicate the number of records on that specific property. If there is no number in brackets, there is only one record for that property.

The symbol and colour used indicates 'elevation': the red inverted triangle will dictate 'ERIS Sites with Lower Elevation', the yellow triangle will dictate 'ERIS Sites with Higher Elevation' and the orange square will dictate 'ERIS Sites with Same Elevation.'

Unplottables: These are records that could not be mapped due to various reasons, including limited geographic information. These records may or may not be in your study area, and are included as reference.

APPENDIX E
QUALIFICATIONS

Grace P. Ferguson M.Sc., P.Eng.

Senior Hydrogeologist

Grace is a senior hydrogeologist in Stantec's Environmental Services group with more than 20 years' experience in contaminated site management. She offers clients the benefit of her technical knowledge and experience in solving a variety of environmental challenges. She has managed environmental site assessment, monitoring, and remediation projects for a wide cross-section of service sectors, including road and rail transportation, commercial real estate, the petroleum industry, insurance, land development, the Canadian Forces, industry, and waste management. This wide range of experience provides her the vision to see complex projects through from planning to closure.

Grace is a licensed Professional Engineer in the Province of Ontario and is recognized by the Ontario Ministry of the Environment, Conservation and Parks as a Qualified Person for Environmental Site Assessment under Ontario Regulation 153/04. She is also listed as a contaminant/waste specialist with the Ontario Ministry of Transportation.

EDUCATION

M.Sc., University of Waterloo / Hydrogeology, Waterloo, Ontario, 2001

B.A.Sc., University of Waterloo / Geological Engineering, Waterloo, Ontario, 1993

REGISTRATIONS

Professional Engineer #90427949, Professional Engineers Ontario, Feb 9/96

PROJECT EXPERIENCE

Environmental Risk Assessments

Risk Management Plans for Risk Assessment, Toronto, Ontario (Senior Reviewer)
Developed and reviewed risk management plans (RMPs) as part of Risk Assessments for the management of remaining soil and groundwater impacts at three former industrial sites in Toronto, in support of RSCs and to facilitate future developments.

Risk Management Plans for Redevelopment, Southern Ontario (Senior Reviewer)
Developed and reviewed risk management plans (RMPs) as part of Risk Assessments for the management of remaining soil and groundwater impacts at former petroleum sites in Elora, Barrie, Cookstown and Cambridge, Ontario.

Risk Management Plan and RSC Support, Burlington, Ontario (Qualified Person for ESA)
Provided support and input to environmental investigations for the filing of an RSC at a retirement home impacted by petroleum from an adjacent property. Developed a risk management plan for a risk assessment and reviewed updated reporting to support the RSC.

** denotes projects completed with other firms*

Grace P. Ferguson M.Sc., P.Eng.

Senior Hydrogeologist

Environmental Site Assessments Phase I, II, III

Contamination Overview Studies and Phase II Environmental Site Assessment, Peel Watermain Projects, Mississauga, Ontario (Environmental Specialist)
Completion of contamination overview studies and environmental sampling to assess the potential for generation of contaminated soil during watermain replacement work along three existing and future roadways in Mississauga. Provided fill management options for consideration in construction tendering.

Phase I ESAs Commercial Portfolio, Southern Ontario (Project Manager and Senior Reviewer)
Oversight of 10 Phase I ESAs as part of a Canada-Wide due diligence portfolio for a large commercial client. Also provided senior review of Phase I ESA reports for several of the portfolio sites.

Phase I and II Environmental Site Assessments, Commercial Properties, Kitchener, Ontario (Project Manager)
Managed and reviewed ESAs of commercial properties for financing due diligence.

Phase One and Two Environmental Site Assessments, Commercial Property, Kitchener, Ontario (Project Manager)
Managed and reviewed ESAs of a used car lot and former industrial site for due diligence in advance of potential purchase and redevelopment of the Kitchener downtown core.

Contamination Overview Study and Environmental Sampling, Windsor-Detroit Tunnel Plaza, Windsor, Ontario (Environmental Project Lead)
Managed the completion of an assessment of potential environmental concerns that could affect redevelopment of a border crossing facility.

Contamination Assessments of Road Transportation Systems, Ontario (Environmental Project Lead)
Completed contamination overview studies, preliminary site screenings, or excess materials management plans at approximately 25 existing and proposed Ontario Ministry of Transportation roadways and interchanges to support preliminary and detailed design transportation projects.

Phase I ESAs, Commercial and Industrial Properties, Kitchener, Ontario (Project Manager)
Senior technical support and review for assessments at 10 properties for due diligence purposes.

Environmental Investigation, Industrial Facility, Walkerton, Ontario (Project Manager)
Project manager for the assessment, monitoring and development of remedial options for VOC impacts to groundwater at an active industrial facility.

** denotes projects completed with other firms*

Grace P. Ferguson M.Sc., P.Eng.

Senior Hydrogeologist

Environmental Investigations, Redevelopment Site, Vaughan, Ontario (Project Manager)
Project manager for several environmental investigations relating to the redevelopment of Secondary Buffer lands surrounding a recently closed landfill site. These included Phase 1 and Phase 2 environmental site assessments, development of a groundwater monitoring program for a new golf course, and remediation of environmental impacts along a future road realignment. The project involved extensive consultation with MOE and municipal and private stakeholders.

Environmental Site Assessment, Rail Yard, Woodstock, Ontario (Project Manager)
Completion of a hydrogeological assessment of a rail yard facility, including test pit excavation, borehole drilling, monitoring well and drive point piezometer installation, soil and groundwater sampling, and hydraulic conductivity testing. Provided senior technical review of on-going groundwater monitoring activities.

Environmental Review, Proposed Development Site, Kitchener, Ontario (Senior Reviewer)
Completed a review of historical environmental work done at a property and assessed the level of effort and cost to complete the necessary work to support the filing of a Record of Site Condition with the Ontario Ministry of the Environment. This was done to determine the feasibility of site re-use options.

Environmental Site Assessments, Parkway West Compressor Station, Milton, Ontario (Environmental Specialist)
Grace managed Phase One and Phase Two Environmental Site Assessments of four parcels of land being acquired to develop a natural gas compressor station. In addition, she also managed a soil excavation program to remediate surficial impacted soil at one parcel prior to site development, and supported the client in determining off-site fill management options during development.

Environmental Retainer, Various Sites, Greater Toronto Area, Ontario (Project Manager)
Managed numerous environmental site assessments and monitoring projects at client-owned properties in advance of site redevelopment for transportation systems as part of a two-year retainer assignment. Managed Phase II ESAs , co-ordinated designated substance surveys and geophysical surveys, and recommended and implemented remedial excavation programs. Also managed on-going monitoring program at a client-owned landfill site.

Environmental Investigation, Rail Yards, Northern Ontario (Project Manager)
Senior technical reviewer for quarterly and annual groundwater monitoring at a railyard with petroleum impacts to soil and groundwater. Previously project manager for hydrogeological investigations at the yard from 2000 to 2005. Completed a remedial options/feasibility study and developed a remedial action plan to address both on-site and off-site impacts. Co-ordinated drilling and initial sampling of private domestic wells at several off-site and on-site locations.

** denotes projects completed with other firms*

Grace P. Ferguson M.Sc., P.Eng.

Senior Hydrogeologist

Phase I and II Environmental Site Assessment, Commercial/Industrial facility, Mississauga, Ontario (Project Manager)
Project management and senior technical support for a comprehensive Phase I and II ESA at a former petrochemical research and development facility in an urbanized area. Developed a conceptual site model of subsurface conditions and facilitated an understanding of potential environmental liabilities associated with the property.

Environmental Site Assessment and RSC Filing, Cambridge, Ontario (Reviewer, ESA)
Grace was a quality reviewer and QPESA for assessment of several adjacent properties to be redeveloped into a residential complex. She completed Phase One, Two and limited remediation and filed an RSC in accordance with O.Reg. 153/04 for one property that had experienced commercial use.

Phase I ESA, Wind Farm Development, Grand Valley, Ontario (Senior technical reviewer)
Provided senior review support to a Phase I ESA of a large network of proposed wind turbines, distribution lines, transformer station, and storage areas forming part of a wind farm that was under development. Identified potential environmental concerns and provided guidance to the client to manage them.

Environmental Investigation, Petrochemical Terminal Facility, Oakville, Ontario (Senior Technical Reviewer)
Senior hydrogeological technical support to an ongoing groundwater investigation at a large petrochemical terminal site. Work was done to fulfill ECA obligations associated with a phytoremediation program, and to better understand environmental conditions across the property.

Contamination Overview Study and Construction Support, King and Fountain Street Improvements, Cambridge, Ontario (Environmental Specialist)
Managed and reviewed a contamination overview study of several roadways in advance of reconstruction. Also provided ongoing environmental and waste management support for excess materials management during construction, including storage tank removals.

Contamination Overview Study and Phase I ESAs, Franklin Boulevard, Cambridge, Ontario (Project Manager)
Project manager and senior reviewer for an assessment of potential sources of contamination along an 8 km roadway and completion of 30 Phase I ESAs adjacent to the roadway, as part of detailed design for road improvements.

Phase One Environmental Site Assessment, Former Golf Course, Southern Ontario, Southern Ontario (Senior Reviewer)
Senior reviewer of a Phase One ESA completed for due diligence in advance of a potential sale of the property. The Phase One ESA was completed to the regulation standards prescribed by O.Reg. 153/04, as amended.

** denotes projects completed with other firms*

Grace P. Ferguson M.Sc., P.Eng.

Senior Hydrogeologist

Phase One and Two ESAs, Risk Assessment and Record of Site Condition, Northern Ontario (Senior Reviewer)
As a QPESA Grace provided senior level review for assessments of two former gasoline service stations. Phase One and Two ESAs were completed to the revised regulatory standards prescribed by O. Reg. 153/04 to support a Risk Assessment (RA) and Record of Site Condition (RSC). She developed a risk management plan for the RA at one site and filed a RSC.

Phase One and Two Environmental Site Assessment, Scrap Metal Facility, Kitchener, Ontario (Project Manager)
Project Manager and Senior Reviewer for Phase One and Two ESAs of a brownfield site to support potential sale and / or redevelopment. ESAs were completed to the regulatory standards prescribed by O.Reg. 153/04, as amended.

Environmental Assessments, Redevelopment Site, Kitchener, Ontario (Project Manager)
Phase I Environmental Site Assessment of a construction maintenance yard and surrounding undeveloped land. Development of recommendations for assessment work to support redevelopment approvals. Completion of environmental monitoring following limited removal of impacted soil, and environmental observation and verification sampling during removal of fuel storage facilities.

Contamination Overview Study, Phase I/II Environmental Site Assessment, and Construction Support, Weber Street Redevelopment, Kitchener, Ontario (Environmental Specialist)
Managed and reviewed a contamination overview study and Phase II Environmental Site Assessment to identify and assess potential environmental concerns along a 1.2 km section of Weber Street in Kitchener, as part of preliminary and detailed design for road reconstruction. Also provided ongoing environmental and waste management support for excess materials management during construction, including storage tank removals.

Phase I and II Environmental Site Assessments, 104 Retail Service Stations, Southern Ontario (Project Manager)
Key Project Manager for 25 of 104 retail gasoline service station sites assessed during a 60 day due diligence period. Responsible for project management and senior review of Phase I and Phase II ESAs.

Phase I and II Environmental Site Assessment and CA Support, Detroit-Windsor Truck Ferry, Windsor, Ontario (Project Manager)
Completion of Phase I and II ESA and development of waste management options at a truck ferry terminal, in preparation for infrastructure improvements. Provided ongoing support to Contract Administrator with respect to waste management and environmental issues.

Phase I ESA, Industrial Facilities, Ontario (Project Manager)
Environmental site assessments, including historical review and site reconnaissance, of an industrial plastics manufacturer and a food packaging plant.

** denotes projects completed with other firms*

Grace P. Ferguson M.Sc., P.Eng.

Senior Hydrogeologist

Environmental Site Assessment of Fisherman's Pier Lands, Hamilton and Burlington, Ontario (Project Hydrogeologist)
Completed an Environmental Site Assessment (ESA) as part of a planning study to examine potential redevelopment options for lands known as Fisherman's Pier. Identified current and historical land uses of potential environmental concern.

Environmental Assessment, Redevelopment Site, Milton, Ontario (Project Manager)
Completed a Phase I/II ESA at a vacant site and filed a Record of Site Condition to support redevelopment as a commercial facility.

Phase I and II ESAs, Highway Maintenance Patrol Yards*, Lambton and Simcoe Counties, Ontario (Project Manager)
Project manager and primary field personnel for soil and groundwater investigations at 11 maintenance patrol yards, using borehole drilling, well sampling and geophysical methods.

Phase I ESA, Various Properties, Ontario (Project Manager)
Historical reviews, site reconnaissance, reporting and senior review of commercial, institutional and vacant properties for financial institutions and land developers.

Environmental Evaluations, Federally Owned Properties*, Pickering, Ontario (Project Manager)
Completion of environmental evaluations of more than 70 rural residential, commercial, vacant and agricultural properties within the proposed Pickering Airport lands, Pickering, Ontario. Evaluations included a site reconnaissance, testing of building materials for suspected designated substances, and potable water sampling.

Phase I ESAs, Various Properties*, Ontario and Manitoba (Project Hydrogeologist)
Environmental assessments, including historical review and site reconnaissance of more than 80 residential, institutional, commercial, industrial and vacant properties in Ontario and Manitoba for various financial institutions, developers, individuals and government agencies. Institutional properties included approximately 20 nursing homes and retirement facilities.

Environmental and Historical Review, Mixed Land Use Area, Hamilton, Ontario (Project Hydrogeologist)
Environmental review of several industrial, commercial and vacant properties in the Hamilton West Harbour area as part of redevelopment planning.

Phase I and II ESAs, Various Facilities*, Toronto and Owen Sound, Ontario (Project Hydrogeologist)
Assessment of environmental conditions, including potential soil and groundwater impacts, at a former auto repair facility, a commercial property, an inactive industrial site and a former landfill site.

** denotes projects completed with other firms*

Grace P. Ferguson M.Sc., P.Eng.

Senior Hydrogeologist

Phase I and II Environmental Site Assessment (ESA), Former Industrial Facility, London, Ontario (Project Manager)

Project manager for a Phase I/II ESA to assess soil and groundwater conditions prior to purchase of a portion of vacant land formerly used as an industrial facility.

** denotes projects completed with other firms*

Janice M. Cooper M.Sc., EIT

Environmental Scientist

Janice is a Master's of Science graduate interested in the management and remediation of contaminated sites. The topic of her Master's thesis was the investigation of thermally-activated persulfate as a potential in situ remediation technique for per- and polyfluoroalkyl substances, specifically PFOA and PFOS. Prior to her graduate studies, Janice was a co-op student in Environmental Engineering, and spent a year working with Stantec in the Community Development and Environmental Services teams. She has experience in the field working on activities relating to Phase I, II, and III Environmental Site Assessments (ESAs), soil and groundwater remediation, and environmental site monitoring. From a reporting perspective, Janice developed strong research and technical writing skills through her Master's program.

EDUCATION

Master's of Science, University of Waterloo/ Master's of Science (Water), Waterloo, Ontario, 2018

Bachelor's of Applied Science, University of Waterloo/ Environmental Engineering Co-Op Program, Waterloo, Ontario, 2015

CERTIFICATIONS & TRAINING

Standard First Aid with CPR B & AED, Rescue 7 First Aid, Markham, Ontario, 2017

Enbridge 2018 Contractor Safety & Environmental Orientation, Waterloo, Ontario, 2018

Shell Retail Contractor Orientation, Waterloo, Ontario, 2018

Husky Energy Corporate Safety Orientation - Field, Waterloo, Ontario, 2018

TNPI Health & Safety for Contractors & Field Staff, Waterloo, Ontario, 2018

Petroleum Oriented Safety Training, Waterloo, Ontario, 2018

Suncor Energy Health & Safety Rules, Waterloo, Ontario, 2018

198950, Canadian National Contractor Safety Program, Waterloo, Ontario, 2018

Installer (non-freeway & TCP) Work Zone Traffic Control and Safety Course, Arges Training & Consulting, Mississauga, Ontario, 2018

Certificate of Achievement, POST 2019 LEVEL 2 - BBS - Orientation and Test, Waterloo, Ontario, 2019

REGISTRATIONS

Engineer-In-Training #100225036, Professional Engineers Ontario

PROJECT EXPERIENCE

Environmental Site Assessments Phase I, II, III

Environmental Phase II Groundwater Monitoring, Kapuskasing, Ontario (Field Technician)

Janice assisted with groundwater monitoring activities at two gas station locations in Kapuskasing, ON in support of a Phase II Environmental Site Assessment.

South Kitchener District Park, Kitchener, Ontario (Field Technician)

Janice supervised the removal of a UST and the associated excavation activities, supervised supplemental drilling and conducted well development around the site of the UST excavation, and completed stockpile sampling for movement of on-site materials.

Janice M. Cooper M.Sc., EIT

Environmental Scientist

Site Investigation Services and MNA, CFB Trenton, Trenton, Ontario (Field Technician, Laboratory Technician)
Janice assisted with the laboratory component of the monitored natural attenuation (MNA) program at the Trenton Air Force Base, as well as the groundwater sampling program component of a Phase II Environmental Assessment.

Phase I ESA, Ottawa, Ontario (Environmental Scientist)
Janice completed the Phase One reporting and historical record review for a former vehicle maintenance and service facility located in Ottawa, Ontario. Based on the findings of the Phase I ESA, a Phase II ESA work plan was developed and completed for the site, including soil and groundwater investigation.

Phase I ESA, Chatham, Ontario (Environmental Scientist)
Janice assisted with the reporting and historical review for the Phase I ESA for an active industrial property located in Chatham, Ontario.

Phase I ESA, Kingsville, Ontario (Environmental Scientist)
Janice assisted with the Phase I reporting for a Phase I conducted along a hydro easement with multiple site parcels.

Phase II ESA, Toronto, Ontario (Environmental Scientist)
Janice assisted with the Phase II reporting for various phases of a large development in Toronto, Ontario in support of a future Record of Site Condition submission.

Environmental Site Assessments

Contaminant Overview Study for the Highway 401 Planning Study from Cobourg to Colborne, Cobourg, Ontario (Environmental Scientist)
Janice completed the site visit, historical review, and reporting for the Contaminant Overview Study (COS) in support of the Highway 401 Planning Study from Cobourg to Colborne.

Contaminant Overview Study for Union Gas Limited Windsor Line Replacement, Windsor, Ontario (Environmental Scientist)
Janice assisted with the completion of the site visit, historical review, and reporting for the COS in support of the Union Gas project along the Windsor Union Gas easement.

Environmental Site Management

Chicopee Fill Management, Kitchener, Ontario (Environmental Scientist)
Janice assisted with the revision of the soil management plan for Chicopee Ski Hill according to the requirements of O. Reg. 153.

Residential Stormwater Pond Sampling, Waterloo, Ontario (Environmental Scientist)
Janice assisted with field coordination to conduct stormwater pond sediment sampling in support of Community Development project. She also helped to collect samples on Site using both Ponar and hand augering methods.

Janice M. Cooper M.Sc., EIT
Environmental Scientist

Pipeline Integrity Work (Environmental Scientist)
Janice assumed a role of laboratory coordinator in support of several concurrent projects related to investigations around Trans Canada pipelines. Janice coordinated with the lab and project managers to ensure that lab reporting met the project requirements for quality and timeliness. Summarizing, archiving, and drafting e-mail summaries was also required in order to support prompt communication with the client.

Groundwater Monitoring and Reporting

Woodstock Home Hardware Groundwater Program, Woodstock, Ontario (Environmental Scientist)
Janice conducted the field coordination for the 2018 groundwater monitoring season, and communicated with the client and project manager for this Site. She also assisted with the groundwater monitoring and sampling events, in addition to surveying monitoring wells at the Site.

Husky Oil Operations Limited | Downstream Portfolio Management 2018, Multiple Sites, Alberta and Ontario (Environmental Scientist)
Janice assisted with both the groundwater monitoring and sampling activities, as well as reporting tasks for the 2018 Husky monitoring season. UST nest inspections were a component of the on-site work, in addition to well development and low-flow sampling.

Uqsuq Groundwater Monitoring and Sampling Program, Iqaluit, Nunavut (Environmental Scientist)
Janice assisted with the field coordination and field-work component for on-going programs at various sites in Iqaluit. The groundwater monitoring and sampling activities were used to track the impacts of petroleum hydrocarbon spills.

Annual Groundwater Program, North Bay, Ontario (Environmental Scientist)
Janice completed the groundwater monitoring and sampling program at a former chemical manufacturing facility in North Bay, Ontario. She also completed the reporting tasks associated with this program.

Environmental Site Remediation

Longlac Treatment System Design, Longlac, Ontario (Engineering Intern)
Janice assisted with the design of a pump-and-treat system for the remediation of PHC-contaminated groundwater under the supervision of a P.Eng.

Bronte Creek Environmental Remediation, Oakville, Ontario (Environmental Scientist)
Janice used GWSdat to prepare time series and contour plots in support of the evaluation of the effectiveness of monitored natural attenuation and employment of oxygen releasing compounds at this Site. These activities were conducted in support of the Remedial Action Plan to address a historical release of petroleum hydrocarbons into the ecologically sensitive Site. Janice also assisted with various reporting deliverables and participated in a stakeholder meeting with all involved parties.

MP1867.05 Remedial Options, Hamilton, Ontario (Environmental Scientist)
Janice assisted with the development of a remedial options analysis for contamination around a pipeline to determine the best course of action to manage on-Site contamination.

Janice M. Cooper M.Sc., EIT
Environmental Scientist

Emergency Response
Pipeline Release Emergency Response, Ontario (Environmental Scientist)
Janice assisted with soil and air quality sampling in support of emergency response to a small pipeline release that crossed onto an agricultural property.

Wind Power
South Branch Wind Farm 30 MW, Morrisburg and Brinston, Ontario (Field Technologist)
An Environmental Effects Monitoring Plan was developed and a three-year post-construction monitoring program of a 30 MW wind power facility was required. Janice helped conduct bird and bat mortality monitoring, searcher efficiency, and scavenger trials throughout the field season.

PUBLICATIONS

Cooper, Janice M.. Investigation of the Efficacy of in situ Degradation Methods for Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonic Acid (PFOS) in Groundwater, Master's Thesis, University of Waterloo, 2018.

APPENDIX F:
STAGE 1 ARCHAEOLOGICAL ASSESSMENT



Stage 1 Archaeological Assessment: Kirkwall – Hamilton Pipeline Project

Parts of Various Lots and Concessions,
Geographic Townships of Beverly, West Flamborough, and East Flamborough,
former Wentworth County,
now City of Hamilton, Ontario

June 18, 2019

Prepared for:

Enbridge Gas Inc.
50 Keil Drive North
Chatham, Ontario N7M 5M1

Prepared by:

Stantec Consulting Ltd.
600-171 Queens Avenue
London, Ontario N6A 5J7

Licensee: Parker Dickson, MA
License Number: P256
PIF Number: P256-0564-2018
Project Number: 160961299

ORIGINAL REPORT

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Executive Summary

Stantec Consulting Ltd. (Stantec) was retained by Enbridge Gas Inc. (Enbridge Gas) to complete a Stage 1 archaeological assessment for the Kirkwall – Hamilton Pipeline Project (the Project). Note: As of January 1, 2019, Union Gas Ltd. and Enbridge Gas Distribution have amalgamated into one utility with the legal name Enbridge Gas Inc. The Project Area, or study area, for the Stage 1 assessment of the Project comprises approximately 6,400 hectares of various Lots and Concessions, Geographic Townships of Beverly, West Flamborough, and East Flamborough, former Wentworth County, now City of Hamilton, Ontario. The Stage 1 archaeological assessment was conducted during the preliminary planning phase of the Project in accordance with the provisions of the *Ontario Heritage Act* (Government of Ontario 1990a) and the requirements of Section 4.3.4 of the Ontario Energy Board's (OEB) *Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario, 7th Edition* (OEB 2016). The final route and construction easement, including any temporary land use, for the Project will be determined at a later date. Thus, the current study area for the Stage 1 archaeological assessment is large and serves to capture a broad and generalized geographic area associated with the Project.

The Stage 1 archaeological assessment was completed under Project Information Form (PIF) # P256-0564-2019 issued to Parker Dickson, MA, of Stantec, by the Ministry of Tourism, Culture and Sport (MTCS). Permission for Stantec staff to enter the study area for the purposes of the Stage 1 archaeological assessment was not required as a property inspection was not required.

The Stage 1 archaeological assessment determined that the entirety of the study area retains potential for the identification of pre-contact Indigenous, post-contact Indigenous, and Euro-Canadian archaeological resources. Numerous farm complexes, residences, municipal rights-of-way (ROWs), and other existing features (i.e., existing roads, railways, residential and commercial complexes, and buried utilities and infrastructure) are located throughout the study area; however, they were not specifically examined as part of a Stage 1 property inspection and may still retain archaeological potential. As such, these areas have been included as part of the determination that the study area exhibits potential for the identification and recovery of archaeological resources.

In accordance with Section 1.3.1 and Section 7.7.4 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), **Stage 2 archaeological assessment is required for any portion of the Project's anticipated construction activities which impacts an area of archaeological potential**. Further details regarding Stage 2 archaeological assessment recommendations are provided in the body of the report.

The MTCS is asked to review the results presented and to accept this report into the *Ontario Public Register of Archaeological Reports*. Archaeological sites recommended for further archaeological fieldwork remain subject to Section 48(1) of the *Ontario Heritage Act* (Government of Ontario 1990a) and may not be altered, or have artifacts removed, except by a person holding an archaeological license.

The Executive Summary highlights key points from the report only; for complete information and findings, the reader should examine the complete report.

Project Personnel

Project Manager:	Michael Candido, B.Sc. (Env)
Licensed Archaeologist:	Parker Dickson, MA (P256)
GIS Specialist:	Andrew White, M.Sc.; Patrick Worsell, BES, DGIS
Report Writer:	Parker Dickson, MA (P256)
Quality Review:	Peter Popkin, Ph.D., CAHP, MCIfA (P362)
Independent Review:	Tracie Carmichael, BA, B.Ed. (R140)

Acknowledgements

Proponent Contacts:	Doug Schmidt – Supervisor, Environmental Planning Ken McCorkle – Manager, Indigenous Affairs
Ministry of Tourism, Culture and Sport:	Robert von Bitter – Archaeological Sites Database Coordinator
Ministry of Natural Resources and Forestry:	Lisa Casselman – Survey Records Clerk

1.0 PROJECT CONTEXT

1.1 DEVELOPMENT CONTEXT

Stantec Consulting Ltd. (Stantec) was retained by Enbridge Gas Inc. (Enbridge Gas) to complete a Stage 1 archaeological assessment for the Kirkwall – Hamilton Pipeline Project (the Project). Note: As of January 1, 2019, Union Gas Ltd. and Enbridge Gas Distribution have amalgamated into one utility with the legal name Enbridge Gas Inc. The Project Area, or study area, for the Stage 1 assessment of the Project comprises approximately 6,400 hectares of various Lots and Concessions, Geographic Townships of Beverly, West Flamborough, and East Flamborough, former Wentworth County, now City of Hamilton, Ontario (Figure 1). The Stage 1 archaeological assessment was conducted during the preliminary planning phase of the Project in accordance with the provisions of the *Ontario Heritage Act* (Government of Ontario 1990a) and the requirements of Section 4.3.4 of the Ontario Energy Board's (OEB) *Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario, 7th Edition* (OEB 2016).

To increase existing capacity and accommodate additional demand for natural gas, Enbridge is proposing to construct a new 48-inch diameter natural gas pipeline. The proposed Project will be constructed between Enbridge's existing Kirkwall valve site, located northeast of the intersection of Safari Road and Valens Road, and Enbridge's existing Hamilton valve site, located east of Highway 6 and north of Carlisle Road, generally paralleling three existing Enbridge pipelines. The length of the proposed pipeline will be determined by the final route chosen and will be approximately 10 to 14 kilometres in length (Figure 2). Construction activities related to the Project are anticipated to begin as early as Spring/Summer 2021 and be completed by the end of 2021.

As noted above, the final route and construction easement, including any temporary land use, for the Project will be determined at a later date. Thus, the current study area for the Stage 1 archaeological assessment is large and serves to capture a broad and generalized geographic area associated with the Project.

1.1.1 Objectives

The objectives of the Stage 1 archaeological assessment were to compile available information about the known and potential archaeological resources within the study area and to provide specific direction for the protection, management and/or recovery of these resources. In compliance with the provincial standards and guidelines set out in the Ministry of Tourism, Culture and Sport's (MTCS) 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), the objectives of the Stage 1 Archaeological Overview/Background Study are as follows:

- To provide information about the study area's geography, history, previous archaeological fieldwork, and current land conditions;
- To evaluate the study area's archaeological potential which will support recommendations for Stage 2 survey for all or parts of the study area; and
- To recommend appropriate strategies for Stage 2 survey.

To meet these objectives, Stantec archaeologists employed the following research strategies:

- A review of relevant archaeological, historic, and environmental literature pertaining to the study area;
- A review of the land use history, including pertinent historic maps;
- A review of the *City of Hamilton Archaeology Management Plan* to identify predetermined areas of archaeological potential (City of Hamilton 2016); and,
- An examination of the *Ontario Archaeological Sites Database* to determine the presence of registered archaeological sites in and around the study area.

Permission for Stantec staff to enter the study area for the purposes of the Stage 1 archaeological assessment was not required.

1.2 HISTORICAL CONTEXT

1.2.1 Post-contact Indigenous Resources

"Contact" is typically used as a chronological benchmark in discussing Indigenous archaeology in Canada and describes the contact between Indigenous and European cultures. The precise moment of contact is a constant matter of discussion. Contact in what is now the province of Ontario is broadly assigned to the 16th century (Loewen and Chapdelaine 2016).

The post-contact Indigenous occupation of southern Ontario was heavily influenced by the dispersal of various Iroquoian-speaking communities by the New York State Iroquois and the subsequent arrival of Algonkian speaking groups from northern Ontario at the end of the 17th century and the beginning of the 18th century (Konrad 1981; Schmalz 1991). By 1690, Ojibwa speaking people had begun moving south into the lower Great Lakes basin. The Indigenous economy since the turn of the 18th century focused on fishing and the fur trade, supplemented by agriculture and hunting (Konrad 1981; Rogers 1978). Numerous Indigenous groups and communities are associated with the post-contact occupation of southern Ontario and the general area of the Project.

At the turn of the 17th century, the region of the study area was occupied by Iroquoian populations who are historically described as the *Neutre* Nations (by the French) or the *Attiwandaron* (by the Huron-Wendat); their autonym is not conclusively known (Birch 2015). Claude Bernou's 1680 map indicates the then dispersed *Attiragenga* (near modern day Hamilton) and *Antouaronon* (west of the Grand River along the Lake Erie north shore) Nations occupied the region of the study area (White 1978: Figure 2) and settlements dating to the 17th century have been identified in the Fairchild-Big Creeks, Upper Twenty Mile Creek, and Lower Grand River settlement clusters, near to the study area (Lennox and Fitzgerald 1990: Table 13.1). In 1649, the Seneca and the Mohawk led a campaign into southern Ontario and dispersed the Attiwandaron (Neutral) Nations and the Seneca established dominance over the region (Heidenreich 1978; Konrad 1981). By 1690, Ojibwa speaking people had begun moving south into the lower Great Lakes basin (Konrad 1981; Rogers 1978); particularly, the Mississauga Nations gained dominance in the region. The Indigenous economy since the turn of the 18th century focused on fishing and the fur trade, supplemented by agriculture and hunting.

The expansion of the fur trade led to increased interaction between European and Indigenous people, and ultimately intermarriage between European men and Indigenous women. During the 18th century the progeny of these marriages began to no longer identify with either their paternal or maternal cultures, but instead as Métis. The ethnogenesis of the Métis progressed with the establishment of distinct Métis communities along the major

waterways in the Great Lakes of Ontario. Métis communities were primarily focused around the upper Great Lakes and along Georgian Bay, however Métis people have historically lived throughout Ontario (Métis Nation of Ontario 2016; Stone and Chaput 1978:607-608).

The study area falls within the historic and traditional territory of a number of Indigenous communities, including but not limited to the Mississaugas of the Credit First Nation (Mississaugas of the New Credit First Nation n.d.), the Six Nations of the Grand River, and the Haudenosaunee Confederacy. Since contact with European explorers and immigrants, and, later, with the establishment of provincial and federal governments (the Crown), the lands within Ontario and the Geographic Townships of Beverly, West Flamborough, and East Flamborough have been included in various treaties, land claims, and land cessations. Though not an exhaustive list, Morris (1943) provides a general outline of some of the treaties within the Province of Ontario from 1783 to 1923. While it is difficult to exactly delineate treaty boundaries today, an approximate outline of the treaty lands described by Morris is provided in Figure 3 (1943). According to Morris (1943), the study area is situated within the described limits of the 1792 indenture of the 1784 Between the Lakes Purchase between the English government (referred to as “the Crown”) and the Mississaugas). This treaty:

> *...was made with the Mississa[ug]a Indians 7th December, 1792, though purchased as early as 1784. This purchase in 1784 was to procure for that part of the Six Nation Indians coming into Canada a permanent abode.*
>
> *The area included in this Treaty is, Lincoln County excepting Niagara Township; Saltfleet, Binbrook, Barton, Glanford and Ancaster Townships, in Wentworth County; Brantford, Onondaga, Tusc[a]r[o]ra, Oakland and Burford Townships in Brant County; East and West Oxford, North and South Norwich, and Dereham Townships in Oxford County; North Dorchester Township in Middlesex County; South Dorchester, Malahide and Bayham Township in Elgin County; all Norfolk and Haldimand Counties; Pelham, Wainfleet, Thorold, Cumberland and Humberstone Townships in Welland County ... .*
>
> (Morris 1943:17-18)

As demonstrated above, the nature of Indigenous settlement size, population distribution, and material culture shifted as European settlers encroached upon Indigenous territory. However, despite this shift, “written accounts of material life and livelihood, the correlation of historically recorded villages to their archaeological manifestations, and the similarities of those sites to more ancient sites have revealed an antiquity to documented cultural expressions that confirms a deep historical continuity to…systems of ideology and thought” (Ferris 2009:114). As a result, Indigenous peoples of southern Ontario have left behind archaeologically significant resources throughout the region which show continuity with past peoples, even if they have not been explicitly recorded in Euro-Canadian documentation.

1.2.2 Euro-Canadian Resources

At its inception, Upper Canada was only sparsely settled by Europeans and the land had not been officially surveyed to any great extent. Thus, there was an urgency, by the then Lieutenant Governor of Upper Canada John Graves Simcoe, to survey this new province in order to establish military roads and to prevent settlers from clearing and settling land not legally belonging to them. In 1791, the Provinces of Upper Canada and Lower Canada were created from the former Province of Quebec by an act of British Parliament (Craig 1963:17). At this time, Colonel John Graves Simcoe was appointed as the Lieutenant Governor of Upper Canada and was tasked with governing the new

province, directing its settlement and establishing a constitutional government modelled after that of Britain's (Coyne 1895). The change was affected at the behest of United Empire Loyalists who wished to live under the British laws and customs they were familiar with in Great Britain and the former 13 Colonies (Craig 1963:10-11). John Graves Simcoe had ambitious plans to create a model British society in North America, stating a desire to "inculcate British customs, manners, and principles in the most trivial, as well as most serious matters" in Upper Canada (Craig 1963:21). In 1792, Simcoe divided Upper Canada into 19 counties consisting of previously-settled lands, new lands opened for settlement, and lands not yet acquired by Crown. These new counties stretched from Essex in the west to Glengarry in the east.

1.2.2.1 Wentworth County

In 1792, at Simcoe's behest, the Eighth Act of the Upper Canada Parliament divided the province into four districts: Eastern, Midland, Home, and Western (Kernighan 1875:iii). The four districts were subdivided into 19 counties. The future location of Wentworth County was in the Home District, and was in parts of Haldimand, Lincoln, and York Counties. In 1816, the Gore District was created from lands in the Home and Niagara Districts, and the County of Wentworth was formed (Archives of Ontario 2015). Wentworth County was named in honour of John Wentworth, Royal Governor of New Hampshire from 1766-1775, and later a Lieutenant Governor of Nova Scotia (Johnston 1967:3-4). In 1849, the District System was abolished (Archives of Ontario 2015), and the Counties of Halton and Wentworth formed a single municipality. In 1853, the two counties were separated. Wentworth County totaled 272,000 acres (110,074.5 hectares) and comprised the City of Hamilton, Town of Dundas, and the Townships of Beverly, Binbrook, Barton, Ancaster, Saltfleet, East and West Flamborough (alternatively spelled Flamboro), and the Township of Glanford, where the study area is located (Kernighan 1875:iii-iv).

Early 19th century communities in Wentworth County included Dundas, Ancaster, and Hamilton. The completion of the Burlington Bay Canal in 1832 (Craig 1963:158) and the opening of the Great Western Railway in 1853, led to Hamilton's ascent as the dominant settlement and place of trade in the county (Kernighan 1875:v). Hamilton developed into a major manufacturing centre of Ontario, while the rest of the county was primarily agricultural. Wentworth County was especially known for its orchards and vineyards and was an important part of the Niagara Fruit Belt (Johnston 1967:209). Other crops grown in Wentworth County included wheat, barley, and tobacco (Johnston 1967:205-206).

At the turn of the 20th century, Hamilton had a population of 50,000 (Johnston 1967:247). The widespread adoption of the automobile opened rural portions of Wentworth County to suburban development. As a result, the population of Wentworth's townships began to increase and the City of Hamilton annexed portions of Barton, Ancaster, and Saltfleet Townships. By the 1950s, the population of Wentworth not within the city of Hamilton was about 60,000 (Johnston 1967:288-289). The population of Hamilton had grown to nearly 300,000 by 1966 (Dominion Bureau of Statistics 1967:10-12). In 1973, Wentworth County was amalgamated into the new Regional Municipality of Hamilton-Wentworth, which was restructured into the single-tier City of Hamilton in 2001 (Archives of Ontario 2015).

The Stage 1 study area for the Project comprises numerous lots and concessions in the Geographic Townships of Beverly, West Flamborough, and East Flamborough. Table 1 provides a summary of various lots and concessions within the Stage 1 study area.

Table 1: Summary of Lots and Concessions with the Study Area

Lot	Concession	Geographic Township
23 to 36	5	Beverly
24 to 36	6	
24 to 36	7	
24 to 36	8	
1 to 17	5	West Flamborough
1 to 17	6	
1 to 14	7	
1 to 10	8	
12 and 13	6	East Flamborough
12 and 13	7	
12 and 13	8	
12 and 13	9	
12 and 13	10	

1.2.2.2 Township of Beverly

Established in 1792, Beverly Township (alternatively spelled Beverley) took its name from the Town of Beverly, located in East Yorkshire, England. The first survey of the Township of Beverly was undertaken by Augustus Jones in 1794 and included Concessions 1 through 5. Large portions of the township were swampy and known as “Beverly Swamp”. The remaining concessions, i.e., 6 through 10, were initially surveyed in 1797 by John Stegman, but due to the challenging landscape and Beverly swamp, the survey was completed again in 1832 by James Kirkpatrick (Collins 2001:7). The township was laid out in relation to the survey of the Governor’s Road (Dundas Street), also completed by Jones from 1793 to 1795.

The majority of European settlement occurred after James Kirkpatrick’s survey in 1832. The first settlers in the Township of Beverly were Jacob Cope and George Jones, who arrived following the survey (Page & Smith 1875:x). The majority of early landowners in the township were absentee owners, which included merchants and officeholders in York (now Toronto), Niagara, and Montreal (Collins 2001:7).

Settlement in the Township of Beverly occurred primarily at road intersections and was influenced by the establishment of mills and railway development. In the 1820s, Governor’s Road, south of the study area, was planked through the township, influencing the location of the settlements of Lynden and Copetown. The Dundas and Waterloo Road was opened in the township in the early 19th century and planked in 1837 between the Desjardins Canal to the Village of Waterloo to the northeast. The roadway, west of the study area, allowed for the settlement of Rockton, Romulus, and Sheffield (Collins 2001:8). By 1859, the Dumfries and Beverly Road was planked and connected to the Dundas and Waterloo Road from the adjacent Township of North Dumfries, in the County of Brant.

Settlement in the township was slow due to the challenging terrain composed of rock, swamps, and forests. The township remained an unbroken forest until 1810, when a portion of land was cleared near Sheffield (Cornell 1967:8). By 1820, the township had only a population of 81, with 1,883 acres of cultivated land, out of a total 70,200 acres (Page & Smith 1875:x). In the 1830s, settlers from the British Isles began to arrive in the township and impact the population growth. The first settlements in the northern portion of the township in relation to the study area occurred in 1832 with the first settlers of John and William McKnight. They were followed soon after by John Valens, the Pentland, and the Macdonald families (Irwin & Co. 1883:37).

In the first few decades of the 19th century, the population grew steadily from 617 in 1824, to 2,382 in 1839. In 1837, the community of Kirkwall commenced to settle, with the majority of settlers being of Scottish decent. After 1840, the settlement of the township grew quickly and by 1850 there was very little unclaimed land (Page & Smith 1875:X). In 1846, the township had 52,159 acres taken up, with 16,332 under cultivation. William Henry Smith described the township that year as well settled, with fine farms, and two or three excellent mill streams (Smith 1846:15).

In relation to the study area, the closest early settlement in the township is Kirkwall, which was established to the west at the present-day intersection of Kirkwall Road and Concession Road 8. Kirkwall, also known as “Little Scotland,” was settled by six families from Scotland in 1832 (Collins 2001:35). A year later the settlers were joined by 12 additional families from Scotland, as well as an English family and four families from Northern Ireland (Collins 2001:35). Within three years of the arrival of the first European settlers, a log church was constructed to accommodate the growing congregation. In 1848, the log structure was replaced with a stone church (Collins 2001:35). In 1866, Kirkwall was a small post office village with a population of about 60. At the time the village had two stores, a church, a hotel, a blacksmith shop, and a boot and shoe shop (Mitchell 1866:343). Kirkwall remained a small village throughout the late 19th century, with a population of only 60 in 1886 (Irwin & Co. 1886:103).

The Great Western Railway (GWR) was constructed through the southern portion of the Township of Beverly from 1851 to 1853 (Page & Smith 1875:iv). The line opened in January 1854 operating between Windsor and Niagara Falls (Houghton 2008:88). Stations in the township were located in the hamlets of Lynden and Copetown. In 1883, the Township of Beverly reached a population of 4,890 (Irwin & Co. 1883:38). A portion of the 1859 map of Wentworth County featuring Beverly Township is illustrated in Figure 4 (Surtees 1859). A portion of the 1875 map of Beverly Township is illustrated in Figure 5 (Page & Smith 1875). The mid-to-late 19th century development of the study area within the Township of Beverly is illustrated on both maps with numerous landowners and structures depicted.

During the 20th century, the study area in the Township of Beverly continued to be part of a rural landscape, surrounded, primarily, by agricultural lands. The hamlets and villages in the township witnessed a decline in the early 20th century, influenced by the nearby larger markets and industries in Hamilton and Toronto. In 1974, with the creation of the Regional Municipality of Hamilton-Wentworth, the Township of Beverly was amalgamated with the Townships of West and East Flamborough, to form the Town of Flamborough. Later, in 2001, the Town of Flamborough was amalgamated into the new City of Hamilton (Hamilton Public Library 2017b).

1.2.2.3 Township of West Flamborough

The Township of West Flamborough was surveyed by Augustus Jones in 1793 using a single-front system. The township survey, similarly, to the Township of Beverly was also laid out in relation to the survey of the Governor's Road. The township was named after a small east coast village in Yorkshire, England. It was surveyed into west and east portions that remained administratively joined until 1854 (Hamilton Public Library 2017b). The west portion was laid out in the shape of a triangle with the Governor's Road serving as the base. It has 11 concessions running west to east that were numbered north from Governor's Road (Burkholder 1950). Laid out using the single-front system, each concession was composed of long and narrow lots that were approximately 200 acres in size. However, some lot sizes in the township are irregular, due to its triangular shape and Cootes Paradise along the southeast portion (Green *et al*. 2003:2).

As part of the survey of the township, Simcoe ordered that a 60-acre plot be set aside for the creation of a town plot. The town was surveyed in 1801 by Deputy Surveyor John Stegman and named Cootes Paradise (now Dundas) after Captain Thomas Cootes, a British Naval Officer who hunted waterfowl in the area in the 1780s (Royal Botanical Gardens n.d.). The town plot was laid out on a portion of Lot 17, Concession 1, in the Township of West Flamborough and a portion of Lot 53, Concession 1, in the Township of Ancaster (Page & Smith 1875:ix).

The first European settlers in the township were Ann Morden and her family, who were United Empire Loyalists that came to the township in 1787. When Jones surveyed the township, he noted the Morden family as squatters in the Dundas Valley (Woodhouse 1965:10). Other early European settlers prior to 1800 included: Andrew Vanevery, John Purbus, Isaac Durham, William Chrysler, David Vanevery, Frederick Schram, John Rosebrough, Peter Vanevery, Isaac Smith, John Showers, Michael Showers, William Frances, Harcar Lyons, and James Durand (Woodhouse 1965:12).

One of West Flamborough Township's main features is Spencer Creek. In the early 19th century, the water flow of the creek was sufficiently strong to power a number of mills; particularly in the Greensville area, where Honourable James Crooks established several mills of various types. The industrial and residential community came to be known as Crook's Hollow and included saw mills, grist mills, flour mills, and one of the first large-scale paper mills in Upper Canada at the time. Spencer Creek, as it flows through West Flamborough Township, provides the water for two of the region's most scenic waterfalls, Webster's Falls and Tew's Falls. Both waterfalls are located along the edge of the Niagara Escarpment, just downstream from the historic village of Bullock's Corners, location of the West Flamborough Township Hall.

Settlement in the Township of West Flamborough developed primarily along the waterways and road intersections. South of the study area, Edward Peer purchased 30 acres on Spencer Creek in 1801 and built the first mill in Dundas, known as Dundas Mills (Woodhouse 1965:14). Other mills developed along watercourses in the township and by 1823 the township had 11 grist mills and eight saw mills in operation (Page & Smith 1875:iii). The community of Dundas flourished in the 19th century as it was located at the junction of large roadways and on the shoreline of Coote's Paradise Marsh. The town developed into a trading and transportation centre in the township (Freeman 2001:21). The town received the first post office in the township in 1814 and was given the name Dundas after the main thoroughfare in the settlement, Dundas Street (Conservation Hamilton n.d.).

Growth within the township accelerated with the construction of the Desjardins Canal between 1826 and 1837. The canal was constructed along the mouth of Spencer Creek to connect Dundas with Burlington Bay. Dundas served as the location for company headquarters and offices, as well as a community for workers (Page & Smith 1875:ix). Following the construction of the Desjardins Canal, Dundas became a busy port on Lake Ontario (Freeman 2001:37). In the northern portion of the township, the opening of the Guelph to Dundas Road began in 1827, following the founding of the Town of Guelph by John Galt, north of the study area. Galt instigated the development of a roadway through the Township of Puslinch towards the Township of West Flamborough. The Guelph to Dundas Road, also known as Aboukir Road, was laid out following an Indigenous trail. Although it was an open route, the Guelph to Dundas Road remained a trail until the mid-19th century. In 1846, the Guelph and Dundas Road Company was established by a group of Guelph businessmen to further open the roadway. By 1850, the roadway was nearly completed running through the eastern portion of the study area (Clark 2016). The roadway is depicted as an open road on the 1859 map of Wentworth County forming the boundary between the townships of West and East Flamborough before heading south through the villages of Freelton and Strabane (see Figure 4).

Dundas was incorporated as a town on July 28, 1847 (Page & Smith 1875:ix). With the construction of the GWR in 1854, Dundas witnessed a shift from canal shipments to utilization of the railway for the shipment of goods. By the end of the 19th century, the Town of Dundas had become one of the major manufacturing towns in the province with industries producing such goods as flour, cotton, clothing, agricultural implements, and furniture (Page & Smith 1875:ix).

In relation to the study area, the closest early settlement in the township was Strabane, which developed at the intersection of Brock Road and Concession Road 8 West. It was first settled by Matthew Peebles in 1842 (Mitchell 1866:352). A post office was established at the intersection in 1851 with Peebles as the first postmaster (Library and Archives Canada 2014). By 1866, the village had a population of about 100, and included a hotel, two saw mills, a school, a church, and a boot and shoemaker (Mitchell 1866:352-353). Strabane remained a small community throughout the late 19th century, with a population in 1898 of only about 50 (Vernon 1898:149). A portion of the 1859 map of Wentworth County featuring West Flamborough Township is illustrated in Figure 4 (Surtees 1859). A portion of the 1875 map of West Flamborough Township is illustrated in Figure 5 (Page & Smith 1875). The mid-to-late 19th century development of the study area within the Township of West Flamborough is illustrated on both maps with numerous landowners and structures depicted.

At the turn of the 20th century, the Town of Dundas witnessed a change in settlement patterns as retired farmers began to move into the town from the surrounding township. The proximity of Dundas to the City of Hamilton also created the possibility for many town residents to work in Hamilton while maintaining their home in Dundas (Meyers 1954:42). Traffic between Dundas and Hamilton increased with the development of better roads and highways beginning in the 1920s. In 1920, the Department of Public Highways Ontario assumed roads from Hamilton to Owen Sound and established King's Highway 6 (Bevers 2019). The highway, situated within the study area, is now a busy commuter route in the City of Hamilton, with connections to Highways 401 and 403. In January 2001, the Towns of Flamborough and Dundas amalgamated with the City of Hamilton (Hamilton Public Library 2017a). Dundas remains a small suburban community within the City with a population of 24,710 in 2006 (Social Planning & Research Council of Hamilton 2008).

1.2.2.4 Township of East Flamborough

The Township of East Flamborough was surveyed in 1793 by Augustus Jones using a single-front system. Similar to the Township of West Flamborough, the Township of East Flamborough was laid out in relation to the Governor's Road. The Township of East Flamborough has fourteen concessions running south to north, with a broken front along Burlington Bay. Lots in the township are numbered east to west. Laid out using the single-front system, each concession comprises long and narrow lots that are approximately 200 acres in size.

The Township of East Flamborough was named after the Town of Flamborough in East Yorkshire, England. The first European settler to the Township of East Flamborough was David Fonger who arrived in 1783; he was followed by William Applegarth in 1791 (Green *et al*. 1997:5). Land grants were given beginning in 1796 in the lower portions of the township. One of the first grants was given to Alexander McDonnelll in 1796, which included 800 acres along Grindstone Creek (WEFCC 1967:12).

Settlement in the Township of East Flamborough developed primarily at road intersections and along the waterways, which acted as a source of power for mills. The first mill in the township was constructed on Grindstone Creek by William and John Applegarth (Green *et al*. 1997:5), followed in the early 1800s by a saw mill on the creek near the Great Falls. The settlement of Waterdown developed around Brown's mill, at the crossroads of Dundas Street and Mill Street (Green *et al*. 1997:18) and became the largest village in the township throughout the 19th century.

The southern portion of the township was first settled in the early 19th century, while the remaining portions of the township remained heavily wooded until the 1820s and 1830s. By 1846, 25,537 acres in the township had been taken up with 8,750 acres under cultivation. By this time, the township had two grist mills and nine saw mills (Smith 1846:59). In 1854, the Township of East Flamborough was incorporated as a separate township from West Flamborough (Hamilton Public Library 2017b).

In relation to the study area, the closest early settlement in the township is Carlisle, which was established to the east in 1828 by John Eaton. Eaton and his wife Catherine settled on 400 acres of land in Lots 8 and 9, Concession 8, in the Township of East Flamborough in 1828 (Lake and Reynolds Genealogy 2017). A small village plot, originally known as Eaton, was laid out on Eaton's property by his son Anson Eaton, along with Andrew Patton and George Abery (Mitchell 1866:335). Early European settlers to this hamlet included the Fords, Pattons, Kievels, Hamiltons, McColls, Crookers, Gunbys, Mordens, Adamsons, Binkleys, Hunts, Greens, Mills, and Bennetts (WEFCC 1967:35). A post office was established in the hamlet in 1851, with G.R. Lister as the first postmaster (Library and Archives Canada 2014). In 1853, the hamlet was renamed to Carlisle (WEFCC 1967:35). Also, in 1853, the Hamilton, Waterdown, and Carlisle Road was constructed from Hamilton to Carlisle. In 1866, Carlisle had a population of 150, with two general stores, several saw mills, two schools, and two churches (Mitchell 1866:335).

By 1867, all the lots in the township were taken up by residents or land speculators (Green *et al*. 1997:3). In 1883, the township reached a population of 2,377 with the villages of Aldershot, Carlisle, Clappison, Flamboro Centre, Mountsberg, and Waterdown (Irwin & Co. 1883:54). The largest village was Waterdown with a population of about 700, while Carlie had a population of 150 (Irwin & Co. 1883). A portion of the 1859 map of Wentworth County featuring East Flamborough Township is illustrated in Figure 4 (Surtees 1859). A portion of the 1875 map of East Flamborough Township is illustrated in Figure 5 (Page & Smith 1875). The mid-to-late 19th century development of the study area within the Township of East Flamborough is illustrated on both maps with numerous landowners and structures depicted.

At the beginning of the 20th century, the study area remained within a rural portion of the Township of East Flamborough, just west of the hamlet of Carlisle, and was surrounded by agricultural lands. Carlisle received a small period of growth with the construction in 1911 of the Canadian Pacific Railway (C.P.R.) between Hamilton and Guelph. Traffic surrounding the study area increased with the development of better roads and highways beginning in the 1920s. The Township of East Flamborough was similarly influenced by the development of Highway 6, which influenced the development of subdivisions in Carlisle following the Second World War (WEFCC 1967:37). In January 1974, the Township of East Flamborough became part of the Regional Municipality of Hamilton-Wentworth. In January 2001, the township was amalgamated into the new City of Hamilton (Hamilton Public Library 2017b). Carlisle remains a small community within the City, with a population in 2016 of 1,869 (Statistics Canada 2016).

1.2.2.5 Summary

As illustrated above, the historical context of the Stage 1 study area for the Project includes numerous examples of Indigenous and early Euro-Canadian resources. In discussing the late 19th century historical mapping it must be remembered that historical county atlases were produced primarily to identify factories, offices, residences and landholdings of subscribers and were funded by subscription fees. Landowners who did not subscribe were not always listed on the maps (Caston 1997:100). As such, all structures were not necessarily depicted or placed accurately (Gentilcore and Head 1984). Further, review of historic mapping, including treaty maps, also has inherent accuracy difficulties due to potential error in geo-referencing. Geo-referencing is conducted by assigning spatial coordinates to fixed locations and using these points to spatially reference the remainder of the map. Due to changes in “fixed” locations over time (e.g., road intersections), errors/difficulties of scale and the relative idealism of the historic cartography, historic maps may not translate accurately into real space points. This may provide obvious inconsistencies during the historic map review. Nonetheless, the majority of the study area has been subject to European-style agricultural practices for over 100 years, having been densely populated by Euro-Canadian farmers by the late 19th century. Portions of the study area have been cleared of woodlot and have had extensive drainage systems installed to reclaim swamp and marshland as agricultural field.

1.3 ARCHAEOLOGICAL CONTEXT

1.3.1 The Natural Environment

The Stage 1 study area for the Project includes portions of two broad physiographic regions: the Flamborough Plain and the Norfolk Sand Plain. The Flamborough Plain physiographic region consists of:

> *An isolated tract of shallow drift on the Niagara cuesta…It is an area of about 150 square miles, bounded on the northwest by the Galt Moraine, and on the south by the silts and sands of glacial Lake Warren. A few drumlins are found scattered over this limestone plain and swamps are plentiful. The limestone has been swept bare in places…what little overburden there is on the bedrock, apart from the drumlins, is either bouldery glacial till or sand and gravel…Good soil is not plentiful in the little region: the soil is either wet or stony and shallow.*
>
> (Chapman and Putnam 1984:129-130)

Generally, two streams, i.e., Spencer Creek and small tributaries of Bronte Creek, serve to drain the Flamborough Plains physiographic region. Portions of these two streams traverse the study area. Additional secondary and tertiary creeks and streams from these primary sources (i.e., Barlow Creek) are noted throughout the study area. Moreover, additional ancient and/or relic tributaries of water sources may have existed but are not identifiable today and are not indicated on historic mapping. As noted previously, much of the Geographic Township of Beverly comprises swampy soils. These swamps "serve as water reservoirs and produce cedar posts and other wood" (Chapman and Putnam 1984:130). Soils within the region are generally of poor quality as they are often wet or stony and shallow (Chapman and Putnam 1984:130). However, these soils would be suitable for Indigenous agricultural practices and, with 19th century tiling, would become suitable for large-scale agriculture.

The Norfolk Sand Plain physiographic region includes a large area of fine textured, water deposited sands laid down as part of the delta of the glacial Grand River (Chapman and Putnam 1984). Moreover:

> *The sands and silts of this region were deposited as a delta in glacial Lakes Whittlesy and Warren. A great discharge of meltwater from the Grand River area entered the lakes between the ice front and the moraines to the northwest, building the delta from west to east as the glacier withdrew.*
>
> (Chapman and Putnam 1984:154)

Much of the Norfolk Sand Plain physiographic region is located to the south of the study area, along the north shore of Lake Erie. Thus, much of the region's drainage occurs through small rivers and streams flowing directly to Lake Erie. However, a small portion of the northern part of the region drains through the Grand River via Otter Creek and Big Creek. The northern part of the region also drains to Lake Ontario via Grindstone Creek, which traverses the study area. Additional secondary and tertiary creeks and streams from these primary sources are noted throughout the study area. Moreover, additional ancient and/or relic tributaries of water sources may have existed but are not identifiable today and are not indicated on historic mapping. Generally, the soils within the region are suitable for Indigenous and non-Indigenous agricultural practices, with tobacco farming being the dominant practice in much of the region.

1.3.1.1 Recent Heritage Reports

A Cultural Heritage Assessment Report (CHAR) is being prepared by Stantec (*in press*) to identify the presence of heritage resources within the study area; understand the potential impacts of the Project on these resources; and, prepare mitigation strategies to minimize these impacts. The preliminary information from the CHAR suggests there are 26 cultural heritage resources situated within the study area for the Project. Once the preferred route for the proposed pipeline is determined, appropriate mitigation measures will be evaluated. Further information regarding heritage resources will be detailed in the CHAR once completed.

1.3.2 Pre-contact Indigenous Resources

It has been demonstrated that Indigenous people began occupying southern Ontario as the Laurentide glacier receded, as early as 9000 BCE (Ellis and Ferris 1990:13). Much of what is understood about the lifeways of these Indigenous peoples is derived from archaeological evidence and ethnographic analogy. In Ontario, Indigenous culture prior to the period of contact with European peoples has been distinguished into cultural periods based on observed changes in material culture. These cultural periods are largely based on observed changes to formal lithic tools, and

separated into the Early Paleo-Indian, Late Paleo-Indian, Early Archaic, Middle Archaic, Late Archaic and Terminal Archaic periods. Following the advent of ceramic technology in the Indigenous archaeological record, cultural periods are separated into the Early Woodland, Middle Woodland, and Late Woodland periods, based primarily on observed changes in formal ceramic decoration. It should be noted that these cultural periods do not necessarily represent specific cultural identities but are a useful paradigm for understanding changes in Indigenous culture through time. The current understanding of Indigenous archaeological culture is summarized in Table 2, based on Ellis and Ferris (1990). The provided time periods are based on the "Common Era" calendar notation system, i.e., Before Common Era (BCE) and Common Era (CE).

Table 2: Generalized Cultural Chronology of the Study Area

Period	Characteristics	Time Period	Comments
Early Paleo-Indian	Fluted Projectiles	9000 – 8400 BCE	spruce parkland/caribou hunters
Late Paleo-Indian	Hi-Lo Projectiles	8400 – 8000 BCE	smaller but more numerous sites
Early Archaic	Kirk and Bifurcate Base Points	8000 – 6000 BCE	slow population growth
Middle Archaic	Brewerton-like points	6000 – 2500 BCE	environment similar to present
Late Archaic	Narrow Points	2500 – 1800 BCE	increasing site size
	Broad Points	1800 – 1500 BCE	large chipped lithic tools
	Small Points	1500 – 1100 BCE	introduction of bow hunting
Terminal Archaic	Hind Points	1100 - 950 BCE	emergence of true cemeteries
Early Woodland	Meadowood Points	950 - 400 BCE	introduction of pottery
Middle Woodland	Dentate/Pseudo-Scallop Pottery	400 BCE – 500 CE	increased sedentism
	Princess Point	550 – 900 CE	introduction of corn
Late Woodland	Early Ontario Iroquoian	900 – 1300 CE	emergence of agricultural villages
	Middle Ontario Iroquoian	1300 – 1400 CE	long longhouses (100m +)
	Late Ontario Iroquoian	1400 – 1650 CE	tribal warfare and displacement
Contact Indigenous	Various Algonkian Groups	1650 – 1875 CE	early written records and treaties
Late Historic	Euro-Canadian	1796 CE – present	European settlement

Between 9000 and 8000 BCE, Indigenous populations were sustained by hunting, fishing, and foraging and lived a relatively mobile existence across an extensive geographic territory. Despite these wide territories, social ties were maintained between groups. One method of maintaining social ties was through gift exchange, evident through exotic lithic material documented on many sites (Ellis 2013:35-40).

By approximately 8000 BCE, evidence exists and becomes more common for the production of ground-stone tools such as axes, chisels, and adzes. These tools themselves are believed to be indicative specifically of woodworking. This evidence can be extended to indicate an increase in craft production and arguably craft specialization. This latter statement is also supported by evidence, dating to approximately 7000 BCE of ornately carved stone objects which would be laborious to produce and have explicit aesthetic qualities (Ellis 2013:41). This is indirectly indicative of changes in social organization which permitted individuals to devote time and effort to craft specialization. Since 8000 BCE, the Great Lakes basin experienced a low-water phase, with shorelines significantly below modern lake levels



(Stewart 2013: Figure1.1.C). It is presumed that the majority of human settlements would have been focused along these former shorelines. At approximately 6500 BCE the climate had warmed considerably since the recession of the glaciers and the environment had grown more similar to the present day. By approximately 4500 BCE, evidence exists from southern Ontario for the utilization of native copper (naturally occurring pure copper metal) (Ellis 2013:42). The known origin of this material along the north shore of Lake Superior indicates the existence of extensive exchange networks across the Great Lakes basin.

At approximately 3500 BCE, the isostatic rebound of the North American plate following the melt of the Laurentide glacier had reached a point which significantly affected the watershed of the Great Lakes basin. Prior to this, the Upper Great Lakes had drained down the Ottawa Valley via the French-Mattawa river valleys. Following this shift in the watershed, the drainage course of the Great Lakes basin had changed to its present course. This also prompted a significant increase in water-level to approximately modern levels (with a brief high-water period); this change in water levels is believed to have occurred catastrophically (Stewart 2013:28-30). This change in geography coincides with the earliest evidence for cemeteries (Ellis 2013:46). By 2500 BCE, the earliest evidence exists for the construction of fishing weirs (Ellis *et al.* 1990: Figure 4.1). Construction of these weirs would have required a large amount of communal labour and are indicative of the continued development of social organization and communal identity. The large-scale procurement of food at a single location also has significant implications for permanence of settlement within the landscape. This period is also marked by further population increase and by 1500 BCE evidence exists for substantial permanent structures (Ellis 2013:45-46).

By approximately 950 BCE, the earliest evidence exists for populations using ceramics. Populations are understood to have continued to seasonally exploit natural resources. This advent of ceramic technology correlated, however, with the intensive exploitation of seed foods such as goosefoot and knotweed as well as mast such as nuts (Williamson 2013:48). The use of ceramics implies changes in the social organization of food storage as well as in the cooking of food and changes in diet. Fish also continued to be an important facet of the economy at this time. Evidence continues to exist for the expansion of social organization (including hierarchy), group identity, ceremonialism (particularly in burial), interregional exchange throughout the Great Lakes basin and beyond, and craft production (Williamson 2013:48-54).

By approximately 550 CE, evidence emergences for the introduction of maize into southern Ontario. This crop would have initially only supplemented Indigenous people's diet and economy (Birch and Williamson 2013:13-14). Maize-based agriculture gradually became more important to societies and by approximately 900 CE permanent communities emerge which are primarily focused on agriculture and the storage of crops, with satellite locations oriented toward the procurement of other resources such as hunting, fishing, and foraging. By approximately 1250 CE, evidence exists for the common cultivation of historic Indigenous cultigens, including maize, beans, squash, sunflower and tobacco. The cultural affiliation of populations within the region of the study area at this time period is debated, whether they may have spoken a form of Iroquoian language or Algonquian (Murphy and Ferris 1990). The extant archaeological record demonstrates many cultural traits similar to historic Indigenous nations (Williamson 2013:55).

1.3.3 Known Archaeological Sites and Surveys

In Canada, archaeological sites are registered within the Borden system, a national grid system designed by Charles Borden in 1952 (Borden 1952). The grid covers the entire surface area of Canada and is divided into major units containing an area that is two degrees in latitude by four degrees in longitude. Major units are designated by upper case letters. Each major unit is subdivided into 288 basic unit areas, each containing an area of 10 minutes in latitude by 10 minutes in longitude. The width of basic units reduces as one moves north due to the curvature of the earth. In southern Ontario, each basic unit measures approximately 13.5 kilometres east-west by 18.5 kilometres north-south. In northern Ontario, adjacent to Hudson Bay, each basic unit measures approximately 10.2 kilometres east-west by 18.5 kilometres north-south. Basic units are designated by lower case letters. Individual sites are assigned a unique, sequential number as they are registered. These sequential numbers are issued by the MTCS who maintain the *Ontario Archaeological Sites Database*. The study area is located within Borden blocks AiHa and AiGx, with Borden block AhHa situated immediately to the south.

Information concerning specific site locations is protected by provincial policy and is not fully subject to the *Freedom of Information and Protection of Privacy Act* (Government of Ontario 1990b). The release of such information in the past has led to looting or various forms of illegally conducted site destruction. Confidentiality extends to all media capable of conveying location, including maps, drawings, or textual descriptions of a site location. The MTCS will provide information concerning site location to the party or an agent of the party holding title to a property, or to a licensed archaeologist with relevant cultural resource management interests.

An examination of the *Ontario Archaeological Sites Database* has shown that there are 14 registered archaeological sites within the broad Stage 1 study area (Government of Ontario 2019a); none are within 50 metres of the Preliminary Preferred or Alternate Route options. A further five registered archaeological sites are within one kilometre of the study area; however, none of these sites are located within 50 metres of the study area (Government of Ontario 2019a). Table 3 provides a summary of the previously registered archaeological sites. The locations of the registered archaeological sites related to the study area are illustrated in Tile 1 in the Supplementary Documentation for this report.

Table 3: Registered Archaeological Sites

Borden #	Site Name	Site Type	Cultural Affiliation
AiHa-1	**Shaver Hill Ossuary**	**Ossuary**	**Indigenous**
AiHa-2	**Christianson**	**Village**	**Indigenous**
AiHa-3	**Dwyer Ossuary**	**Ossuary**	**Indigenous**
AiHa-5	**Hamilton / Hunter-Beaton**	**Village**	**Indigenous**
AiHa-7	Hood	Village / Burial	Indigenous
AiHa-8	**Mills**	**Village**	**Indigenous**
AiHa-9	MacDonald	Village	Indigenous
AiHa-10	**Bogle I**	**Hamlet**	**Indigenous**
AiHa-11	**Bogle II**	**Hamlet**	**Indigenous**
AiHa-12	**Robertson**	**Village**	**Indigenous**

Borden #	Site Name	Site Type	Cultural Affiliation
AiHa-14	**Freelton / Kynast**	**Village**	**Indigenous**
AiHa-18	**Kralt**	**Hamlet**	**Indigenous**
AiHa-23	**UG Kirkwall 1**	**Lithic scatter**	**Indigenous**
AiHa-29	**Groen**	**Camp**	**Indigenous**
AiHa-36	**Rutherford**	**Homestead**	**19th century Euro-Canadian**
AiGx-70	**Gamble**	**Indeterminate**	**Indigenous**
AiGx-232	MillGrove North	Homestead	19th century Euro-Canadian
AiGx-235	Abrey Zimmerman	Homestead	19th century Euro-Canadian
AhHa-322	Tract 1036, Location 1	Camp	Indigenous

Note: sites in **bold** are located within the Stage 1 study area

As noted, 14 registered archaeological sites are located within the broad Stage 1 study area (Government of Ontario 2019a). However, none of the registered sites are within 50 metres of the Preliminary Preferred or Alternate Route options for the Project. The potential for Project related construction activity to impact any of the registered archaeological sites within the study area will be re-evaluated as part of the Stage 2 archaeological assessment for the Project following confirmation of the selected route and delineation of any temporary construction easement.

Many of the registered archaeological sites within the study area are known only by their corresponding Site Record Form in the *Ontario Archaeological Sites Database* (Government of Ontario 2019a). As a result, detailed information regarding past archaeological activities and current status are not available for AiHa-5, AiHa-8, AiHa-10, AiHa-11, AiHa-12, AiHa-14, AiHa-18, AiHa-36, and AiGx-70. A summary of the information available from their respective Site Record Form is provided below.

AiHa-5 was registered in 1977 as the Hamilton site. The site was identified as an Indigenous village and was partially excavated by William Noble in 1972. Based on the artifacts recovered, the Hamilton site (AiHa-5) is affiliated with the historic Neutral. Later, in 1986, the same site was registered as the Hunter-Beaton site by William Finlayson and assigned Borden number AiHa-21. However, upon review of the site's locational data, it was determined that the two sites are the same and Borden number AiHa-21 was removed.

AiHa-8 was registered in 1977 as the Mills site. The site was identified as an Indigenous village located in a ploughed field. A small sample of artifacts was collected through excavation in 1971 by Ian Kenyon. The collected artifacts suggest the site is affiliated with the historic Neutral.

AiHa-10 was registered in 1977 as the Bogle I site. The site was identified as an Indigenous hamlet located in a ploughed field. A small sample of artifacts from the site was analyzed by Ian Kenyon. The sample of artifacts from the site suggest an affiliation with the historic Neutral.

AiHa-11 was registered in 1977 as the Bogle II site. The site was identified as an Indigenous hamlet located in a ploughed field. A small sample of artifacts from the site was analyzed by Ian Kenyon. The sample of artifacts from the site suggest an affiliation with the historic Neutral. The Bogle I (AiHa-10) and Bogle II (AiHa-11) sites are situated near each other.

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AiHa-12 was registered in 1977 as the Robertson site. A small sample of artifacts from the site was analyzed by Ian Kenyon. The sample of artifacts from the site suggest an affiliation with the historic Neutral. The site was identified as an Indigenous village near Spencer Creek. The Robertson site (AiHa-12) is located near the Dwyer Ossuary (AiHa-3).

AiHa-14 was registered in 1983 as the Freelton site and was also referred to as the Kynast site. Located within a hardwood forest, the site was identified as an Indigenous village. Test excavations were conducted at the site by William Fox in 1983. The test excavations suggest the site may retain a series of longhouses, possibly surround by a palisade. The artifacts recovered suggest a historic Neutral affiliation, with recovered trade goods indicating a period of use *circa* 1630 CE.

AiHa-18 was registered in 1983 as the Kralt site. The site was identified as an Indigenous hamlet located in a low land area near a swamp. A small sample of artifacts was collected from the surface of the site area. The sample of artifacts from the site suggest an affiliation with the historic Neutral, with recovered trade goods indicate a period of use in the early 1600s CE.

AiHa-36 was registered in 1992 as the Rutherford site. The site was identified as a Euro-Canadian homestead dating to *circa* 1840-1860 CE. A surface collection of artifacts, dominated by refined ceramics and glass, was retained. No further archaeological activities were planned for the site as it was to be protected with a 10 metre buffer around it.

The Shaver Hill Ossuary (Aiha-1) is associated with the Indigenous Christianson village (AiHa-2). Smith (1897:33) describes a large Indigenous settlement near Westover with numerous burial features. Though not named, the description of the site likely corresponds to the Christianson village (AiHa-2) and Shaver Hill Ossuary (AiHa-1). The period of use at the Christianson site (AiHa-2) and Shaver Hill Ossuary is between *circa* 1615 and 1632 CE (Fitzgerald 1982a). The Christianson site (AiHa-2) and Shaver Hill Ossuary have been the subject of numerous archaeological investigations (e.g., Fitzgerald 1981; Fitzgerald 1982b; Lennox and Fitzgerald 1990; Noble 1984; Stothers 1968; Stothers 1972).

The Dwyer Ossuary (AiHa-3) is associated with the Indigenous Robertson village (AiHa-12). The earliest recorded investigations at the Dwyer Ossuary occurred in 1938-1938 by Rutherford Smith. The Robertson site was surveyed by Ian Kenyon in 1971 (Sustainable Archaeology McMaster 2019). The period of use at the Robertson village (AiHa-12) and Dwyer Ossuary (AiHa-3) is between *circa* 1632 and 1651 CE (Fitzgerald 1982a; Fitzgerald 1982b). Few archaeological reports are available for the Robertson village (AiHa-12), while the Dwyer Ossuary (AiHa-3) has been the subject of previous archaeological investigations (e.g., Fitzgerald 1982b; Ridley 1961; Smith and Murphy 1939).

AiHa-23 was registered in 1988 as the UG Kirkwall 1 site. It was identified as a sparse surface scatter comprising four lithic artifacts: an end scraper, a wedge, a utilized flake, and an abrader. The site was identified by Mayer, Pihl, Poulton and Associates Incorporated (MPP) during the archaeological assessment for Union Gas' Kirkwall Ancaster Line (MPP 1988). The site would not be impacted by the preferred pipeline route and a Stage 3 archaeological assessment was not conducted.

AiHa-29 was registered in 1990 as the Groen site by Archaeological Research Associates Ltd. (ARA) during a property assessment for the Kirkwall Valve Site to Hamilton Take-off NPS 42 Pipeline Loop (ARA 1990a). The site was identified as an Indigenous camp and, later, a portion of the site was fully excavated, including mechanical topsoil removal (ARA 1990b). The partial excavation recovered lithic tools and flakes, as well as Indigenous pottery



and faunal remains. Several features and post moulds were also identified. The archaeological work was completed by Archaeological Research Associates Ltd. (ARA) in advance of proposed project impacts (ARA 1990b). The site is associated with the Neutral and dates to between 1620 and 1650 CE.

AiGx-70 was registered as the Gamble Site by Stew Leslie in the early 1970s. The site is identified as an Indigenous archaeological site, with Archaic and Woodland components. No information regarding site type or function is available.

Located outside of the study area, the MacDonald site (AiHa-9) was identified as an Indigenous village in 1838 (Smith 1897:31). The site was described as being between five and six acres in size and was protected by palisades (Smith 1897:31-32). The original identification of the MacDonald site (AiHa-9) confirmed the presence of "pipes, beads, wampum, totems and other mementos…[and] upwards of 300 iron tomahawks…" (Smith 1897:32). Similarly, the Hood site (AiHa-7) was identified outside of the study area in the early 1800s. The site was originally described as large and retained remnants of a palisade (Smith 1897:32). Burial pits had been identified and, from them, various items had been collected including "French axes, iron tomahawks, brass kettles, [and] brass arrow tips…" (Smith 1897:32). The Hood site (AiHa-7) was further described in Lennox (1978) and Fitzgerald (1979).

A query of the *Ontario Public Register of Archaeological Reports* identified several archaeological assessments which may document work within the broad Stage 1 study area or within 50 metres of it (Government of Ontario 2019b). Based on an examination of the queried reports, none document registered archaeological sites within 50 metres of the study area. Many of these reports represent archaeological assessments from the 1970s and 1980s when mapping and artifact recording standards were less precise than today's standards. As it relates to the current and broad Stage 1 study area for the Project, a detailed review of all possible early assessments and reports is not relevant. Rather, a summary of recent archaeological assessment work related to the study area is provided below. Despite some previous archaeological assessments overlapping with the current Stage 1 study area, Stantec has determined that illustrating all previously surveyed areas is not practical given the size and scale of the current study area. Following confirmation of the preferred route and delineation of any temporary construction easement required for the Project, the proximity of previous archaeological assessments and previously surveyed lands can be re-evaluated. Table 4 provides a summary of some of the relevant reports pertaining to previous archaeological work within the study area.

Table 4: Previous Archaeological Assessments

Year	Report	Author	PIF #
1984	*An Archaeological Resource Assessment of the Proposed Union Gas Loop of the NPS 34 Trafalgar Line, Brantford Take-Off to Kirkwall Valve Site, Waterloo and Hamilton-Wentworth Regional Municipalities*	MPP	Not applicable (Licence No. 1984-34)
1987	*Preliminary Report on the Archaeological Survey of Union Gas Pipeline, Kirkwell Valve to Hamilton Valves*	ARA	Not applicable
1988	*An Archaeological Resources Assessment of the Union Gas Pipeline from Kirkwall Valve Sites to the Hamilton Gate Station No. 3, Regional Municipality of Hamilton-Wentworth, Ontario*	MPP	Not applicable (Licence No. 86-92)

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Year	Report	Author	PIF #
1990a	*Archaeological Assessment. Groen Property – Phase II, NPS 42 Trafalgar Gasline, Kirkwell Valve to Hamilton Valve, Wentworth County, Ontario*	ARA	Not applicable (Licence No. 90-045)
1990b	*Archaeological Mitigation Groen Site (AiHa-29) NPS 42 Trafalgar Gasline Kirkwell Valve to Hamilton Valve*	ARA	Not applicable (Licence No. 90-045)
1999	*Stage 1 to 3 Archaeological Assessment of Highway 6, From Highway 5 to South of Concession Road 6W, Flamborough Township, Regional Municipality of Hamilton-Wentworth (W.P. 163-80-01)*	New Directions Archaeology	Not applicable (Licence No. 99-025)
2008	*Stage 1 Archaeological Assessment of the Proposed NPS 48 Brantford Take-Off to Kirkwall Valve Site Pipeline, Township of North Dumfries & City of Hamilton, Ontario*	D.R. Poulton & Associates Inc. (DPA)	P053-179-2018
2014a	*The 2013 Stage 1 Archaeological Assessment of the Proposed Enbridge Pipelines Inc. Line 11 Westover Segment Replacement Project, City of Hamilton, Regional Municipality of Hamilton-Wentworth, Ontario*	DPA	P316-198-2013
2014b	*The 2014 Stage 2 Archaeological Assessment of the Enbridge Pipelines Inc. Line 11 Westover Segment Replacement Project, City of Hamilton, Regional Municipality of Hamilton-Wentworth, Ontario*	DPA	P316-0278-2013
2014c	*The 2013-2014 Stage 2 Archaeological Assessment of Infrastructure Ontario Lands on the Proposed NPS 48 Brantford Take-Off to Kirkwall Valve Site Pipeline, Township of North Dumfries & City of Hamilton, Ontario*	DPA	P316-196-2013
2015a	*The 2013-2014 Stage 2 Archaeological Assessment of the Proposed NPS 48 Brantford Take-Off to Kirkwall Valve Site Pipeline, Township of North Dumfries & City of Hamilton, Ontario*	DPA	P316-0304-2014
2015b	*The 2015 Stage 1 Archaeological Assessment of the Proposed Enbridge Pipelines Inc. Line 10 Westover Segment Replacement Project, City of Hamilton, Ontario*	DPA	P316-0306-2015
2015	*Stage 2 Archaeological Assessment, Enbridge Pipelines Inc., Line 10 Westover Segment Replacement Project, Geotechnical Borehole Work Area and Access Routes, City of Hamilton, Ontario*	Timmins Martelle Heritage Consultants Inc. (TMHC)	P1075-0017-2015
2016	*Stage 2 Archaeological Assessment, Enbridge Pipelines Inc., Line 10 Westover Segment Replacement Project, 2015 Fieldwork, City of Hamilton, Ontario*	TMHC	P1075-0018-2016
2017	*Stage 2 Archaeological Assessment Enbridge Pipelines Inc. Line 10 Westover Segment Replacement Project Spring, Summer and Early Fall 2016 Fieldwork City of Hamilton, Ontario*	TMHC	P324-0098-2016
2018	*Stage 1 Archaeological Assessment Municipal Class EA Hydro One B5C/B6C Line Refurb Hydro One Refurb between the Burlington TS & Enbrg Westover SCTS Part of, Lots 28 & 29, Con 5-Lots 28 to 36, Con 6-Lots 28 to 30, Con 7, G.Twp. of Beverly Part of Lots 1 to 16, Con 6, G.Twp. of West Flamborough Part of, Lot 1, Con 1-Lots 1 to 3, Con 2-Lots 3 to 6, Con 3-Lots 5 to 8, Con 4-Lots 8 to 11, Con 5-*	TMHC	P1075-0039-2017

Year	Report	Author	PIF #
	Lots 11 to 13, Con 6-Lot 13, Con 7, G.Twp. of East Flamborough Former Wentworth County, Now City of Hamilton, ON Part of Brant's Block, G.Twp. of Nelson Former Halton County, Now City of Burlington, ON		

MPP completed an archaeological assessment for Union Gas' NPS 34 Trafalgar Line Brantford Take-Off to Kirkwall Valve Site (MPP 1984). This early assessment examined most of the pipeline corridor by pedestrian survey and test pit survey, however no specific ploughing of lands had occurred prior to pedestrian survey and the test pit survey interval was 10 metres. A small eastern portion of the study area corridor overlaps with the current study area for the Project. No archaeological resources were identified in the area of overlap by MPP (1984). Much of the study area corridor for the NPS 34 Trafalgar Line Brantford Take-Off to Kirkwall Valve Site was re-examined as part of a later assessment (see DPA 2008; DPA 2014c; DPA 2015).

In 1987, ARA completed an archaeological assessment for Union Gas' Kirkwell [*sic*] Valves to Hamilton Valves (ARA 1987). Much of the pipeline corridor for ARA (1987) is believed to follow Preliminary Preferred Route A of the current Project, however, a copy of the report could not be obtained for review (see Supplementary Documentation). A partial summary of the ARA (1987) is provided in Ecological Services for Planning Ltd.'s (ESP) *Kirkwall Valve Site to Hamilton Take-off NPS 42 Pipeline Loop Route Selection and Environmental Impact Assessment* (ESP 1987). The ESP (1987:59) report notes that archaeological staff "walked, surface inspected and test pitted areas of high potential." No mapping of the survey areas was provided in the ESP (1987) report and no detailed description of the archaeological survey methods was provided. Two archaeological sites, the Robertson Village (AiHa-12) and Dwyer Ossuary (AiHa-11), are located within the study corridor for the Kirkwall Valve Site to Hamilton Take-off NPS 42 Pipeline Loop (ESP 1987). However, no archaeological resources were identified during ARA's survey work between the Kirkwall Valve Site and Brock Road.

In association with the Kirkwall Valve Site to Hamilton Take-off NPS 42 Pipeline Loop, ARA completed an archaeological assessment of the Groen Property (ARA 1990a). One archaeological site, the Groen site (AiHa-29), was identified within the study corridor east of Brock Road. The site was identified as an Indigenous camp and, later, a portion of the site was fully excavated, including mechanical topsoil removal (ARA 1990b). The partial excavation recovered lithic tools and flakes, as well as Indigenous pottery and faunal remains. Several features and post moulds were also identified. The archaeological work was completed by ARA in advance of proposed project impacts (ARA 1990b). The site is associated with the Neutral and dates to between 1620 and 1650 CE.

In 1999, New Directions Archaeology (NDA) completed a Stage 1 to 3 archaeological assessment for approximately six kilometres of road improvements for Highway 6, from Highway 5 to 100 metres south of Concession Road 6 West (NDA 1999). The northern end of the NDA (1999) study area is located adjacent to the southern end of the current study area for the Project. NDA (1999) identified two archaeological sites, one of which, the Millgrove North site (AiGx-232), is located within one kilometre of the current study area. Neither site identified by NDA (1999), i.e., Red Tulip Site (AiGx-231) and Millgrove North Site (AiGx-232), are located within 50 metres of the current study area.

In 2008, DPA completed a Stage 1 archaeological assessment for Union Gas Limited's Proposed NPS 48 Brantford Take-Off to Kirkwall Valve Site Pipeline (DPA 2008). A Stage 2 for the project followed in 2013 and 2014 (DPA 2014c; DPA 2015). The easternmost portion of the Stage 2 study area (see BK31 and BK32) overlaps the current study area for the Project. During the Stage 2 survey, DPA (2015a) identified 17 archaeological locations. None of the

archaeological locations are located within the segment which overlaps the current study area. As part of the specific Stage 2 survey for Infrastructure Ontario Lands associated with the Proposed NPS 48 Brantford Take-Off to Kirkwall Valve Site Pipeline (DPA 2014c) an isolated findspot of Indigenous nature was identified and was not registered as an archaeological site. Similar archaeological assessments for proposed pipeline routes had been completed in the 1980s and early 1990s (e.g., MPP 1984; MPP 1989; DPA 1995).

In 2013, DPA completed a Stage 1 archaeological assessment for Enbridge Pipeline Inc.'s proposed Line 11 Westover Segment Replacement project (DPA 2014a). The northernmost portion of the Line 11 Westover Segment Replacement project, i.e., an approximate 280 metre gravel access road, overlaps with the southern end of the current study area. Stage 2 archaeological assessment was recommended in advance of proposed construction impacts and was completed by DPA (2014b). No archaeological resources within the current study area or within 50 metres of the current study area were identified during DPA's Stage 2 assessment (DPA 2014b).

Also, in 2013, DPA completed a Stage 1 archaeological assessment for Enbridge Pipeline Inc.'s proposed Line 10 Westover Segment Replacement project (DPA 2015b). Portions of Line 10 and 11 parallel each other in the same existing easement. The Stage 1 assessment determined that Stage 2 assessment is required in advance of proposed construction activities. The northernmost portion of the Line 10 Westover Segment Replacement projects, i.e., an approximate 280 metre gravel access road, overlaps with the southern end of the current study area. Stage 2 archaeological assessment was recommended in advance of proposed construction impacts. Various Stage 2 archaeological assessments for the Line 10 Westover Segment Replacement project have been completed by TMHC. In addition, numerous Stage 3 assessments and Stage 4 mitigations were completed by TMHC and other archaeological consultants in support of the Line 10 Westover Segment Replacement. However, no archaeological resources within the current study area or within 50 metres of the current study area were identified during the various Stage 2 assessments for the Line 10 Westover Segment Replacement project (e.g., TMHC 2015; TMHC 2016; TMHC 2017).

In 2017, TMHC completed a Stage 1 archaeological assessment for the 114-kiloVolt circuit B5C and B5C/B6C lines located between the Enbridge Westover Southern Consumer Transmission Station (SCTS), City of Hamilton and Burlington Transmission Station (TS), City of Burlington (TMHC 2018). The study area for TMHC (2018) follows the existing transmission line running through the current study area for the Project, specifically a portion of Alternate Route B. Stage 2 archaeological assessment was recommended for all lands retaining archaeological potential (TMHC 2018). Stantec understands that a Stage 2 archaeological assessment has not been completed for this project.

1.3.4 City of Hamilton's Archaeological Management Plan

The City of Hamilton's municipal archaeological management plan, entitled *The City of Hamilton Archaeology Management Plan* (AMP) was consulted and illustrates the study area as a locale of archaeological potential for Indigenous and Euro-Canadian archaeological resources (City of Hamilton 2016). To identify archaeological potential, an archaeological potential model was created using cultural and physiographic information, such as the presence of identified/registered sites or proximity to water. Generally, the AMP uses the following criteria to aid in the determination of archaeological potential of a property:

- 250 metre catchment area for registered archaeological sites;
- 250 metre catchment area for unregistered but known or reported archaeological sites;



- 300 metre catchment area for primary watercourses;
- 100 metre catchment area for historic activities;
- 100 metre catchment area for historic transportation corridors;
- 100 metre catchment area for unusual landforms;
- Areas within the historic urban boundary that have not been substantially disturbed;
- Rural historic settlements;
- Properties designated under the *Ontario Heritage Act*; and
- Modern and historic aerial photography.

Based on the criteria identified above, the AMP identifies the study area for the Project with general archaeological potential (City of Hamilton 2016).

1.3.5 Existing Conditions

The Stage 1 archaeological assessment was completed under PIF # P256-0564-2019 issued to Parker Dickson, MA, of Stantec, by the MTCS. The study area for the Stage 1 archaeological assessment of the Project comprises approximately 6,400 hectares of various Lots and Concessions, Geographic Townships of Beverly, West Flamborough, and East Flamborough, former Wentworth County, now City of Hamilton, Ontario (Figure 1 and Figure 2). The proposed Project will be constructed between Enbridge's existing Kirkwall valve site, located northeast of the intersection of Safari Road and Valens Road, and Enbridge's existing Hamilton valve site, located east of Highway 6 and north of Carlisle Road, generally paralleling three existing Enbridge pipelines. The length of the proposed pipeline will be determined by the final route and will be approximately 10 to 14 kilometres in length (Figure 2).

Broadly, much of the study area consists of active agricultural field with smaller pockets of sparse woodlot. The study area is also inundated with numerous water sources, municipal road ROWs, and municipally constructed drains, as well as the small communities of Westover, Flamborough, Harper Corners, Breezy's Corners, and Strabane. Existing Enbridge infrastructure, such as metering stations, pumping stations, and storage facilities, are located within the study area. For example, much of the Preliminary Preferred Route A parallels the existing Kirkwall Valve Site to Hamilton Take-off NPS 42 Pipeline, which, itself, parallels an existing line constructed in the early 1950s. The final route and construction easement, including any temporary land use, for the Project will be determined at a later date. Thus, the current study area for the Stage 1 archaeological assessment is large and serves to capture a broad and generalized geographic area associated with the Project. A property inspection was not completed in association with the Stage 1 archaeological assessment.

2.0 ANALYSIS AND CONCLUSIONS

Archaeological potential is established by determining the likelihood that archaeological resources may be present on a subject property. Stantec applied archaeological potential criteria commonly used by the MTCS (Government of Ontario 2011) to determine areas of archaeological potential within the region under study. These variables include proximity to previously identified archaeological sites, distance to various types of water sources, soil texture and drainage, glacial geomorphology, elevated topography, and the general topographic variability of the area. However, it is worth noting that extensive land disturbance can eradicate archaeological potential (Government of Ontario 2011).

Potable water is the single most important resource for any extended human occupation or settlement and since water sources in Ontario have remained relatively stable over time, proximity to drinkable water is regarded as a useful index for the evaluation of archaeological site potential. In fact, distance to water is one of the most commonly used variables for predictive modeling of archaeological site locations. Distance to modern or ancient water sources is generally accepted as the most important determinant of past human settlement patterns and, considered alone, may result in a determination of archaeological potential. However, any combination of two or more other criteria, such as well-drained soils or topographic variability, may also indicate archaeological potential.

When evaluating distance to water it is important to distinguish between water and shoreline, as well as natural and artificial water sources, as these features affect site location and type to varying degrees. The MTCS categorizes water sources in the following manner:

- Primary water sources: lakes, rivers, streams, creeks;
- Secondary water sources: intermittent streams and creeks, springs, marshes and swamps;
- Past water sources: glacial lake shorelines, relic river or stream channels, cobble beaches, shorelines of drained lakes or marshes; and
- Accessible or inaccessible shorelines: high bluffs, swamp or marshy lake edges, sandbars stretching into marsh.

Primary water sources are abundant within the Stage 1 study area. Transecting the study area are primary sources such as Spencer Creek, Fairchild Creek, Barlow Creek, Grindstone Creek, and Bronte Creek. Much of the Geographic Township of Beverly comprises swampy soils. These swamps “serve as water reservoirs and produce cedar posts and other wood” (Chapman and Putnam 1984:130). The swamps in the study area would have also provided faunal and floral resources for use. Additional ancient and/or relic tributaries of water sources may have existed but are not identifiable today and are not indicated on historic mapping.

Further examination of the study area’s natural environment identified soil conditions suitable for Indigenous and Euro-Canadian agriculture, especially in the 19th and 20th centuries following the implementation of municipal drainage systems and agricultural field tiling. The study area is situated within portions of two broad physiographic regions: the Flamborough Plain and the Norfolk Sand Plain. Both physiographic regions contain drumlins, eskers, and other landforms comprising elevated topography. Storck (1982) notes that archaeological sites, particularly Paleo-Indian sites, tend to be in situated in areas of elevated topography as these areas would possess better drainage and would provide a broad view of the surrounding terrain for game watching.

An examination of the *Ontario Archaeological Sites Database* has shown that there are 14 registered archaeological sites within the broad Stage 1 study area; of which, 13 are Indigenous. While no registered site is located within 50 metres of a Preliminary Preferred or Alternate Route option, it is important to recognize that several significant archaeological sites, such as Indigenous villages and ossuaries (i.e., Christianson Village [AiHa-2], Shaver Hill Ossuary [AiHa-1], Robertson Village [AiHa-12], and Dwyer Ossuary [AiHa-3]), are located within the study area and are of special significance to extant Indigenous communities in the region. A further three registered Indigenous archaeological sites are within one kilometre of the study area, including the Hood Village (AiHa-7) and MacDonald Village (AiHa-9).

For Euro-Canadian sites, archaeological potential can be extended to areas of early Euro-Canadian settlement, including places of military or pioneer settlements; early transportation routes; and properties listed on the municipal register or designated under the *Ontario Heritage Act* (Government of Ontario 1990a) or property that local histories or informants have identified with possible historical events, activities, or occupations. Historical mapping demonstrates that the study area includes early concession roads with structures illustrated as fronting these roads; particularly along major arterial roads, i.e., Dundas Street (Highway 5), Safari Road, Brock Road, and Highway 6. It is also worth noting that preliminary information from the CHAR for the Project suggests there are 26 cultural heritage / built heritage resources situated within the study area. Much of the established road and rail networks and agricultural settlement from the 19th century is still visible today.

The City of Hamilton's municipal archaeological management plan, entitled *The City of Hamilton Archaeology Management Plan* (AMP) was consulted and illustrates the study area as a locale of archaeological potential for Indigenous and Euro-Canadian archaeological resources (City of Hamilton 2016).

As noted above, extensive and deep land alteration can eradicate archaeological potential. Based on aerial imagery of the broad Stage 1 study area, there are likely to be pockets of modern disturbance from municipal road ROWs, and municipally constructed drains, buildings and structures associated with the communities of Westover, Flamborough, Harper Corners, Breezy's Corners, and Strabane, as well as rural properties. However, while a visual examination of the road surface, gravel shoulder, and adjacent ditching of municipal roads may be sufficient to confirm extensive disturbance and removal of archaeological potential, it may not be possible to confirm extensive disturbance of other portions of the municipal road ROWs, particularly those portions immediately adjacent to agricultural fields, through visual examination alone. Thus, these areas are judged to retain archaeological potential and require confirmation of disturbance through additional archaeological assessment.

Further to the above, existing Enbridge infrastructure (as well as other buried utility infrastructure), such as metering stations, pumping stations, and storage facilities, are located within the study area. For example, much of the Preliminary Preferred Route A parallels the existing Kirkwall Valve Site to Hamilton Take-off NPS 42 Pipeline, which, itself, parallels an existing line constructed in the early 1950s. However, a Stage 1 property inspection was not completed for the study area and these areas were not specifically examined for evidence of modern disturbance.

A cursory review of available previous archaeological assessments is provided in Section 1.3.3. Few recent surveys have been completed within the study area and those that have been completed did not identify any archaeological sites. Much of the Preliminary Preferred Route A parallels the existing Kirkwall Valve Site to Hamilton Take-off NPS 42 Pipeline and Brantford Take-Off to Kirkwall Valve Site Pipeline, which have been subject, to varying degrees, to archaeological survey (e.g., ARA 1987; ARA 1990a; DPA 2008; DPA 2014c; DPA 2015a; ESP 1987; MPP 1984; and MPP 1988). However, the survey work during the early assessments, e.g., those completed in the 1980s and 1990s,

may have only sampled “high potential” areas and used survey methods not consistent with the MTCS’ 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). As such and given the difficulties in geo-referencing older survey maps, as well as the relatively close proximity of known Indigenous village and ossuaries, existing easements are judged to retain archaeological potential. Further, TMHC (2018) recently completed a Stage 1 archaeological assessment for a project which parallels the existing transmission line running through the current study area for the Project, specifically a portion of Alternate Route B. TMHC (2018) determined that their study area retained further archaeological potential and recommended a Stage 2 archaeological assessment.

In summary, it has been determined that the entirety of the study area retains potential for the identification of pre-contact Indigenous, post-contact Indigenous, and Euro-Canadian archaeological resources. As noted above, numerous farm complexes, residences, municipal ROWs, and other existing features of potential disturbance (i.e., existing roads, railways, residential and commercial complexes, and buried utilities and infrastructure) are located throughout the study area; however, they were not specifically examined as part of a Stage 1 property inspection and may still retain archaeological potential. Further, low and permanently wet areas and areas of steep slope may exist within the study area but were not specifically examined as part of a Stage 1 property inspection. As such, these areas have been included as part of the determination that the study area exhibits potential for the identification and recovery of archaeological resources. The final route and construction easement, including any temporary land use, for the Project will be determined at a later date. A refinement of archaeological potential specific to the Project’s anticipated impacts will be included as part of the Stage 2 archaeological assessment for the Project.

3.0 RECOMMENDATIONS

The Stage 1 archaeological assessment determined that the entirety of the study area for the Project retains potential for the identification and documentation of archaeological resources. In accordance with Section 1.3.1 and Section 7.7.4 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), **Stage 2 archaeological assessment is required for any portion of the Project's anticipated construction activities which impacts an area of archaeological potential (Figure 6).**

The objective of the Stage 2 archaeological assessment will be to document any archaeological resources within the study area and to determine whether these archaeological resources require further assessment. The Stage 2 archaeological assessment will include the systematic walking of open ploughed fields as outlined in Section 2.1.1 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The MTCS standards further require that all agricultural land, both active and inactive, be recently ploughed and sufficiently weathered to improve the visibility of archaeological resources. Ploughing must be deep enough to provide total topsoil exposure, but not deeper than previous ploughing, and must provide at least 80% ground surface visibility.

Moreover, for areas inaccessible for ploughing, the Stage 2 archaeological assessment will include a test pit survey as outlined in Section 2.1.2 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The MTCS standards require that each test pit be approximately 30 centimetres in diameter, excavated to at least five centimetres in to subsoil, and have all soil screened through six millimetre hardware cloth to facilitate the recovery of any cultural material that may be present. Prior to backfilling, each test pit will be examined for stratigraphy, cultural features, or evidence of fill.

In addition to the above, the specific roadways and ROWs will require further archaeological assessment in accordance with Section 2.1.8 of Standard 2 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). Any portion of the ROW within agricultural or accessible land may require ploughing and pedestrian survey in accordance with Section 2.1.1 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), depending on the specific Project impact. Confirmation of disturbance will also be required for any anticipated Project impact to other existing features (i.e., existing roads, railways, farm complexes, residences, buried utilities and other infrastructure).

If the archaeological field team determines any lands to be low and wet, steeply sloped, or disturbed during the Stage 2 field work, those areas will not require survey, but will be photographically documented in accordance with Section 2.1 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

The MTCS is asked to review the results presented and to accept this report into the *Ontario Public Register of Archaeological Reports*. Archaeological sites recommended for further archaeological fieldwork remain subject to Section 48(1) of the *Ontario Heritage Act* (Government of Ontario 1990a) and may not be altered, or have artifacts removed, except by a person holding an archaeological license.

4.0 ADVICE ON COMPLIANCE WITH LEGISLATION

This report is submitted to the Minister of Tourism, Culture and Sport as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c O.18 (Government of Ontario 1990a). The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the study area of a development proposal have been addressed to the satisfaction of the MTCS, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* (Government of Ontario 1990a) for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the *Ontario Public Register of Archaeological Reports* referred to in Section 65.1 of the *Ontario Heritage Act* (Government of Ontario 1990a)

Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the *Ontario Heritage Act* (Government of Ontario 1990a) The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48(1) of the *Ontario Heritage Act* (Government of Ontario 1990a)

The *Funeral, Burial and Cremation Services Act,* 2002, S.O. 2002, c.33 (Government of Ontario 2002), requires that any person discovering or having knowledge of a burial site shall immediately notify the police or coroner. It is recommended that the Registrar of Cemeteries at the Ministry of Government and Consumer Services is also immediately notified.

Archaeological sites recommended for further archaeological fieldwork remain subject to Section 48(1) of the *Ontario Heritage Act* (Government of Ontario 1990a) and may not be altered, or have artifacts removed, except by a person holding an archaeological license.

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Lots 28 & 29, Con 5-Lots 28 to 36, Con 6-Lots 28 to 30, Con 7, G.Twp. of Beverly Part of Lots 1 to 16, Con 6, G.Twp. of West Flamborough Part of, Lot 1, Con 1-Lots 1 to 3, Con 2-Lots 3 to 6, Con 3-Lots 5 to 8, Con 4-Lots 8 to 11, Con 5-Lots 11 to 13, Con 6-Lot 13, Con 7, G.Twp. of East Flamborough Former Wentworth County, Now City of Hamilton, ON Part of Brant's Block, G.Twp. of Nelson Former Halton County, Now City of Burlington, ON. Report on file, Toronto: Ministry of Tourism, Culture and Sport. PIF P1075-0039-2017.

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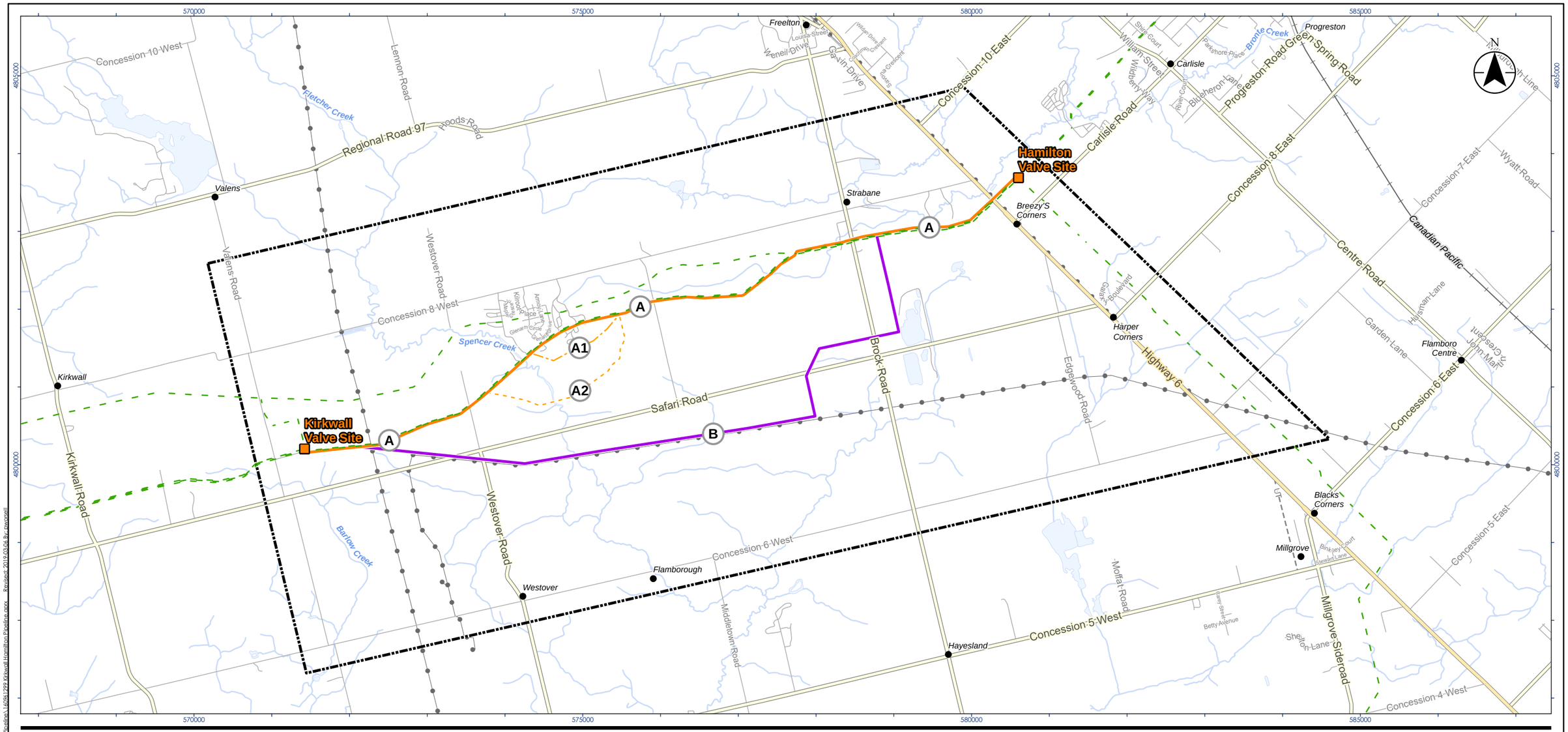
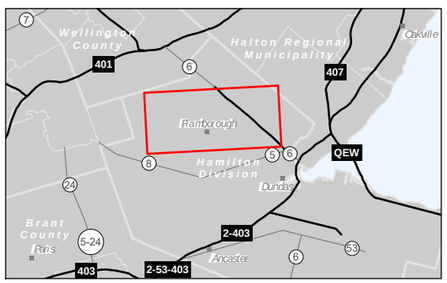
6.0 MAPS

General maps of the broad Stage 1 study area are provided on the following pages. Maps identifying exact archaeological site locations do not form part of this public report; they may be found in the Supplementary Documentation.





Legend

- Existing Enbridge Station
- A - Preliminary Preferred Route
- A1 - Route Deviation
- A2 - Route Deviation
- B - Alternate Route
- Existing Pipeline
- General Study Area
- Highway
- Major Road
- Minor Road
- Minor Road
- Railway
- Hydro Line
- UT Unknown Transmission Line
- Watercourse
- Waterbody

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Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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Project Location
City of Hamilton

160961299
Prepared by PW on 2019-03-06

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENT

Figure No.
1

Title
Location of the Project

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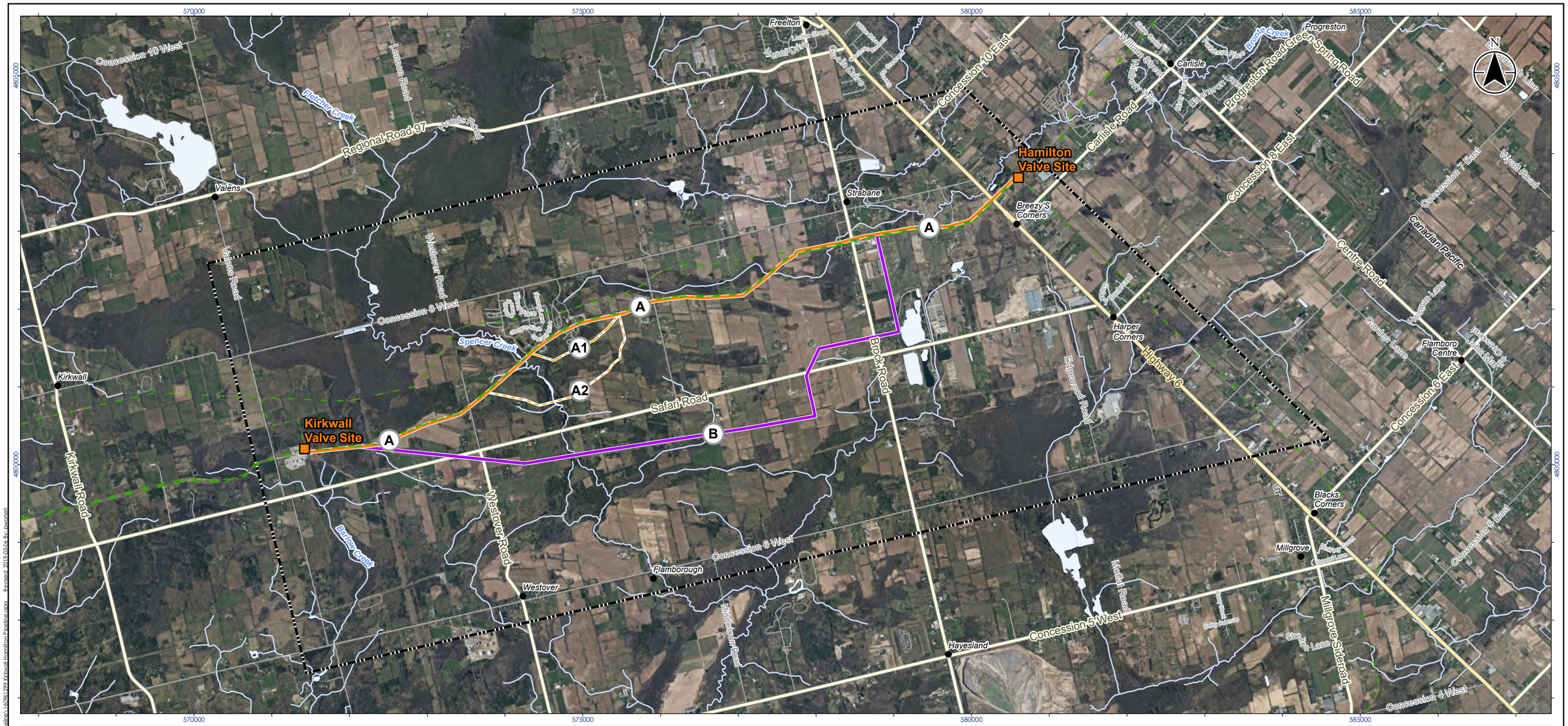

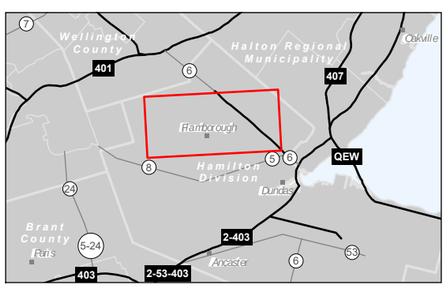

Legend

- Existing Enbridge Station
- A - Preliminary Preferred Route
- A1 - Route Deviation
- A2 - Route Deviation
- B - Alternate Route
- Existing Pipeline
- General Study Area
- Highway
- Major Road
- Minor Road
- Minor Road
- Railway
- Hydro Line
- Unknown Transmission Line
- Watercourse
- Waterbody

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Notes

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Prepared by PW on 2019-03-06

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENT

Figure No.
2

Title
Location of the Study Area

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Legend

★ Project Location

A Treaty No. 381, May 9th, 1781 (Mississauga and Chippewa)
AA Treaty No. 72, October 30th, 1854 (Chippewa)
AB Treaty No. 82, February 9th, 1857 (Chippewa)
AE Treaty No. 9, James Bay 1905, 1906 (Ojibway and Cree)
AG Williams Treaty, October 31st, 1923 (Chippewa)
A2 John Collins' Purchase, 1785 (Chippewa)
B Crawford's Purchase, October 9th, 1783 (Algonquin and Iroquois)
B1 Crawford's Purchase, October 9th, 1783 (Mississauga)
B2 Crawford's Purchase, 1783, 1787, 1788 (Mississauga)
C Treaty No. 2, May 19th, 1790 (Odawa, Chippewa, Pottawatomi, and Huron)
D Treaty No. 3, December 2nd, 1792 (Mississauga)
E Haldimand Tract: from the Crown to the Mohawk, 1793
F Tyendinaga: from the Crown to the Mohawk, 1793
G Treaty No. 3 3/4: from the Crown to Joseph Brant, October 24th, 1795
H Treaty No. 5, May 22nd, 1798 (Chippewa)
I Treaty No. 6, September 7th, 1796 (Chippewa)
J Treaty No. 7, September 7th, 1796 (Chippewa)
K Treaty No. 11, June 30th, 1798 (Chippewa)
L Treaty No. 13, August 1st, 1805 (Mississauga)
M Treaty No. 13A, August 2nd, 1805 (Mississauga)
N Treaty No. 16, November 18th, 1815 (Chippewa)
O Treaty No. 18, October 17th, 1818 (Chippewa)
P Treaty No. 19, October 28th 1818 (Chippewa)
Q Treaty No. 20, November 5th, 1818 (Chippewa)
R Treaty No. 21, March 9th, 1819 (Chippewa)
S Treaty No. 27, May 31st, 1819 (Mississauga)
T Treaty No. 27½, April 25th, 1825 (Ojibwa and Chippewa)
U Treaty No. 35, August 13th, 1833 (Wyandot or Huron)
W Treaty No. 45½, August 9th, 1836 (Saugeen)
X Treaty No. 57, June 1st, 1847 (Iroquois of St. Regis)
Y Treaty No. 60, Robinson, Superior, September 7th, 1850 (Ojibwa)
Z Treaty No. 61, Robinson, Huron, September 9th, 1850 (Ojibwa)

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Notes
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3. Treaty boundaries adapted from Morris 1943 (1964 reprint). For cartographic representation only.

Project Location
City of Hamilton

160961299
Prepared by PW on 2019-03-06

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENT

Figure No.
3

Title
Treaties and Purchases (Adapted from Morris 1943)

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GRAVEL ROAD
STRABANE
VILLAGE OF CARLISLE
WARD No 3
WARD No 4
HAMILTON, WATERDOWN & CARLISLE
Estate of William Smith
Geo Abery
Henry Sparks
Jas Morden
Wm Nicholson
Wm Foster
Wm Finlay
John Alderson
Donald Stuart
Wm Patterson
Wm Irvine
Wm Atridge
Henry Anderson
John Nicholson
Jacob Baker
John Cummings
Edw Evans
Glebe Land
Lewis Rose
Abram Bindley
William Bindley
John Featherstone
Hugh Green
Nelson Morden
Mark P Crooker
Dan Eaton
Henry Sparks
Jas Morden
Wm Nicholson
Wm Atridge
Henry Anderson
John Nicholson
Jacob Baker
John Cummings
Edw Evans
Glebe Land
Lewis Rose
William Bindley
John Featherstone
Abram Bindley
Hugh Green
Wm Foster
Wm Finlay
Henry Anderson
James Foster
MILLGROVE
WARD No 4
Harker Lyons
Abram
Jacob Baker
John Baker
John Cummings
Glebe Land
Edw Evans
Lewis Rose
John Featherstone
William Bindley
Abram Bindley
Hugh Green
Nelson Morden
Mark P Crooker
Dan Eaton
Henry Sparks
Jas Morden
Wm Nicholson
Wm Atridge
Henry Anderson
John Nicholson
Wm Foster
Wm Finlay
James Foster
Donald Stuart
John Alderson
Wm Patterson
Wm Irvine
Wm Campbell
Geo Hall
Rob Waddell
Jas Glasgow
Mrs Rathbone
Thomas Fletcher
George Tennant
David Bickle
Robert Hunter
Thos Foster
Wm Richardson
Jas Campbell
Wm Evans
Thos Connell
Wm Connell
Canada Co
Wm Miller
Wise
Wilson
Geo Grey
Martin Shelly
Walter Turnbull
Wm Robson
Robert D. Riddell
John Chambers
John Gilbert
Rob Parvis
Jas Howard
Geo Howe
Wm Forsyth
Adam Kerr
David Mitchell
Wm M'Combs
John M'Knight
Thos Preston
Hugh Parks
Archibald Stewart
Wm Crawford
Rob Johnston
Rob Parker
John Train
Wm M'Clares
Wm Patterson
Rob Ballantyne
Claude Lapsley
Rob Parker
John Patterson
Rob M'Donald
John Currun
Wallace M'Donald
Rob Parker
Thos Cook
Thos Grey
Rob Parker
Canada Co
Geo Aitcheson
Thos Poston
Capt Wm Johnstone
Jas Dunn
John Patton
Wm James
Geo Nickle
John Kelly
Geo Denham
Wm Raitt
Pat Kenny
Pat Doyle
John Doyle
Pat Doyle
John Colemore
Wm Organ
John Harper
Joseph Bullock
Pat Doyle
Wm Marble
Jas Morden
Sam Wilson
John Ross
Wm Hemming
Wm Cummings
Edw Pepper
Edw Markle
Jacob Cummings
Wm Curry
Canada Co
Joseph Adams
Jacob Rymal
Wm Curry Estates
Elijah Binkley
John Bigham
Wm Foster
Arthur Keays
Israel Markle
Jonathan Smith
Thomas Morden
James Bentley
Jacob Bentley
Wm Bentley
Capt Davis
Jacob Baker
John Baker
John Cummings
Jacob Baker
John Baker
Harker Lyons
Abram
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James Foster
Henry Anderson
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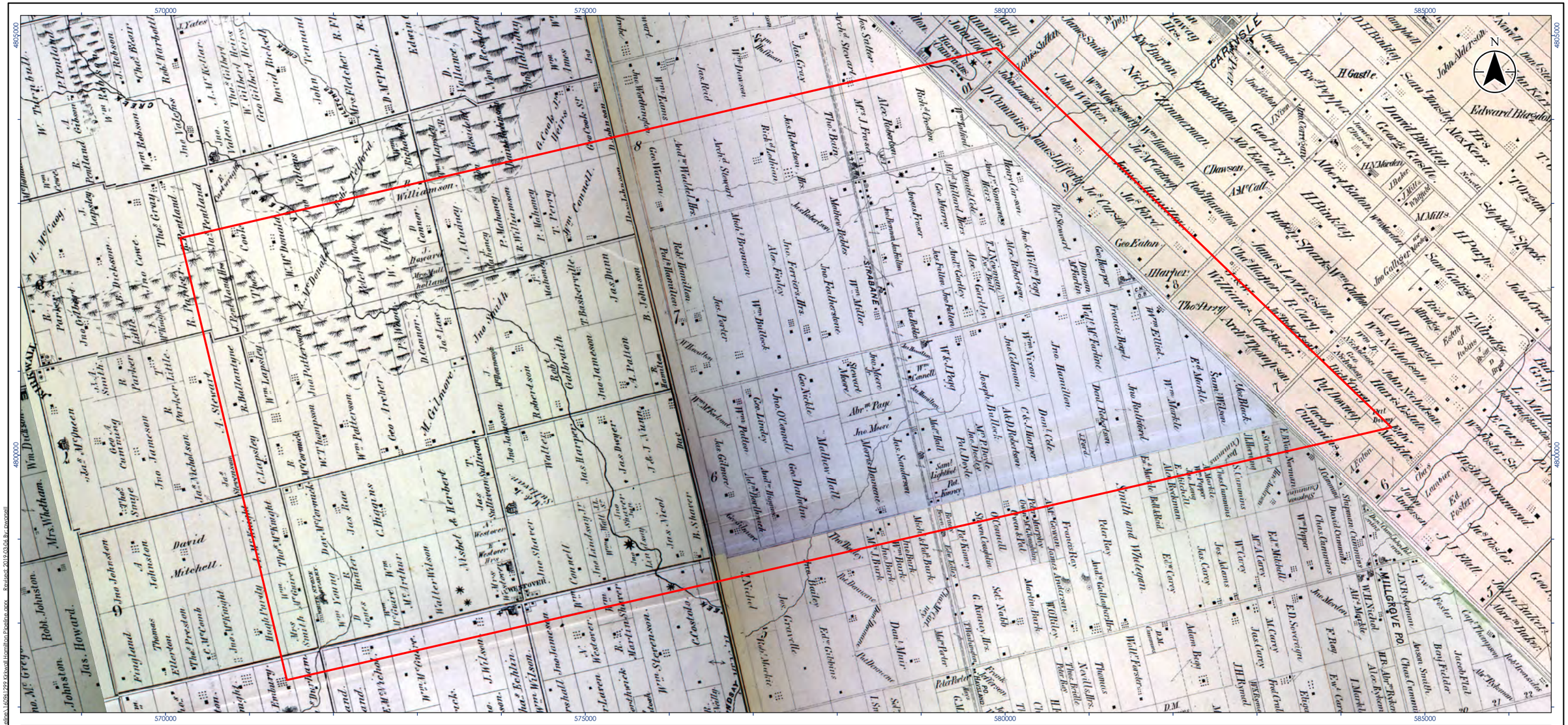
John Cummings
Edw Evans
Glebe Land



Legend

General Study Area (Approximate)

Notes

1. Map is not to scale.
2. Historic map source:

Stantec

Project Location
City of Hamilton

160961299
Prepared by PW on 2019-03-06

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENT

Figure No.
5

Title
1875 County of Wentworth Map

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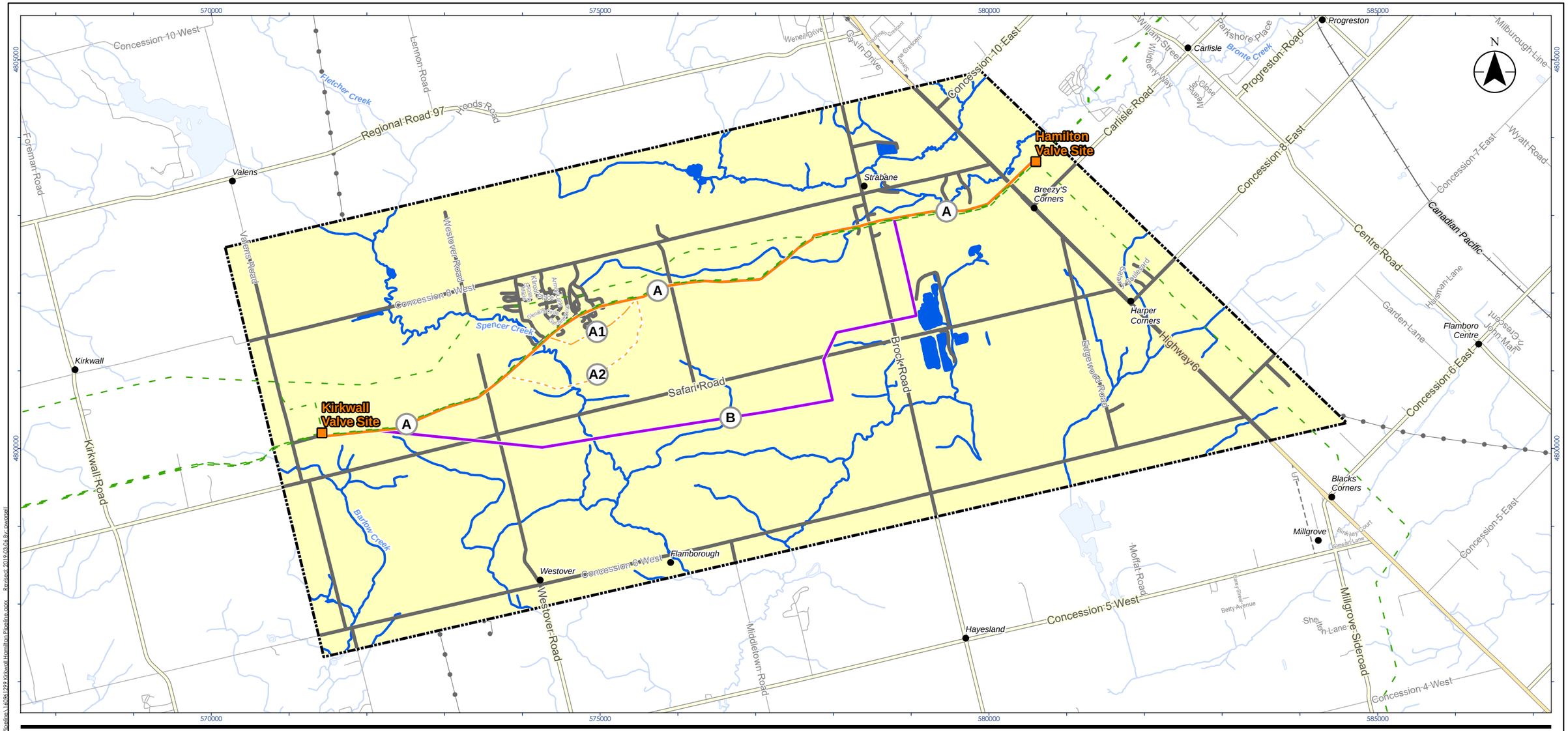

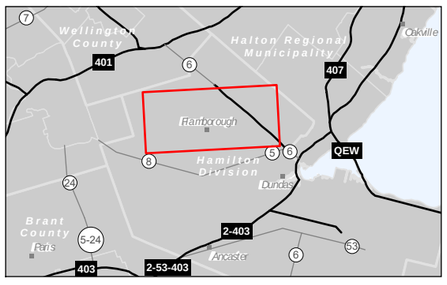

Legend

- Existing Enbridge Station
- A - Preliminary Preferred Route
- A1 - Route Deviation
- A2 - Route Deviation
- B - Alternate Route
- Existing Pipeline
- General Study Area
- Highway
- Major Road
- Minor Road
- Minor Road
- Railway
- Hydro Line
- Unknown Transmission Line
- Watercourse
- Waterbody

Stage 1 Archaeological Potential

- Retains Archaeological Potential; Stage 2 Assessment Required
- Municipal/Provincial Road ROW, May Retain Archaeological Potential; Stage 2 Assessment Required to Confirm Disturbance
- Low and Permanently Wet Areas, Low to No Archaeological Potential; Stage 2 Assessment Required to Confirm Presence

0 1 2 km

1:50,000 (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, 2019.

Stantec

Project Location
City of Hamilton

160961299
Prepared by PW on 2019-03-06

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENT

Figure No.
6

Title
Archaeological Potential of the Study Area

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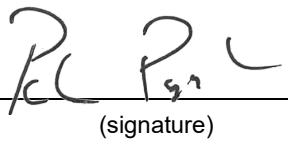
7.0 CLOSURE

This report documents work that was performed in accordance with generally accepted professional standards at the time and location in which the services were provided. No other representations, warranties or guarantees are made concerning the accuracy or completeness of the data or conclusions contained within this report, including no assurance that this work has uncovered all potential archaeological resources associated with the identified property.

All information received from the client or third parties in the preparation of this report has been assumed by Stantec to be correct. Stantec assumes no responsibility for any deficiency or inaccuracy in information received from others.

Conclusions made within this report consist of Stantec's professional opinion as of the time of the writing of this report and are based solely on the scope of work described in the report, the limited data available and the results of the work. The conclusions are based on the conditions encountered by Stantec at the time the work was performed. Due to the nature of archaeological assessment, which consists of systematic sampling, Stantec does not warrant against undiscovered environmental liabilities nor that the sampling results are indicative of the condition of the entire property.

This report has been prepared for the exclusive use of the client identified herein and any use by any third party is prohibited. Stantec assumes no responsibility for losses, damages, liabilities, or claims, howsoever arising, from third party use of this report. We trust this report meets your current requirements. Please do not hesitate to contact us should you require further information or have additional questions about any facet of this report.

Quality Review 
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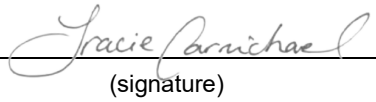
Peter Popkin, Associate, Senior Archaeologist

Independent Review 
(signature)

Tracie Carmichael, Managing Principal, Environmental Services

APPENDIX G:
CULTURAL HERITAGE ASSESSMENT REPORT

Dawn-Parkway System Expansion: Kirkwall-Hamilton Pipeline Section: Cultural Heritage Assessment Report

FINAL REPORT

June 18, 2019
File: 160961299

Prepared for:

Enbridge Gas Inc.
745 Richmond Street
Chatham, ON N7M 5J5

Prepared by:

Stantec Consulting Ltd.
600-171 Queens Avenue
London, ON N6A 5J7

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APPENDIX A CULTURAL HERITAGE RESOURCE INVENTORY

Executive Summary

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 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 seven kilometres (km), then parallel three existing Enbridge Gas pipelines for approximately three 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 retained Stantec Consulting Ltd. (Stantec) to conduct an environmental study for the construction and operation of the proposed pipeline and related facilities. The Ontario Energy Board's (OEB) *Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario, (2016)* (the *OEB Environmental Guidelines*) require that where the Project may affect known or potential heritage resources, further studies may be required. In order to identify the presence of heritage resources in the Study Area, understand the potential impacts of the Project on these resources, and prepare mitigation strategies to minimize these impacts, it was determined that a Cultural Heritage Assessment Report (CHAR) would be prepared.

The study methodology is broadly based on guidelines provided by Ministry of Tourism, Culture and Sport (MTCS) within InfoSheet #5 in *Heritage Resources in the Land Use Planning Process, Cultural Heritage and Archaeology Policies of the Ontario Provincial Policy Statement, 2005*. The OEB *Environmental Guidelines* make provisions for the consideration of heritage in the pipeline development planning stage of the Project and stipulate that pipeline proponents are responsible for demonstrating the appropriate level of due diligence regarding heritage resources. This involves identification of heritage resources and the assessment of impacts of the Project on these resources.

During the course of the field survey, 35 individual sites were identified as containing potential heritage resources within the Study Area of the proposed pipeline routes. The Study Area for this survey is delineated by property parcels within a 50 metre buffer of the Project Location. Where a potential heritage resource was identified in the Study Area, an evaluation of the cultural heritage value or interest of the property, or properties, was undertaken. Where cultural heritage value or interest was identified, a structure or landscape was assigned a cultural heritage resource (CHR) number and the property was determined to contain a heritage resource. Evaluations for each property are contained within Appendix A.



Where a heritage resource was identified within or across the Study Area, an assessment of potential impacts resulting from the Project was undertaken. The assessment of potential impacts was undertaken according to InfoSheet #5. Given the proposed undertaking, the evaluation of potential impacts was undertaken where a component or heritage attribute of the heritage resources was positioned within 50 metres of a proposed pipeline route.

Where potential impacts were identified, measures to mitigate the impact have been prepared. A total of 26 cultural heritage resources (CHRs) were determined to be situated within the Study Area of the proposed pipeline route alternatives (Route A and B). Route A was selected as the preferred route for the Project. A total of 13 CHRs were determined to be situated within the Study Area of the preferred route.

To prevent negative indirect Project impacts, these heritage resources should be isolated from Project activities. It is recommended that site plan controls be put in place prior to construction to prevent potential indirect impacts as a result of the Project. The site plan control methods shall be determined in advance of construction by the proponent to indicate where Project activities are restricted. As described in Section 6.3, site plan controls should include mapping heritage resources within the 50-metre buffer of Project activities on construction maps and physically demarcating these properties to communicate the presence of these properties to construction crews.

One cultural heritage resource, 750 Concession 8 West (CHR-11), is located within 50 metres of Project activities. This resource is at risk for indirect impacts resulting from construction-related ground vibration. It is recommended that Enbridge consult with a qualified building conditions specialist or geotechnical engineer with previous experience working with heritage structures to identify appropriate vibration mitigation measures in advance of construction. Mitigation measures for vibration may include developing an appropriate vibration setback distance, a vibration attenuation study, and/or a construction monitoring program.

Enbridge Gas' on-site inspection team should monitor the construction phase of this project so that construction activities do not occur within 50 metres of built heritage attributes of CHRs and that no cultural heritage landscape elements are impacted during construction. Monitoring for impacts should also be carried out by Enbridge Gas during post-construction rehabilitation.

To assist in the retention of historic information, copies of this report should be deposited with local libraries and municipalities. It is recommended that this report be deposited at the Hamilton Public Library, Central Library Branch and the Hamilton Municipal Heritage Committee.

The Executive Summary highlights key points from the report only; for complete information and findings, the reader should examine the complete report.



Project Personnel

Project Manager:	Michael Candido, B.Sc. (Env.)
Heritage Consultant:	Meaghan Rivard, MA, CAHP
Task Manager:	Laura Walter, MA
Report Writers:	Laura Walter, MA Frank Smith, MA
GIS Specialist:	Andrew White, BA, M.Sc.
Administrative Assistant:	Carol Naylor
Quality Reviewer:	Jeffrey Muir, BA, CAHP
Independent Reviewer:	Tracie Carmichael, BA, B.Ed.
Proponent Contact:	Ryan Park

Abbreviations

BHR	Built Heritage Resource
CHAR	Cultural Heritage Assessment Report
CHL	Cultural Heritage Landscape
CHR	Cultural Heritage Resource
CHVI	Cultural Heritage Value or Interest
CPR	Canadian Pacific Railway
GWR	Great Western Railway
km	kilometres
LACAC	Local Architectural Conservation Authority Committee
MTCS	Ministry of Tourism, Culture and Sport
OEB	Ontario Energy Board
OHA	*Ontario Heritage Act*
OHT	Ontario Heritage Trust
O. Reg.	Ontario Regulation
PPS	Provincial Policy Statement
PPV	Peak particle velocity
RoW	Right-of-Way

Glossary

Built Heritage Resource	(BHR) Refers to a single building, structure, monument, installation or remains determined to be of cultural heritage value or interest (CHVI) following evaluation according to Ontario Regulation (O. Reg.) 9/06. In addition, this includes properties protected under the *Ontario Heritage Act* (OHA) or listed by local, provincial or federal jurisdictions. This may include residences, barns, bridges, and similar features (based on definition provided in the 2014 Provincial Policy Statement [PPS] [Government of Ontario 2014]).
Cultural Heritage Landscape	(CHL) Refers to a defined geographical area modified by human activities and determined to be of CHVI following evaluation according to O. Reg. 9/06. In addition, this includes properties protected under the OHA or listed by local, provincial or federal jurisdictions. This may include grouping(s) of individual heritage features such as structures, spaces, archaeological sites and natural elements, which together form an important type of heritage form, distinctive from that of its constituent elements or parts (based on definition provided in the PPS [Government of Ontario 2014]).
Cultural Heritage Resource	(CHR) Refers to built or cultural resources where CHVI has been determined according to O. Reg. 9/06. Prior to evaluation, resources identified to be 40 years of age or older are considered to be *potential* heritage resources. There are two categories of heritage resources: Built Heritage Resources (BHR) and Cultural Heritage Landscapes (CHL).
Cultural Heritage Value or Interest	(CHVI) Refers to the O. Reg 9/06 criteria in which heritage value of a property is identified. The three criteria set out subsection two are design or physical value, historical or associative value, and contextual value.
Heritage attributes	Refers to the components of a heritage resource that define its CHVI. These may include, but are not limited to, principal features, characteristics, context, and appearance of a heritage resource (based on definition provided in the PPS [Government of Ontario 2014]).



Potential Heritage Resource	Refers to any property previously identified by municipal staff or provincial agencies as containing, or having the potential to contain, CHVI. This includes properties identified on municipal registers, lists, or inventories of potential heritage resources. It may also include properties identified during the site assessment that are over 40 years of age.
Project Location	Refers to any land in, on, over, or under which part of the proposed pipeline is situated. This includes constructible areas as well as proposed staging areas and land used for permanent or temporary project activity.
Protected Heritage Property	Refers to properties which are designated under, or subject to an easement made under, the OHA, as well as properties identified by provincial authorities and prescribed public bodies as a provincial heritage properties. In addition, protected heritage property includes those identified by federal or international authorities as such including, but not limited to, Parks Canada or UNESCO (based on definition provided in the PPS [Government of Ontario 2014]).
Study Area	Refers to all properties through which the Project Location is proposed to pass through plus a 50-metre area surrounding the Project components. Property parcel information was used to delineate the limits of the Study Area.

1.0 INTRODUCTION

1.1 PROJECT OVERVIEW

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, 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 seven kilometres (km), then parallel three existing Enbridge Gas pipelines for approximately three 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.

Route A, depicted on Figure 1, is the preliminary preferred route for the pipeline. Route A extends east between Safari Road and Concession 8 West, between the Kirkwall Valve Site and the Hamilton Valve Site. The route currently includes two additional proposed deviation routes, A1 and A2, between Westover Road and Middletown Road. These two deviation routes were proposed to avoid impacts to the properties at 1264 Concession 8 West (Atrium Glen Retirement Community) and 1218 Concession 8 West (Ponderosa Nature Resort). Route B is the proposed alternative route, and extends east between Safari Road and Concession 6 West until Brock Road where it extends north and joins with Route A.

1.2 STUDY PURPOSE AND OBJECTIVES

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. The environmental study will 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)

As part of this study, Stantec identified the need to consider heritage resources as defined by Section 4.3.4 of the *Ontario Energy Board (OEB) Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario* (the *OEB Environmental Guidelines*) (OEB 2016). The *Guidelines* require that where the Project may affect known or potential heritage resources, further studies may be required. In order to identify the presence of heritage resources within the Study Area, understand the potential impacts of the Project on these resources, and prepare mitigation strategies to minimize these impacts, it was determined that a Cultural Heritage Assessment Report (CHAR) would be prepared.

To meet these objectives, the CHAR:

- Summarizes the historical context of the area surrounding the Project
- Identifies properties protected under the *Ontario Heritage Act* (OHA) through consultation with the local heritage planners and regulatory bodies
- Identifies and describes potential heritage resources situated on properties within the Study Area based on a windshield survey
- Evaluates the cultural heritage value or interest (CHVI) of potential heritage resources within the Study Area according to *Ontario Regulation* (O. Reg.) *9/06* to determine the presence of heritage resources (Government of Ontario 2006a)
- Identifies areas of potential impacts according to the Ministry of Tourism, Culture and Sport's (MTCS) InfoSheet #5 in *Heritage Resources in the Land Use Planning Process, Cultural Heritage and Archaeology Policies of the Ontario Provincial Policy Statement, 2005* (Government of Ontario 2006b)
- Establishes measures to mitigate negative direct or indirect impacts to heritage resources associated with construction and operation of the Project

1.3 ACTIVITY SUMMARY

1.3.1 Construction

The pipeline construction process includes various activities as described below:

1. Site Preparation and Clearing: The first activity is typically the survey and staking, which delineate the boundaries of the right-of-way (RoW) and temporary work areas. Next, the RoW and temporary work areas are cleared of brush and trees (typically during winter, under frozen ground conditions). In the spring the fences that break up the linear RoW are braced and cut to permit an uninterrupted work area. Safety fence is installed at the edge of the construction RoW where public safety considerations are required, and aspects of the traffic management plan are implemented (i.e., signs, vehicle access). Silt fence is installed at the required locations. Pre-tiling work is completed to accommodate agricultural drainage.
2. Grading and Stripping: The RoW is graded to allow for access by construction equipment. At this stage, the topsoil (on agricultural lands) or the duff layer (on natural lands) is stripped by bulldozers and graders then segregated so it will not be mixed with the subsoil later removed from the trench. Existing landscaping is also removed, and dewatering undertaken, where necessary.
3. Stringing: Stringing is the process where pipe sections are delivered to the full length of the RoW, placed on wooded skids and generally parallel to where the trench will be excavated.
4. Pipe Fabrication: The pipe is bent as required and the welding crew welds the pipe into continuous lengths. The pipe welds are non-destructively tested (e.g., x-ray) and coated.
5. Trenching and Lowering: After the pipe is fabricated, a trenching machine or hydraulic hoe can begin excavating a new trench. In areas of shallow bedrock, hoe-ramming and/or blasting may be required. In agricultural areas, tiles that are cut during the trench excavation are flagged and repaired as quickly as practical. In some areas the pipeline cannot be installed by trenching due to obstacles such

as roads or watercourses. In these locations the pipeline is installed using a trenchless approach through a variety of different means. Laneways and driveways are left over the trench as long as feasible where requested by the landowner.

6. Backfilling: During backfilling the originally excavated subsoil is placed over the pipe in the trench. In stony areas, the pipe may be sand-padded to protect the coating. In shallow water table areas, the pipeline may be weighted to provide negative buoyancy. In agricultural areas, after the trench is backfilled, tiling is repaired that was disturbed or broken by construction. Landowners with tile drainage are given the opportunity to inspect tile repairs. Typically, a tile consultant is retained to oversee tile repairs and the design of a header tile system if required.

7. Hydrostatic Testing: The pipeline is pressure tested by filling the pipe with water and holding it at a high pressure for a set period of time, typically 24 hours. Water is typically drawn by permit from nearby water sources such as watercourses or lakes, if available. Municipal water may also be used for hydrostatic testing. Upon completion of the hydrostatic testing, the pipeline is drained and dried then put into service with natural gas.

8. Clean-Up and Restoration: Clean-up is the restoration of the RoW and other work areas. On agricultural land, this may require decompaction of the subsoil and stone picking to maintain productivity. In natural areas, clean-up restores the environment including re-seeding of the RoW, returning the topography after grading, restoring ditch banks and watercourse crossings. Any erosion and sediment controls installed during construction are also removed. Clean-up will also restore landscaping, laneways and driveways.

1.3.2 Operation

Pipeline operation consists of pressurized natural gas flowing through the pipeline. Mainline valves located at the valve sites will serve to shut off and isolate the pipeline for maintenance and security purposes. Additional above-ground facilities along the pipeline include post-mounted signs identifying the pipeline, aerial patrol signs for fixed wing patrols, fence stiles, foot bridges for ditch crossings (if applicable), and "test boxes" located along fence lines at roads that are used to assess the adequacy of the corrosion protection system.

Once the pipeline is operational, the following activities are undertaken to patrol and maintain the pipeline:

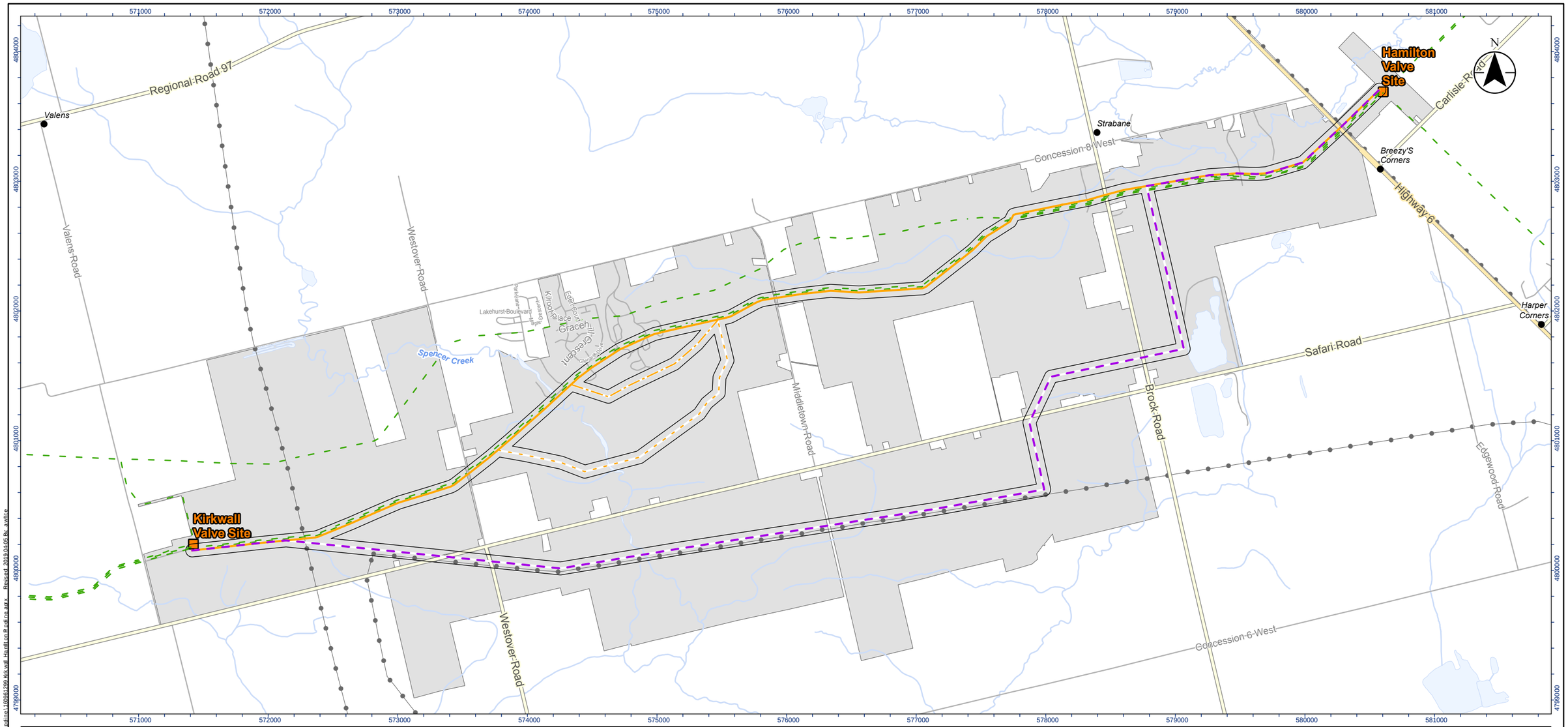
- Completing a “line walk” of the entire pipeline by Enbridge Gas personnel once a year to check for exposed pipelines, evidence of damage to aboveground equipment and piping, evidence of damage to underground piping and gas leaks, and identify any unassociated construction activity near the pipeline RoW

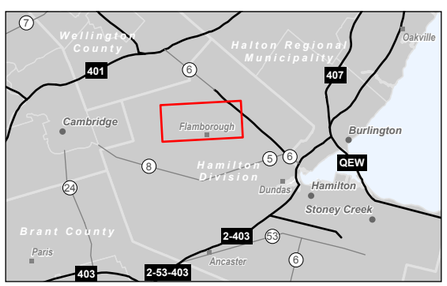
- Conducting fixed wing aerial patrols weekly from April 1 to December 31 and monthly from January 1 to March 31 to detect the presence of soil erosion and third-party structures or activities that could damage the pipeline

- Checking cathodic corrosion protection – an electric current that runs along the length of the pipeline to prevent the development of corrosion

- Reviewing operating conditions of pipeline facilities such as valve sites
- Completing depth of cover surveys, so that the amount of soil cover over the pipeline is maintained
- Performing periodic inspection by running electronic tools through the interior of the pipeline to assess for the presence of corrosion or dents and the need for repairs
- Completing class location surveys, adding all new buildings and structures to the Enbridge Gas mapping system.







Legend

- Study Area
- 50 m Buffer
- Preliminary Preferred Route (A)
- Route Deviation A1
- Route Deviation A2
- Route Alternative (B)
- Carto route halo
- Existing Enbridge Station
- Existing Pipeline
- Place_Names_gb Local Places
- Municipal Boundary, Lower
- Highway
- Major Road
- Minor Road
- Minor Road
- Hydro Line
- Watercourse
- Waterbody

0 0.5 1 km

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, 2019.

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Stantec

Project Location
City of Hamilton

160961229

Client/Project
ENBRIDGE GAS INC.
KIRKWALL TO HAMILTON PIPELINE PROJECT

Figure No.
1

Title
Project Location

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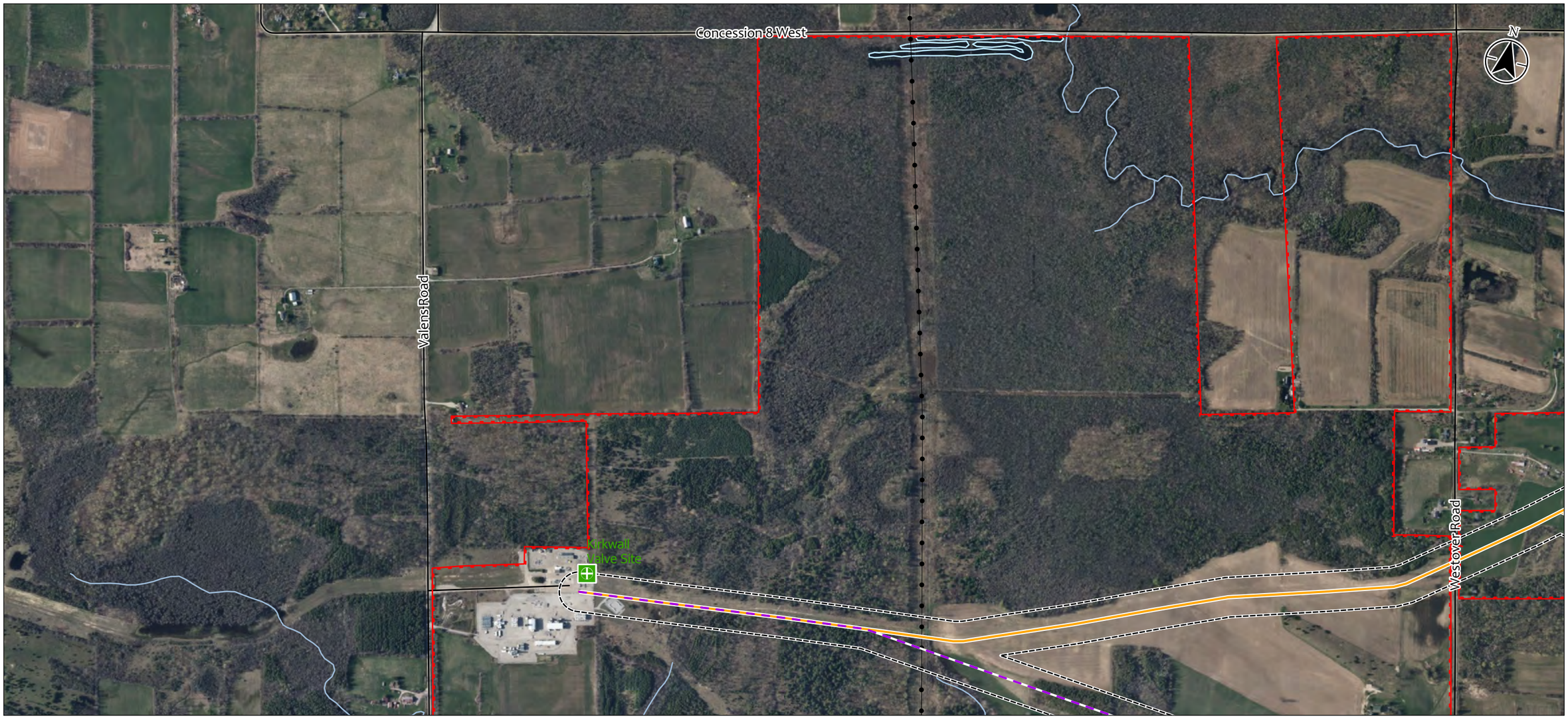

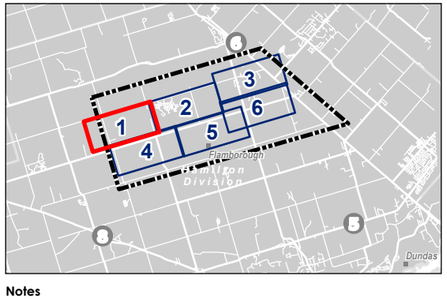

Legend

- Study Area
- 50 m Buffer
- Preliminary Preferred Route (A)
- Route Deviation A2
- Route Alternative (B)
- Station
- Road
- Hydro Line
- Waterbody
- Watercourse

0 100 200 400 m

1:10,000 (At original document size of 11x17)

Notes

1. Coordinate System:
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2019.
3. Orthoimagery © First Base Solutions, 2019. Imagery Date, 2017.

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Stantec

Project Location
City of Hamilton

160961299
Prepared by AMW on 2019-04-08
Technical Review by ABC on yyyy-mm-dd

Client/Project
Enbridge Gas Inc.
Kirkwall to Hamilton Pipeline

Figure No.
2.1

Title
Study Area

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2.0 METHODOLOGY

2.1 REGULATORY REQUIREMENTS

The study methodology is broadly based on guidelines provided by MTCS within InfoSheet #5 (Government of Ontario 2006b). As discussed briefly in Section 1.0, the *OEB Environmental Guidelines* make provisions for the consideration of heritage resources in the pipeline development planning stage of the Project. The *OEB Environmental Guidelines* stipulate that pipeline proponents are responsible for demonstrating the appropriate level of due diligence regarding heritage resources. This involves both the identification of heritage resources and the assessment of impacts of the Project on these resources. According to the *OEB Environmental Guidelines*, due diligence should be exhibited by:

- *Recognizing cultural heritage resources that may be affected by pipeline development, identifying significant cultural heritage resources and understanding their cultural heritage value or interest*
- *Assessing the effects or impacts that could result from proposed pipeline development*
- *Protecting cultural heritage resources by appropriate conservation, avoidance and mitigation*

(OEB 2016: 31-32)

In addition to requirements outlined in the *OEB Environmental Guidelines*, provisions made under the revised 2014 *Provincial Policy Statement* (PPS) were also considered in the preparation of the study. Section 2.6 of the PPS addresses cultural heritage in the land use planning process and as such was considered. The applicable provisions include:

> *2.6.1 - Significant built heritage resources and significant cultural heritage landscapes shall be conserved.*
>
> *2.6.3 - Planning authorities shall not permit development and site alteration on adjacent lands to protected heritage property except where the proposed development and site alteration has been evaluated and it has been demonstrated that the heritage attributes of the protected heritage property will be conserved.*
>
> (Government of Ontario 2014: 29)

In response to requirements outlined within InfoSheet #5, the *OEB Environmental Guidelines*, and the PPS, Stantec has identified built heritage resources (BHR) and cultural heritage landscapes (CHL); evaluated the impacts of the proposed undertaking on the cultural heritage resources (CHR); and provided options to mitigate those impacts and to conserve protected properties, if applicable.

The CHAR was composed of a program of archival research focused on the Study Area. To familiarize the study team with the Study Area, local historical resources were consulted, archival documents were reviewed, and a summary of the historical background of the local area was prepared. Specifically, historical mapping was consulted to identify the presence of structures, settlements, and other potential

heritage resources in advance of the field program. Mapping from 1859, 1875, 1916, 1923, 1929, 1936, 1938, 1964, and 1975 was reviewed.

2.2 MUNICIPAL AND AGENCY CONSULTATION

Listings of provincially and locally designated properties, districts and easements were collected from the City of Hamilton, the Ontario Heritage Trust (OHT), and the MTCS. Consultation with agencies and the municipality within which the Project is proposed was undertaken to determine the presence of designated, listed, or registered heritage properties within the Study Area.

Recognition of protected properties varies greatly and is dependent on the level of CHVI identified or, in some cases, the level of investigation undertaken. For the purpose of this study, any property previously identified by municipal staff or provincial agencies as containing, or having the potential to contain, CHVI was determined to be a protected heritage property. Specific requirements pertaining to these properties are described within the *OEB Environmental Guidelines* which emphasize that early identification allows the proponent to consider the impact the Project may have on protected heritage properties.

2.3 FIELD PROGRAM

A vehicular windshield survey was conducted by Laura Walter, MA, and Frank Smith, MA, both Cultural Heritage Specialists with Stantec, on January 30, 2019 from publicly accessible roadways, unless specified otherwise. Since the survey was completed prior to the selection of Route A as the preferred route, the Study Area for Routes A and B were surveyed for potential heritage resources, including both potential built heritage resources and components of cultural heritage landscapes. Where identified, these were photographed, and their locations recorded. Characteristics of each potential heritage resource were noted while in the field and their locations recorded.

In general, buildings and structures of more than 40 years of age were screened during the survey for their potential to satisfy O. Reg. 9/06 criteria. The use of the 40-year threshold is generally accepted by both the federal and provincial authorities as a preliminary screening measure for cultural heritage interest or value. This practice does not imply that all buildings and structures more than 40 years of age are inherently of significant heritage value, nor does it exclude exceptional examples constructed within the past 40 years of being of significant cultural heritage value.

2.4 EVALUATION OF CULTURAL HERITAGE VALUE OR INTEREST

The criteria for determining CHVI are defined by O. Reg. 9/06. Each potential heritage resource was considered both as an individual structure and as cultural landscape. Where CHVI was identified, a property was assigned a CHR (Cultural Heritage Resource) number and the property was determined to contain a heritage resource. Evaluations for each property are contained within Appendix A.

2.4.1 Ontario Regulation 9/06

In order to identify cultural heritage value or interest at least one of the following criteria must be met:

1. The property has design value or physical value because it,

- *i. is a rare, unique, representative, or early example of a style, type, expression, material or construction method,*
- *ii. displays a high degree of craftsmanship or artistic merit, or*
- *iii. demonstrates a high degree of technical or scientific achievement.*

2. The property has historical value or associative value because it,

- *i. has direct associations with a theme, event, belief, person, activity, organization, or institution that is significant to a community,*
- *ii. yields, or has the potential to yield, information that contributes to an understanding of a community or culture, or*
- *iii. demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.*

3. The property has contextual value because it,

- *i. is important in defining, maintaining, or supporting the character of an area,*
- *ii. is physically, functionally, visually, or historically linked to its surroundings, or*
- *iii. is a landmark.*

(Government of Ontario 2006a).

2.5 ASSESSMENT OF PROJECT IMPACTS

Where a heritage resource was identified within or across the Study Area, an assessment of potential impacts as a result of the Project was undertaken. The assessment of potential impacts was undertaken according to InfoSheet #5. Seven potential negative impacts have been identified, including, but not limited to:

- *Destruction of any, or part of any, significant heritage attributes or features*
- *Alteration that is not sympathetic, or is incompatible, with the historic fabric and appearance*
- *Shadows created that alter the appearance of a heritage attribute or change the viability of a natural feature or plantings, such as a garden*
- *Isolation of a heritage attribute from its surrounding environment, context or a significant relationship*



- *Direct or indirect obstruction of significant views or vistas within, from, or of built and natural features*
- *A change in land use such as rezoning a battlefield from open space to residential use, allowing new development or site alteration to fill in the formerly open spaces*
- *Land disturbances such as a change in grade that alters soils, and drainage patterns that adversely affect an archaeological resource*

(Government of Ontario 2006b)

Indirect impacts resulting from land disturbances apply to archaeological resources, which are beyond the scope of this assessment. An Archaeological Assessment has been prepared under separate cover, which addresses the archaeological potential of the Study Area and includes recommendations for further work (Stantec 2019). No further consideration to archaeological resources is provided in this report.

In addition to impacts discussed in InfoSheet #5, this CHAR also evaluated the potential for indirect impacts resulting from the vibrations of construction activities. Although the effect of construction vibrations on historic period structures is highly variable, research suggests that vibrations may be perceptible in buildings with a setback of less than 40 metres from project activity (Crispino and D'Apuzzo 2001; Ellis 1987; Rainer 1982; Wiss 1981).

2.6 MITIGATION STRATEGIES

Mitigation strategies were prepared based on guidelines provided by both the MTCS and the OEB. The MTCS suggest methods of minimizing or avoiding negative direct or indirect impacts including, but not limited to:

- *Alternative development approaches*
- *Isolating development and site alteration from significant built and natural features and vistas*
- *Design guidelines that harmonize mass, setback, setting, and materials*
- *Limiting height and density*
- *Allowing only compatible infill and additions*
- *Reversible alterations*
- *Buffer zones, site plan control, and other planning mechanisms*

(Government of Ontario 2006b)

3.0 HISTORICAL DEVELOPMENT

3.1 INTRODUCTION

The Study Area is located in the City of Hamilton, Ontario. The Study Area extends from the existing Kirkwall valve site at 1376 Valens Road east to the Hamilton valve site situated on the east side of Highway 6 (Figure 2). As mentioned in Section 2.3, since the vehicular wind shield survey was undertaken prior to the selection of the preferred route, the Study Area includes the original two alternative routes that span between the valve sites. Route A, now the preferred route, extends east between Safari Road and Concession 8 West, with two proposed route deviations, A1 and A2, between Westover Road and Middletown Road. The formerly proposed alternative Route B extends east between Safari Road and Concession 6 West until Brock Road where it extends north and joins with Route A.

The Study Area spans across the following historical lots and concessions within the former Township of Beverly, within the former County of Wentworth, now the City of Hamilton:

- Lots 29 to 36, Concession 6
- Lots 25 to 36, Concession 7

The Study Area then spans across the following historical lots and concessions within the former Township of West Flamborough, within the former County of Wentworth, now the City of Hamilton:

- Lots 1 to 5, Concession 6
- Lots 1 to 12, Concession 7

And the Study Area spans across the following historical lots and concessions within the former Township of East Flamborough, within the former County of Wentworth, now the City of Hamilton:

- Lots 12 to 13, Concession 9

The following sections outline the historical development of the Study Area from the period of settlement to the present.

3.2 PHYSIOGRAPHY

The Study Area is situated within the Flamborough Plain physiographic region, with a small section located within the Norfolk Sand Plain physiographic region, of southern Ontario (Chapman and Putnam 1984: 113). The physiography along the proposed pipeline route between the Kirkwall valve site and Westover Road is characterized by limestone plains and till plains (drumlinized). Between Westover Road and Middletown Road the physiography of proposed pipeline route consists of till plains (drumlinized) and areas of drumlins. Between Westover Road and Brock Road the physiography consists of till plains (drumlinized) and limestone plains. Between Brock Road and the Hamilton valve site the area is again



characterized by limestone plains with an area between Highway 6 and the Hamilton valve site on the boundary of limestone plains and sand plains. The soil in the region is generally poor and ranges from loam to muck; cultivated soil is mainly found on the drumlins and deeper gravel terraces (Chapman and Putnam 1984: 130).

3.3 SURVEY AND SETTLEMENT

3.3.1 Township of Beverly

The first survey of the Township of Beverly was undertaken by Augustus Jones in 1794. This survey included Concessions 1 through 5. The remaining concessions, 6 through 10, were initially surveyed in 1797 by John Stegman, but due to the challenging landscape and Beverly swamp, the survey had to be resurveyed in 1832 (Collins 2001: 7). The township survey was laid out in relation to the survey of the Governor's Road (Dundas Street), also completed by Jones from 1793 to 1795. A party of Queen's Rangers opened the road to serve as a military connection road between the Great Lakes and the St. Clair River. It was named by Governor John Graves Simcoe for Henry Dundas, Secretary of State for the British Home Department (Magel 1998: 30).

The township name of Beverly was chosen by Simcoe after the Town of Beverly, located in East Yorkshire, England (Hamilton Public Library 2017b). The township has 10 concessions running south to north from the Governor's Road, with lots numbered west to east. Laid out using the single-front system, each concession was comprised of long and narrow lots that were approximately 200 acres in size (Plate 1).



Plate 1: Single-Front System (Dean 1969)

The first European settlers in the Township of Beverly were Jacob Cope and George Jones, who arrived following the survey (Page & Smith 1875: x). The majority of early landowners in the township were absentee owners, which included merchants and officeholders in York (now Toronto), Niagara, and Montreal (Collins 2001: 7).

3.3.2 Township of West Flamborough

The Township of West Flamborough was surveyed in 1793 using a single-front system by District Provincial Land Surveyor Augustus Jones. The township survey, similar to the Township of Beverly, was also laid out in relation to the survey of the Governor's Road. The township name of Flamborough was chosen by Simcoe after a small east coast village in Yorkshire, England. It was surveyed into west and east portions that remained administratively joined until 1854 (Hamilton Public Library 2017b). The west portion was laid out in the shape of a triangle with the Governor's Road serving as the base. It has 11 concessions running west to east that were numbered north from Governor's Road (Burkholder 1950). Laid out using the single-front system, each concession was comprised of long and narrow lots that were approximately 200 acres in size (Plate 1). Lot sizes in the township are irregular, due to its triangular shape and Cootes Paradise along the southeast portion (Green *et al*. 2003: 2).

As part of the survey of the township, Simcoe ordered that a 60-acre plot be set aside for the creation of a town plot. The town was surveyed in 1801 by Deputy Surveyor John Stegman and named Cootes Paradise (now Dundas) after Captain Thomas Cootes, a British Naval Officer who hunted waterfowl in the area in the 1780s (Royal Botanical Gardens n.d.). The town plot was laid out on a portion of Lot 17, Concession 1, in the Township of West Flamborough and a portion of Lot 53, Concession 1, in the Township of Ancaster (Page & Smith 1875: ix).

The first settlers in the township were Ann Morden and her family, United Empire Loyalists, who settled in the township in 1787. When Jones surveyed the township, he noted the Morden family as squatters in the Dundas Valley (Woodhouse 1965: 10). Other early settlers prior to 1800 included Andrew Vanevery, John Purbus, Isaac Durham, William Chrysler, David Vanevery, Frederick Schram, John Rosebrough, Peter Vanevery, Isaac Smith, John Showers, Michael Showers, William Frances, Harcar Lyons, and James Durand (Woodhouse 1965: 12).

3.3.3 Township of East Flamborough

The Township of East Flamborough was surveyed in 1793 using a single-front system by District Provincial Land Surveyor Augustus Jones (Waterdown East Flamborough Centennial Committee [WEFCC] 1967: 11). Similar to the Township of West Flamborough, the Township of East Flamborough was laid out in relation to the Governor's Road and named by Simcoe. The Township of East Flamborough has fourteen concessions running south to north, with a broken front along Burlington Bay. Lots in the township are numbered east to west. Laid out using the single-front system, each concession was comprised of long and narrow lots that were approximately 200 acres in size (Plate 1).

The first settler in the Township of East Flamborough was David Fonger who arrived in 1783. He was followed by William Applegarth in 1791 (Green et al. 1997: 5). Land grants were given beginning in 1796,



in the lower portions of the township. One of the first grants was given to Alexander McDonnelll in 1796, including 800 acres on Grindstone Creek (WEFCC 1967: 12).

3.4 19TH CENTURY DEVELOPMENT

3.4.1 Township of Beverly

Settlement in the Township of Beverly developed primarily at road intersections and was influenced by the establishment of mills and railway development. In the 1820s, Governor's Road, south of the Study Area, was planked through the township, influencing the location of the settlements of Lynden and Copetown. The Dundas and Waterloo Road was opened in the township in the early 19th century and planked in 1837 between the Desjardins Canal to the Village of Waterloo to the northeast. The roadway, west of the Study Area, allowed for the settlement of Rockton, Romulus, and Sheffield (Collins 2001: 8). By 1859, the Dumfries and Beverly Road was planked and connected to the Dundas and Waterloo Road from the adjacent Township of North Dumfries, in the County of Brant.

Settlement in the township was slow due to the challenging terrain composed of rock, swamps, and forests. The township remained an unbroken forest until 1810, when a portion of land was cleared near Sheffield (Cornell 1967: 8). By 1820, the township had only a population of 81, with 1,883 acres of cultivated land, out of a total 70,200 acres (Page & Smith 1875: x). In the 1830s, settlers from the British Isles began to arrive in the township and the population increased. The first European settlements in the northern portion of the township in relation to the Study Area occurred in 1832 with the first settlers, John and William McKnight. They were followed soon after by John Valens, the Pentland family, and the Macdonald family (Irwin & Co. 1883: 37).

The first administration meeting of the Township of Beverly was held on January 4, 1836, with John Cornell as chairman (Cornell 1967: 196). By 1839, the population of the township had risen to 2,382. After 1840, the settlement of the township grew quickly, and by 1850 there was very little unclaimed land (Page & Smith 1875: x). In 1846, the township had 52,159 acres taken up, with 16,332 under cultivation. William Henry Smith described the township that year as well settled, with fine farms and two or three excellent mill streams (Smith 1846: 15). In 1850, the Township of Beverly was incorporated as a township following the *Municipal Corporations Act* (The Baldwin Act). The first meeting of the incorporated township was held on January 21, 1850, at Barlow's Inn in Rockton. Seth Holocomb was elected first reeve of the township (Cornell 1967: 196).

In relation to the Study Area, the closest settlement in the township to develop was Kirkwall, which was established to the west at the present-day intersection of Kirkwall Road and Concession Road 8. Kirkwall, also known as "Little Scotland," was settled by six families from Scotland in 1832 (Collins 2001: 35). A year later the settlers were joined by 12 additional families from Scotland as well as an English family and four families from Northern Ireland (Collins 2001: 35). Within three years of the arrival of the first settlers a log church was constructed to accommodate the growing congregation. In 1848, the log structure was replaced with a stone church (Collins 2001: 35). In 1866, Kirkwall was a small post office village with a population of about 60. The village also at the time had two stores, a church, a hotel, a blacksmith shop,



and a boot and shoe shop (Mitchell 1866: 343). Kirkwall remained a small village throughout the late 19th century, with a population of only 60 in 1886 (Irwin & Co. 1886: 103).

The Great Western Railway (GWR) was constructed through the southern portion of the Township of Beverly from 1851 to 1853 (Page & Smith 1875: iv). The line opened in January 1854, operating between Windsor and Niagara Falls (Houghton 2008: 88). Stations in the township were located in the hamlets of Lynden and Copetown. In 1883, the Township of Beverly reached a population of 4,890 (Irwin 1883: 38). The population of Sheffield decreased towards the end of the century, with a population of 150 in 1883 (Irwin 1883: 106).

3.4.2 Township of West Flamborough

Settlement in the Township of West Flamborough developed primarily along the waterways, which acted as a source of power for mills, and at road intersections. South of the Study Area, Edward Peer in 1801 purchased 30 acres on Spencer Creek and built the first mill in Dundas, known as Dundas Mills (Woodhouse 1965: 14). It was purchased by the Hatt brothers by 1808. Other mills developed along watercourses in the township and by 1823 the township had 11 grist mills and eight saw mills in operation (Page & Smith 1875: iii). The creek was renamed Spencer Creek in the 1830s, after Joseph Spencer who constructed a dam and mill on the watercourse in 1834 (Middleton 2004: 50).

The community of Dundas flourished in the 19th century as it was located at the junction of large roadways and on the shoreline of Cootes Paradise Marsh. The town developed around Hatt's mill, with inns and stores constructed to serve settlers while their grain was ground at the mill. It developed into a trading and transportation centre in the township (Freeman 2001: 21). The town received the first post office in the township in 1814 and was given the name Dundas after the main thoroughfare in the settlement, Dundas Street (Conservation Hamilton n.d.).

Growth accelerated with the construction of the Desjardins Canal between 1826 and 1837. The canal was constructed along the mouth of Spencer Creek to connect Dundas with Burlington Bay. Dundas served as the location for the Desjardins Canal Company headquarters and offices, as well as a community for workers (Page & Smith 1875: ix). Following the construction of the Desjardins Canal, Dundas became a busy port on Lake Ontario (Freeman 2001: 37).

In the north portion of the township, the opening of the Guelph to Dundas Road began in 1827, following the founding of the Town of Guelph by John Galt, north of the Study Area. Galt instigated the development of roadway through the Township of Puslinch towards the Township of West Flamborough. The Guelph to Dundas Road, also known as Aboukir Road, was laid out following an Indigenous trail. Although it was an open route, the Guelph to Dundas Road remained a trail until the mid-19th century. In 1846, the Guelph and Dundas Road Company was established by a group of Guelph businessmen to further open the roadway. Two years later at a Guelph and Dundas Road Company meeting on February 28, 1848, an application was made to the provincial government to establish the company as the administrator for the improvement of the roadway, with Thomas Rees Brock as the secretary. The roadway was renamed Brock Road, in honour of its first secretary. William Cook of Hamilton was awarded the contract for the road and a sod-turning ceremony was held on July 20, 1848. By 1850, the

roadway was nearly completed running through the east portion of the Study Area (Clark 2016). The roadway is depicted as an open road on the 1859 Map of the County of Wentworth, running the boundary of the townships of West and East Flamborough before heading south through the villages of Freelton and Strabane (Figure 3).

Dundas was incorporated as a town on July 28, 1847 (Page & Smith: ix). With the construction of the GWR in 1854, Dundas witnessed a shift from canal shipments to utilization of the railway for the shipment of goods. In the last quarter of the 19th century, the Town of Dundas had become one of the major manufacturing towns in the province with industries producing such goods as flour, cotton, clothing, agricultural implements, and furniture (Page & Smith 1875: ix).

In relation to the Study Area, the closest settlement in the township was Strabane. Strabane developed at the intersection of Brock Road and Concession Road 8 West. It was first settled by Matthew Peebles in 1842 (Mitchell 1866: 352). A post office was established at the intersection in 1851 with Peebles as the first postmaster (Library and Archives Canada 2014). By 1866, the post village had a population of about 100, and included a hotel, two saw mills, a school, a church, a boot and shoemaker (Mitchell 1866: 352-353). Strabane remained a small community throughout the late 19th century, with a population in 1898 of only about 50 (Vernon 1898: 149).

3.4.3 Township of East Flamborough

Settlement in the Township of East Flamborough developed primarily at road intersections and along the waterways, which acted as a source of power for mills. The first mill in the township was constructed on Grindstone Creek by William and John Applegarth (Green *et al*. 1997: 5), followed in the early 1800s by a saw mill on the creek near the Great Falls, constructed by Alexander Brown. The settlement of Waterdown developed around Brown's mill, at the crossroads of Dundas Street and Mill Street (Green et al. 1997: 18). Waterdown was the largest village in the township throughout the 19th century.

The southern portion of the township was first settled in the early 19th century, while the remaining portions of the township remained heavily wooded until the 1820s and 1830s. By 1846, 25,537 acres in the township had been taken up with 8,750 acres under cultivation. The township by this time had two grist mills and nine saw mills (Smith 1846: 59). In 1854, the Township of East Flamborough was incorporated as a separate township from West Flamborough (Hamilton Public Library 2017b).

In relation to the Study Area, the closest settlement in the township was Carlisle. Carlisle was established to the east of the Study Area in 1828 by John Eaton. Eaton and his wife Catherine settled on 400 acres of land, Lots 8 and 9, Concession 8, in the Township of East Flamborough in 1828 (Lake and Reynolds Genealogy 2017). A village, originally known as Eaton, was laid out on Eaton's property by his son Anson Eaton, along with Andrew Patton and George Abery (Mitchell 1866: 335). Early settlers to this hamlet included the Fords, Pattons, Kievels, Hamiltons, McColls, Crookers, Gunbys, Mordens, Adamsons, Binkleys, Hunts, Greens, Mills, and Bennetts (WEFCC 1967: 35).

A post office was established in the hamlet in 1851, with G.R. Lister as the first postmaster (Library and Archives Canada 2014). The hamlet was renamed in 1853 to Carlisle (WEFCC 1967: 35). In 1853, the Hamilton, Waterdown, and Carlisle Road was constructed from Hamilton to Carlisle. In 1866, Carlisle had

a population of 150, with two general stores, several saw mills, two schools, and two churches (Mitchell 1866: 335).

By 1867, all the lots in the township were taken up (Green et al. 1997: 3). In 1883, the township reached a population of 2,377, with the villages of Aldershot, Carlisle, Clappison, Flamboro Centre, Mountsberg, and Waterdown (Irwin 1883: 54). Carlisle's population remained stable in the last quarter of the century with a population in 1883 of 150 (Irwin 1883).

3.5 20TH CENTURY DEVELOPMENT

3.5.1 Township of Beverly

During the 20th century, the Study Area in the Township of Beverly continued to be part of a rural landscape, surrounded by primarily agricultural lands. The hamlets and villages in the township witnessed a decline in the early 20th century, influenced by the larger markets and industries in Hamilton and Toronto.

In the mid-20th century, following the Second World War, the Township of Beverly experienced renewed growth, following the construction of better highways and the development of the trucking industry. Farms in the township moved to a focus on dairy farming and by the 1960s hundreds of farmers prospered with milk contracts. There was also a shift in farming to specialized vegetables and fruits, as well as nursery operations (Collins 2001: 9).

In 1974, with the creation of the Regional Municipality of Hamilton-Wentworth, the Township of Beverly was amalgamated with the Townships of West and East Flamborough, to form the Town of Flamborough. In 2001, the Town of Flamborough became a part of the new City of Hamilton (Hamilton Public Library 2017b).

3.5.2 Township of West Flamborough

At the turn of the 20th century, the Town of Dundas witnessed a change in settlement patterns as retired farmers began to move into the town from the surrounding township. The proximity of Dundas to the City also created the possibility for many town residents to work in Hamilton while maintaining their home in Dundas (Meyers 1954: 42). Dundas had reached its industrial peak in the late 19th century, falling from 61 manufacturing industries in 1890 to 17 in 1901 (Meyers 1954: 25). Hamilton at this time was booming and offered more employment opportunities. Nonetheless, industries continued to play an important role in the Dundas economy. Large industries that attracted residents to Dundas included the Steel Company of Canada, Dominion Steel Castings Ltd. (Dofasco Inc.), National Steel Car Corporation, and Canadian Westinghouse (Bailey 1983: 81).

Traffic between Dundas and Hamilton increased with the development of better roads and highways beginning in the 1920s. In 1920, the Department of Public Highways Ontario assumed roads from Hamilton to Owen Sound and established King's Highway 6 (Bevers 2019). The highway, situated within the Study Area, is now a busy commuter route in the City of Hamilton, with connection to Highways 401 and 403.



In January 2001, the Town of Dundas became a part of the City of Hamilton (Hamilton Public Library 2017a). Dundas remains a small suburban community within the City with a population of 24,710 in 2006 (Social Planning & Research Council of Hamilton 2008).

3.5.3 Township of East Flamborough

At the beginning of the 20th century, the Study Area remained within a rural portion of the township, just west of the hamlet of Carlisle, and was surrounded by agricultural lands. Carlisle experienced a small period of growth with the construction in 1911 of the Canadian Pacific Railway (CPR) between Hamilton and Guelph. The CPR was constructed east of Carlisle, in the hamlet of Progreston, and brought passenger and freight trains through the area daily (WEFCC 1967: 37).

Traffic surrounding the Study Area increased with the development of better roads and highways beginning in the 1920s. The Township of East Flamborough was similarly influenced by the development of Highway 6, which influenced the development of subdivisions in Carlisle following the Second World War (WEFCC 1967: 37).

In January 1974, the Township of East Flamborough became part of the Regional Municipality of Hamilton-Wentworth. In January 2001, the township became part of the new City of Hamilton (Hamilton Public Library 2017b). Carlisle remains a small community within the City, with a population in 2016 of 1,869 (Statistics Canada 2016).

3.6 SITE HISTORY

A site history for portions of the Study Area was prepared for lots where a related potential heritage resource was identified in Section 4.3. The site history was written in consultation with historical mapping and the Directory and Biography sections of the *Illustrated Historical Atlas of the County of Wentworth* (Page & Smith 1875). The maps that were consulted included Hardy Gregory's 1859 *Map of the County of Wentworth, Canada West,* and Page & Smith's 1875 maps of the townships of Beverly, West Flamborough, and East Flamborough, which appeared in Page's *Illustrated Historical Atlas of the County of Wentworth* (Figure 3 and Figure 4). In discussing the late 19th century historical mapping it must be remembered that historical county atlases were produced primarily to identify factories, offices, residences, and landholdings of subscribers and were funded by subscription fees. Landowners who did not subscribe were not always listed on the maps (Caston 1997: 100). As such, all structures were not necessarily depicted or placed accurately, which is the case for Hardy Gregory's 1859 map (Gentilcore and Head 1984).

3.6.1 Lot 29, Concession 6, Township of Beverly

Lot 29, Concession 6 in the former Township of Beverly was granted from the Crown as a 200-acre patent in 1804 to Margaret Darby (Ontario Land Registry Access [ONLAND] 2018a). By 1859, the property had been sold as two separate north and south half parcels as depicted on Gregory's 1859 map (Figure 3). The north half is shown under the ownership of Mr. McLorey, while the south half is depicted under the ownership of Alexander Dunand. The southeast corner of Dunand's property has a small parceled section labelled "S.C.R." No structures are depicted on the lot. Page & Smith's 1875 map shows



the property ownership transferred to Nisbet & Herbert (Figure 4). A structure is depicted in the southwest corner of the property, with two adjacent mill sites. Nisbet & Herbert are listed on the property in Page & Smith's 1875 *Illustrated Historical Atlas of the County of Wentworth* as lumbermen (Page & Smith 1875: xxxvii).

3.6.2 Lot 32, Concession 6, Township of Beverly

Lot 32, Concession 6 in the former Township of Beverly was granted from the Crown in two separate parcels, with the south half, a 100-acre parcel to William Connell in 1847, and the northeast quarter, a 50-acre parcel to Robert Self in 1857 (ONLAND 2018a). By 1859, the south half of the lot was still under the ownership of William Connell, and the northeast quarter under the ownership of Robert Self (Figure 3). The northwest quarter is shown under the ownership of Frederick Miles. A structure is depicted on Connell's property in the southeast corner. Connell retained the property into the late 19th century as depicted on Page & Smith's 1875 map (Figure 4). A structure is depicted on Connell's portion of the lot in the southeast corner. The ownership of the northeast portion of the property transferred to Walter Robertson, and the northwest portion to M. & J. Sullivan. Two structures with adjacent orchards are depicted on Robertson's property fronting present-day Safari Road.

3.6.3 Lot 34, Concession 6, Township of Beverly

Lot 34, Concession 6 in the former Township of Beverly was granted from the Crown as a 200-acre patent in 1797 to William Oressey (ONLAND 2018a). By 1859, the property was divided into three separate parcels as depicted on Gregory's 1859 map (Figure 3). The north half is shown under the ownership of John Robertson, with a structure on the west portion of the property. The south half is spilt into two parcels, with owners J. Shaver and John Lyndsey. A grist mill is depicted on Lyndsey's property on Crooked Creek. The south half ownership remained the same into the late 19th century as depicted on Page & Smith's 1875 map (Figure 4). A structure and a mill are depicted on Lyndsey (Lindsay)'s property, and a structure with an adjacent orchard on Shaver's property. The ownership of the north half was transferred to James Dwyer. A structure is depicted on the north portion Dwyer's property.

3.6.4 Lot 35, Concession 6, Township of Beverly

Lot 35, Concession 6 in the former Township of Beverly was granted from the Crown in two separate 100-acre parcels, with the south half to George Ironside in 1849, and the north half to John Leslie in 1850 (ONLAND 2018a). By 1859, the ownership of the lot had changed, with the north half transferred to William Nunn, and the south half to James Nichol (Figure 3). No structures are depicted on the lot. The ownership remained the same into the late 19th century as shown on Page & Smith's 1875 map (Figure 4). A structure is depicted with an adjacent orchard on the south portion of Nichol's property, and on the north portion of Nunn's property.

3.6.5 Lot 30, Concession 7, Township of Beverly

Lot 30, Concession 7 in the former Township of Beverly was granted from the Crown as a 200-acre patent in 1798 to Samuel Jones (ONLAND 2018b). By 1859, the property had been sold as two separate

north and south half parcels as depicted on Gregory's 1859 map (Figure 3). The north half of the property is owned by Mr. Law, while the south half is owned by William Currie. No structures are depicted on the property at this time. Page & Smith's 1875 map shows that the Law family retained the property in the late 19th century (Figure 4). The north half is shown with the owner as James Law, with a structure and a surrounding orchard. Most of the south half of the lot changed ownership to M. Gilmore, who owned the adjacent Lot 29, Concession 7. A small section of the south half in the northeast corner was parceled out, with two structures fronting the present-day Westover Road. A structure is shown on Gilmore's portion fronting present-day Safari Road.

3.6.6 Lot 32, Concession 7, Township of Beverly

Lot 32, Concession 7 in the former Township of Beverly was granted from the Crown as a 200-acre patent to Mary Hodgkinson in 1808 (ONLAND 2018b). By 1859, the property had been sold as separate north and south half parcels as depicted on Gregory's 1859 map (Figure 3). The north half is shown under the ownership of John and James Smith, who also own the north half of Lot 31, Concession 7. The south half lists the owner as Walter Robertson. No structures are depicted on the maps. Crooked Creek is depicted crossing the mid-way through the lot. Page & Smith's 1875 map shows that the land ownership of the lot remained the same in the late 19th century (Figure 4). John Smith is listed as the owner of the north half with a structure and adjacent orchard in the southwest corner, south of the creek. Walter Robertson is listed as the owner on the south half with a structure and adjacent orchard in the north portion of the lot.

3.6.7 Lot 34, Concession 7, Township of Beverly

Lot 34, Concession 7 in the former Township of Beverly was granted from the Crown in two separate 100-acres parcels, with the south half to Thomas Dunkin in 1845, and the north half to Thomas Baskerville in 1862 (ONLAND 2018b). Gregory's 1859 map shows Thomas Duncan on the south half of the property and Thomas Baskerville on the north half (Figure 3). Page & Smith's 1875 map shows that the north half of the lot remained in the ownership of Baskerville and depicts a structure and adjacent orchard near the north portion of the lot fronting the present-day Concession 8 West (Figure 4). The ownership changed on the south half of the lot to John Jameson, with no structures depicted.

3.6.8 Lot 35, Concession 7, Township of Beverly

Lot 35, Concession 7 in the former Township of Beverly was granted from the Crown as a 200-acre patent to Hugh Mulholland in 1798 (ONLAND 2018b). By 1859, the property had been sold as separate north and south half parcels as depicted on Gregory's 1859 map (Figure 3). The north half is shown under the ownership of James Dunn and the south half under the ownership of John Patterson. No structures are depicted on the property. Page & Smith's 1875 map shows that the north half of the lot remained in the ownership of James Dunn, with a structure centrally situated on the property (Figure 4). The ownership changed on the south half of the lot to A. Patton. A structure is depicted on Patton's property in the southwest corner.

3.6.9 Lot 36, Concession 7, Township of Beverly

Lot 36, Concession 7 in the former Township of Beverly was granted from the Crown as a 400-acre patent to James Mulholland in 1798 (ONLAND 2018b). By 1859, the property had been sold and subdivided into three separate parcels as depicted on Gregory's 1859 map (Figure 3). The north portion of the property is owned by William Johnstone, the southwest portion by N. Wilson, and the southeast portion by T. Burns. Page & Smith's 1875 map shows, that the north portion of the property remained within the Johnstone (Johnson) family, although the property is divided in two, with B. Johnstone on the west half and William Johnstone on the east half (Figure 4). A structure is shown on William Johnstone's property fronting the present-day Middletown Road. Wilson's southwest portion of the property was sold to R. Hamilton, and Burn's southeast portion to A. Patton.

3.6.10 Lot 2, Concession 6, Township of West Flamborough

Lot 2, Concession 6 in the former Township of West Flamborough was granted from the Crown as a 200-acre patent to Sir Allan McNab in 1796 (ONLAND 2018c). McNab was a lieutenant in Lieutenant-Governor John Graves Simcoe's Second Corps of the Queen's Rangers and was granted the property for his service. McNab was later the father of Sir Allan Napier MacNab, an influential politician, lawyer, and businessman in Hamilton to the southeast (Baskerville 1976). By 1859, the property was divided into four parcels as depicted on Gregory's 1859 map (Figure 3). The northwest quarter is shown under the ownership of William Patton, the northeast quarter under Alexander Patton, the southwest quarter under Adam Borthwick, and the northeast quarter under Henry Higgins. No structures are depicted on the lot. Ownership of the south half of the property remained the same into the late 19th century as depicted on Page & Smith's 1875 map (Figure 4). A structure with an adjacent orchard is depicted set-back from the roadway on Borthwick's and Higgin's properties. The northwest quarter is still shown under the ownership of William Patton, with a structure and adjacent orchard fronting the present-day Safari Road. The northeast quarter was transferred to George Lindey. A structure and adjacent orchard are depicted on Lindey's property fronting the present-day Safari Road.

3.6.11 Lot 3, Concession 6, Township of West Flamborough

Lot 3, Concession 6 in the former Township of West Flamborough was granted from the Crown as a 200-acre patent to Louis Grant in 1797 (ONLAND 2018c). By 1859, the property had been sold as separate north and south half parcels as depicted on Gregory's 1859 map (Figure 3). The north half is owned by William James, and the south half by George Denham. No structures are depicted on the lot. The ownership of the south half remained the same into the late 19th century as depicted on Page & Smith's 1875 map (Figure 4). A structure is shown on Denham's property set back from the roadway. The ownership of the north half of the property by 1875 had transferred to John O'Connell. A structure is depicted on O'Connell's property fronting the present-day Safari Road.

3.6.12 Lot 4, Concession 6, Township of West Flamborough

Lot 4, Concession 6 in the former Township of West Flamborough was granted from the Crown in two separate 100-acre parcels to the Canada Company in 1832 (ONLAND 2018c). By 1859, the north half of

the property had been sold to George Nickle, and the south half to John Kelly (Figure 3). No structures are depicted on the lot. The ownership of the north half remained the same into the late 19th century as shown on Page & Smith's 1875 map (Figure 4). A structure is depicted on Nickle's property fronting the present-day Safari Road. By 1875 the south half of the property was owned by Matthew Hall.

3.6.13 Lot 5, Concession 6, Township of West Flamborough

Lot 5, Concession 6 in the former Township of West Flamborough was granted from the Crown as a 200-acre patent to Captain William Hamilton in 1798 (ONLAND 2018c). By 1859, the property had been divided into three separate parcels as depicted on Gregory's 1859 map (Figure 3). The north portion is owned by John Moore, the central portion by Abraham and Ann Page, and the south portion by John and James Sanderson. No structures are depicted on the lot. The ownership of the north portion remained in the Moore family into the late 19th century as depicted on Page & Smith's 1875 map (Figure 4). A structure and adjacent orchard are shown on Stewart Moore's property fronting the present-day Safari Road. The central portion of the property is shown on the 1875 map as divided into two parcels, with Abraham Page on the north portion, and John Moore on the south portion. The ownership of the south portion of the lot changed by 1875, with Morris Denneene depicted as the owner, with a structure and adjacent orchard on the south portion of the property.

3.6.14 Lot 1, Concession 7, Township of West Flamborough

Lot 1, Concession 7 in the former Township of West Flamborough was granted from the Crown as a 200-acre patent to Major David Shank in 1797 (ONLAND 2018d). Shank was a captain in Simcoe's Queen's Rangers and was granted the property for his service (The On-Line Institute for Advanced Loyalist Studies 2000). By 1859, the property was divided into three parcels as depicted on Gregory's 1859 map (Figure 3). The northwest portion is owned by Patrick Hamilton, the northeast portion by Robert Hamilton, and the south portion by W. Hamilton. No structures are depicted on the lot. The ownership remained the same into the late 19th century as depicted on Page & Smith's 1875 map (Figure 4). Each property is depicted with a structure and an adjacent orchard.

3.6.15 Lot 2, Concession 7, Township of West Flamborough

Lot 2, Concession 7 in the former Township of West Flamborough was granted from the Crown as a 150-acre patent to Thomas Nickle in 1863 (ONLAND 2018d). Nickle is depicted on the property prior to ownership on Gregory's 1859 map (Figure 3). The north portion of the property is shown under the ownership of W. Beryman. No structures are depicted on the lot. By the late 19th century, ownership changed on both portions of the lot as shown on Page & Smith's 1875 map (Figure 4). Nickle's property was owned by James Porter, and Beryman's property by the heirs of Andrew Waddel. A structure and orchard are shown on Porter's property, with the structure fronting the present-day Safari Road. Two structures are shown on Waddel's property fronting Concession 8 West.

3.6.16 Lot 5, Concession 7, Township of West Flamborough

Lot 5, Concession 7 in the former Township of West Flamborough was granted from the Crown as a 200-acre patent to the Canada Company in 1834 (ONLAND 2018d). By 1859, the property was owned by

Robert and Joseph Dixon (Figure 3). No structures are depicted on the lot. By 1875, the property was divided into two parcels, with the north portion under the ownership of James Robertson, and the south portion under John Featherstone (Figure 4). A structure and adjacent orchard are shown on Featherstone's property fronting the present-day Safari Road.

3.6.17 Lot 7, Concession 7, Township of West Flamborough

Lot 7, Concession 7 in the former Township of West Flamborough was granted from the Crown as a 200-acre patent to John Steffle in 1801 (ONLAND 2018d). By 1859, Lot 7 was divided into five separate parcels influenced by the development of the hamlet of Strabane and Brock Road (Figure 3). Four of the parcels are within the Peebles family, with owners M., R., and J. Peebles. The remaining parcel is shown under the ownership of W. Brenan. The northwest corner of M. Peeble's property is shown as subdivided into small narrow lots, and a saw mill is depicted on the east portion of the property. A post office is also depicted on M. Peebles' parcel towards the south end of the lot. Strabane was first settled by Matthew Peebles in 1842, who established a post office as postmaster in 1849 (Mitchell 1866: 352). Page & Smith's 1875 map shows the increased development of Strabane at the northwest corner of the lot, and along Brock Road (Figure 4). The lot is still shown as divided into five parcels, with owners from north to south as Matthew Peebles, John Brenan, James Fulton, Matthew Peebles, and James Peebles. Matthew Peeble's north portion of the lot is depicted with seven structures, a blacksmith shop, and a mill. Brenan's property includes a structure and an adjacent orchard. Fulton's property is shown with two structures and an orchard. Matthew Peebles' south parcel is shown with three structures including the Strabane post office, and James Peebles' property is shown with a structure and adjacent orchard.

3.6.18 Lot 8, Concession 7, Township of West Flamborough

Lot 8, Concession 7 in the former Township of West Flamborough was granted from the Crown as a 200-acre patent to the James Macaulay in 1796 (ONLAND 2018d). By 1859, the lot was divided into three parcels as depicted on Gregory's 1859 map (Figure 3). The north portion is shown under the ownership of Mrs. J. Fraser, the central portion under James Fulton, and the south portion under John Fulton. The three parcels remained under the same family ownership into the late 19th century as depicted on Page & Smith's 1875 map (Figure 4). The north portion is shown with Angus Fraser as the owner, with two structures and a mill near Concession 8 West. James Fulton's property is shown with a structure and adjacent orchard, while John Fulton's property is depicted with two structures fronting the present-day Safari Road.

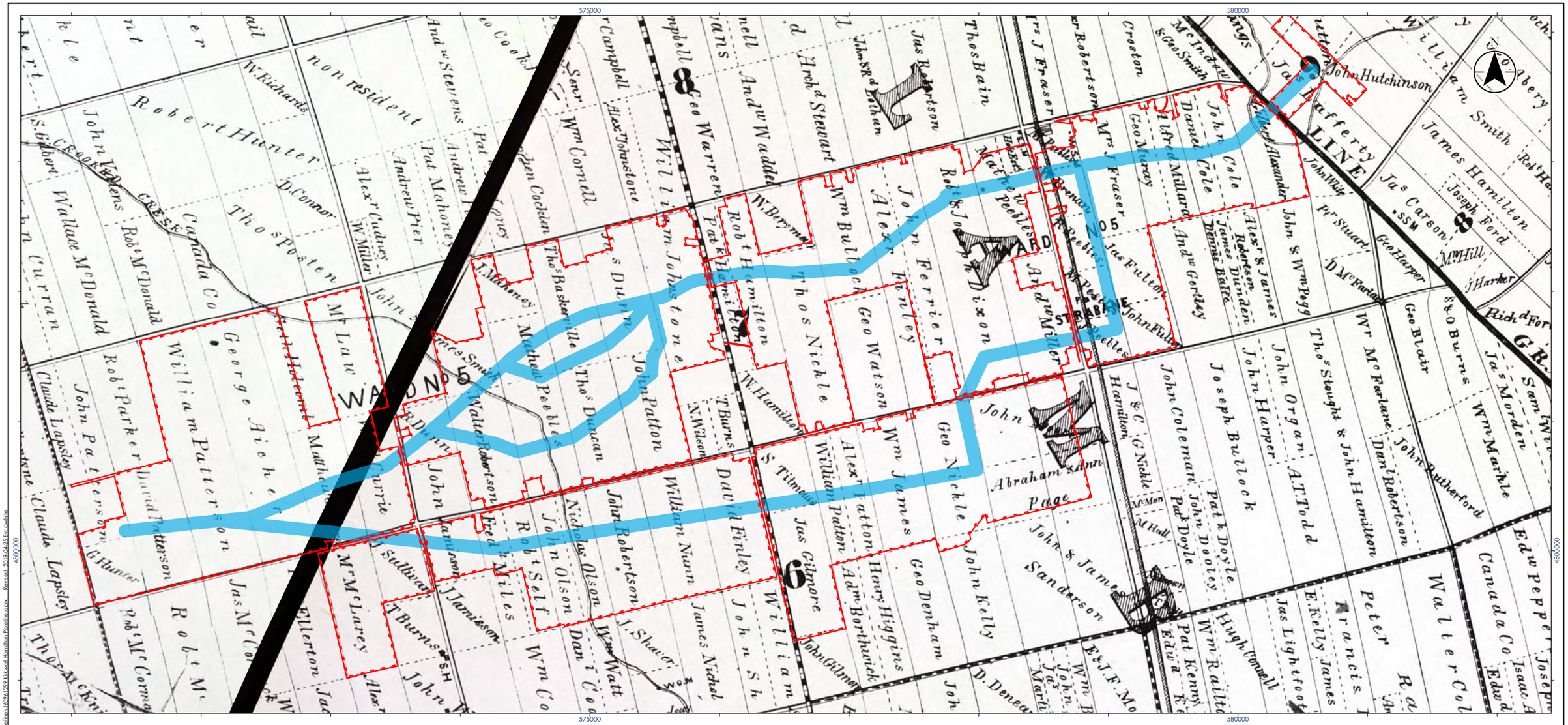
3.6.19 Lot 9, Concession 7, Township of West Flamborough

Lot 9, Concession 7 in the former Township of West Flamborough was granted by the Crown in three separate patents: the south half as a 100-acre parcel to Edward Gilchrist in 1854, the northeast quarter as a 50-acre parcel to Alfred Millard in 1855, and the northwest quarter as a 50-acre parcel to Mary J. A[rmo]ur in 1875 (ONLAND 2018d). Millard is depicted as the owner of the northeast quarter on Gregory's 1859 map (Figure 3). The northwest quarter is shown under the ownership of George Murray, and the south half under Andrew Gertley. No structures are depicted on the lot. The three parcels remained under the same family ownership into the late 19th century as depicted on Page & Smith's 1875

map (Figure 4). A structure is shown on Murray's property fronting Concession 8 West. A structure with an adjacent orchard is shown set back far back from Concession 8 West on the property of Alfred Millard's heirs. The south half of the property is shown as divided into two parcels, with Andrew Gartley on the west quarter, and Alexander Gartley on the east quarter. Structures with adjacent orchards are depicted on both Gartley properties.

3.6.20 Lot 10, Concession 7, Township of West Flamborough

Lot 10, Concession 7, in the former Township of West Flamborough was granted from the Crown as a 200-acre patent to Samuel Le[ose] in 1801 (ONLAND 2018d). By 1859, the lot had been divided into five separate parcels as shown on Gregory's 1859 map (Figure 3). The northwest portion is owned by Daniel Cole, the northeast portion by John Cole, the southwest portion is split between Dennis Balfe and James Dunden, and the southeast portion by Alexander and James Robertson. No structures are depicted on the lot. Daniel Cole remained the owner of the northwest portion into the late 19th century (Figure 4). Page & Smith's 1875 map depicts a structure and orchard on Cole's property set far back from Concession 8 West. By 1875 the northeast portion was owned by the heirs of Andrew Simmons. A structure with an orchard is similarly depicted on the Simmons property set far back from Concession 8 West. The southwest portion of the property remained in the Balfe family, with Edward Balfe listed as the owner with a structure fronting present-day Safari Road. On the adjacent property, T.J. Newman is the owner with a structure and orchard. The southeast portion of the lot remained under the ownership of Alexander Robertson, with a structure depicted on the south portion of the property.



Legend

- Study Area (approximate)
- 50 m Buffer (approximate)

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, 2019.

Stantec

Project Location
City of Hamilton

160961229

Client/Project
ENBRIDGE GAS INC.
KIRKWALL TO HAMILTON PIPELINE PROJECT

Figure No.
3

Title
1859 County of Wentworth Map

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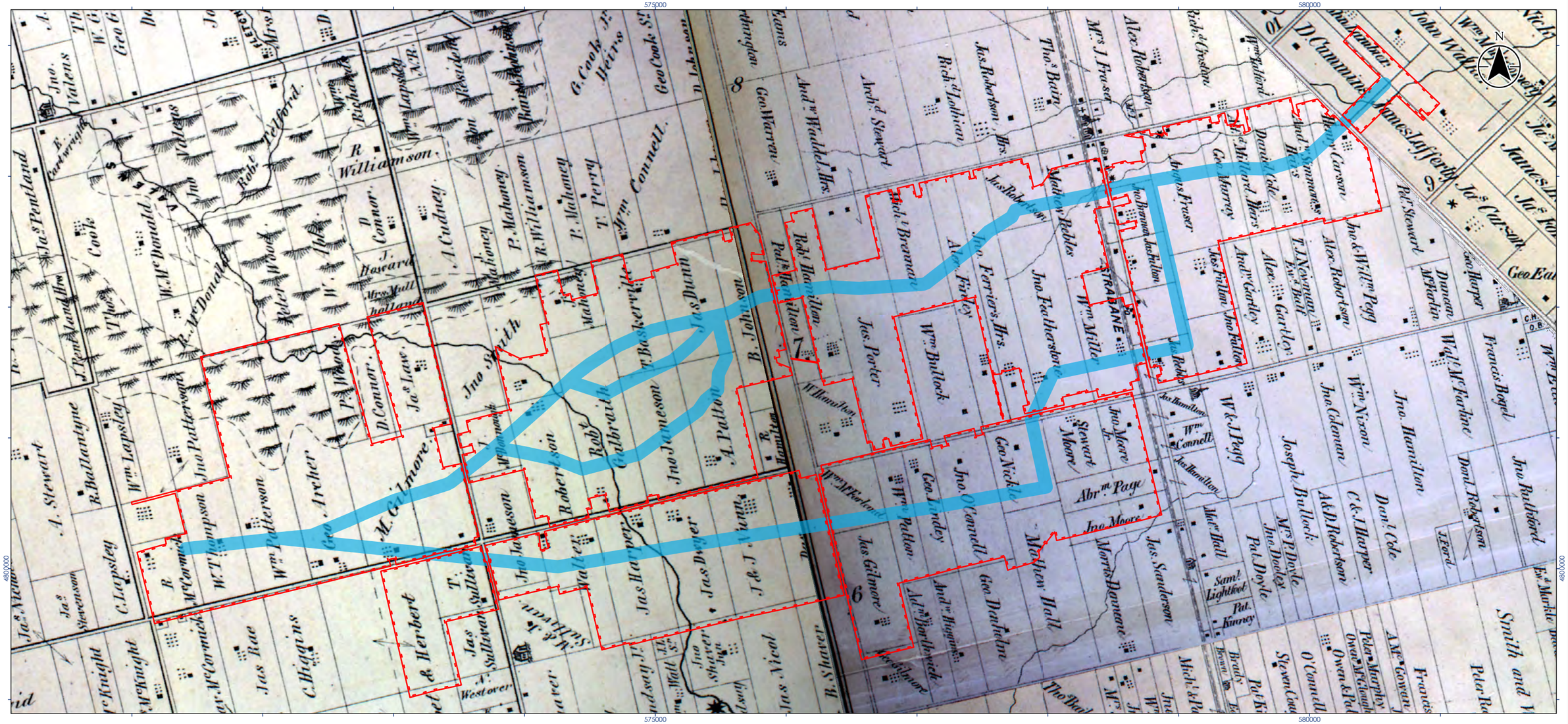

Legend

- 50 m Buffer
- Study Area (approximate)

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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Stantec

Project Location
City of Hamilton

160961229

Client/Project
ENBRIDGE GAS INC.
KIRKWALL TO HAMILTON PIPELINE PROJECT

Figure No.
4

Title
1875 County of Wentworth Map

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4.0 RESULTS

4.1 AGENCY AND MUNICIPAL CONSULTATION

In order to identify heritage resources, the MTCS, OHT, and the City of Hamilton were consulted. The Study Area map that was distributed to the agencies and the municipality included a larger Study Area boundary that extended west to east from Valens Road to just east of Highway 6, and north to south from north of Concession 8 West to south of Concession 6 West. As a result of the consultation, 76 protected properties were identified (Figure 5). Upon further inspection, 20 of the protected properties were determined to be situated within the CHAR Study Area.

At the provincial level, Karla Barboza, Team Lead, Heritage at the MTCS, responded that to date, there are no provincial heritage properties within the Study Area, and no properties that have been designated by the Minister. Kevin De Mille, Heritage Planner with the OHT, responded that there is one OHT archaeological easement in the larger Study Area. The site is an early historic Neutral indigenous archaeological site called Freelton. Freelton is outside this CHAR Study Area by over 10 kilometres to the northwest.

At the municipal level, staff were consulted to determine the presence of municipally protected properties. Miranda Brunton, Cultural Heritage Planner with the City of Hamilton, responded with a listing of 75 heritage properties within and adjacent to the larger Study Area. The majority of the heritage properties identified in the City of Hamilton are not listed or designated but were inventoried in the 1991 Local Architectural Conservation Authority Committee's (LACAC) inventory. One designated property under Part IV of the *Ontario Heritage Act* is located within the larger Study Area, Strabane United Church at 1565 Brock Road (Plate 2). The church is located approximately 400 metres north of the Study Area.



Plate 2: Strabane United Church looking northwest

Table 1: Identified and Protected Heritage Resources in Relation to the Study Area

Agency/Municipality	Location/Municipal Address	Level of Recognition	Relationship to the CHAR Study Area
OHT	Lot 3, Concession 8, former Township of Beverly	Archaeological Easement	Outside of Study Area
Hamilton	1336 Westover Road	LACAC Inventory	Outside of Study Area
Hamilton	1289 Safari Road	LACAC Inventory	Within the Study Area
Hamilton	1427 Safari Road	LACAC Inventory	Outside the Study Area
Hamilton	1261 Safari Road	LACAC Inventory	Outside the Study Area
Hamilton	1248 Concession 8 West	LACAC Inventory	Outside the Study Area
Hamilton	1622 Westover Road	LACAC Inventory	Outside the Study Area
Hamilton	1414 Safari Road	LACAC Inventory	Within the Study Area
Hamilton	1213 Safari Road	LACAC Inventory	Within the Study Area
Hamilton	1286 Safari Road	LACAC Inventory	Within the Study Area
Hamilton	1213 Concession 8 West	Listed	Outside of Study Area
Hamilton	1172 Concession 8 West	LACAC Inventory	Within the Study Area
Hamilton	1212 Safari Road	LACAC Inventory	Within the Study Area
Hamilton	1496 Valens Road	LACAC Inventory	Outside of Study Area
Hamilton	1207 Concession 8 West	LACAC Inventory	Outside of Study Area
Hamilton	1540 Safari Road	LACAC Inventory	Outside of Study Area
Hamilton	1437 Middletown Road	LACAC Inventory	Within the Study Area
Hamilton	1166 Safari Road	LACAC Inventory	Within the Study Area
Hamilton	1171 Concession 8 West	LACAC Inventory	Outside of Study Area
Hamilton	1121 Safari Road	LACAC Inventory	Outside of Study Area
Hamilton	1376 Valens Road	LACAC Inventory	Outside of Study Area
Hamilton	1515 Concession 8 West	LACAC Inventory	Outside of Study Area
Hamilton	1590 Safari Road	LACAC Inventory	Outside of Study Area
Hamilton	1658 Valens Road	LACAC Inventory	Outside of Study Area
Hamilton	1286 Valens Road	LACAC Inventory	Outside of Study Area
Hamilton	1420 Middletown Road	LACAC Inventory	Within the Study Area

Table 1: Identified and Protected Heritage Resources in Relation to the Study Area

Agency/Municipality	Location/Municipal Address	Level of Recognition	Relationship to the CHAR Study Area
Hamilton	1359 Valens Road	LACAC Inventory	Outside of Study Area
Hamilton	1569 Middletown Road	LACAC Inventory	Outside of Study Area
Hamilton	1081 Safari Road	LACAC Inventory	Outside of Study Area
Hamilton	1412 Middletown Road	LACAC Inventory	Within the Study Area
Hamilton	1267 Valens Road	LACAC Inventory	Outside of Study Area
Hamilton	1413 Brock Road	LACAC Inventory	Outside of Study Area
Hamilton	1407 Brock Road	LACAC Inventory	Outside of Study Area
Hamilton	919 Safari Road	LACAC Inventory	Within the Study Area
Hamilton	1539 Brock Road	Listed	Outside of Study Area
Hamilton	1322 Brock Road	LACAC Inventory	Outside of Study Area
Hamilton	1538 Brock Road	Listed	Outside of Study Area
Hamilton	878 Concession 8 West	LACAC Inventory	Outside of Study Area
Hamilton	1554 Brock Road	LACAC Inventory	Outside of Study Area
Hamilton	1553 Brock Road	LACAC Inventory	Outside of Study Area
Hamilton	951 Safari Road	LACAC Inventory	Outside of Study Area
Hamilton	955 Safari Road	LACAC Inventory	Outside of Study Area
Hamilton	783 Concession 8 West	LACAC Inventory	Outside the Study Area
Hamilton	750 Concession 8 West	LACAC Inventory	Within the Study Area
Hamilton	902 Safari Road	LACAC Inventory	Within the Study Area
Hamilton	866 Safari Road	LACAC Inventory	Outside of Study Area
Hamilton	979 Safari Road	LACAC Inventory	Outside of Study Area
Hamilton	713 Safari Road	LACAC Inventory	Outside of Study Area
Hamilton	877 Concession 8 West	LACAC Inventory	Outside of Study Area
Hamilton	792 Safari Road	Listed	Outside of Study Area
Hamilton	917 Concession 8 West	LACAC Inventory	Outside of Study Area
Hamilton	753 Concession 8 West	LACAC Inventory	Outside of Study Area

Table 1: Identified and Protected Heritage Resources in Relation to the Study Area

Agency/Municipality	Location/Municipal Address	Level of Recognition	Relationship to the CHAR Study Area
Hamilton	1000 Concession 8 West	LACAC Inventory	Outside of Study Area
Hamilton	700 Concession 8 West	LACAC Inventory	Within the Study Area
Hamilton	954 Safari Road	LACAC Inventory	Within the Study Area
Hamilton	961 Concession 8 West	LACAC Inventory	Outside of Study Area
Hamilton	1035 Safari Road	LACAC Inventory	Within the Study Area
Hamilton	1525 Highway 6	LACAC Inventory	Outside of Study Area
Hamilton	653 Safari Road	LACAC Inventory	Outside of Study Area
Hamilton	1042 Concession 8 West	LACAC Inventory	Outside of Study Area
Hamilton	994 Safari Road	LACAC Inventory	Within the Study Area
Hamilton	995 Safari Road	LACAC Inventory	Outside of Study Area
Hamilton	1032 Safari Road	LACAC Inventory	Within the Study Area
Hamilton	1412 Middletown Road	LACAC Inventory	Within the Study Area
Hamilton	1433 Highway 6	LACAC Inventory	Outside of Study Area
Hamilton	1490 Highway 6	LACAC Inventory	Within the Study Area
Hamilton	1458 Highway 6	LACAC Inventory	Outside of Study Area
Hamilton	698 Safari Road	LACAC Inventory	Outside of Study Area
Hamilton	1426 Highway 6	LACAC Inventory	Outside of Study Area
Hamilton	1087 Concession 8 West	LACAC Inventory	Outside of Study Area
Hamilton	662 Safari Road	LACAC Inventory	Outside of Study Area
Hamilton	1075 Concession 8 West	LACAC Inventory	Outside of Study Area
Hamilton	632 Safari Road	LACAC Inventory	Outside of Study Area
Hamilton	1121 Safari Road	LACAC Inventory	Outside of Study Area
Hamilton	1345 Highway 6	LACAC Inventory	Outside of Study Area
Hamilton	1565 Brock Road	Designated	Outside the Study Area

4.2 FIELD PROGRAM

As described in Section 2.3, a windshield survey of the Study Area was undertaken to identify potential heritage resources situated within the Study Area and confirm the presence of previously identified protected properties. Where identified, the site was photographically documented from publicly accessible roadways.

During the course of the survey, 35 individual sites were identified as containing potential heritage resources (Figure 5). Of those identified, 17 had been previously identified on the LACAC 1991 Inventory. A summary of these potential heritage resources is contained in Figure 6 and Appendix A.

The majority of potential heritage resources identified were constructed in the mid- to late 19th century, prior to 1875, as determined through historic mapping. The Study Area also includes some potential heritage resources that date to the early 20th century, and mid- to late 20th century. The late 19th century structures are of a similar Ontario vernacular architecture style. Most of the structures from this period are similar one and a half storey residences, with a side gable roof, and have a gabled dormer. The predominant architectural style influence is Gothic Revival, while there are two examples of the Georgian style, one example of the Edwardian style, and one example of the Queen Anne Revival style. Most of the structures have been modified with the addition of vinyl cladding or modern windows and doors. The majority of the potential heritage resources identified are farmsteads comprised of a residential structure and associated farm outbuildings.

4.2.1 OEB *Environmental Guideline* Indicators

Based on the field program, resources representing five of the indicators of CHVI according to Section 4.3.4 of the *OEB Environmental Guidelines* were identified (Table 2). Where potential heritage resources are identified, evaluation of the CHVI according to O. Reg. 9/06 is required to confirm the presence of heritage resources. Where heritage resources are identified, the impacts of the Project on these resources must be assessed.

Table 2: Indicators of CHVI According to Section 4.3.4 of the *OEB Environmental Guidelines*

Indicators	Identified within the Study Area
Property designated under Part IV of the OHA	Not identified
A bridge on Ontario Heritage Bridge List	Not identified
Property within a Heritage Conservation District designated under Part V of the OHA	Not identified
Property with an OHT or municipal heritage conservation easement	Not identified
Property with a provincial or federal plaque	Not identified
A National Historic Site	Not identified

Table 2: Indicators of CHVI According to Section 4.3.4 of the *OEB Environmental Guidelines*

Indicators	Identified within the Study Area
Property containing a registered archaeological site	Not Applicable*
Property with archaeological potential	Not Applicable*
Property listed on a municipal heritage register or provincial heritage register	Identified
Property adjacent to an identified heritage property	Identified
Property that has buildings or structures over 40 years old	Identified
Property within a Canadian Heritage River watershed	Not identified
Property associated with a renowned architect or builder	Not identified
Property containing or adjacent to a burial site or cemetery	Not identified
Parkland	Not identified
Land with distinctive landforms or geographic features	Identified
Historic transportation corridors (such as navigational canals, rail lines or trails, traditional Métis portage routes, etc.)	Not Identified
Other human-made alterations to natural landscapes (such as earthworks, plantings, etc.)	Identified

*An Archaeological Assessment has been undertaken under separate cover. Archaeological potential is considered beyond the scope of the current study.

4.3 EVALUATION OF CULTURAL HERITAGE VALUE OR INTEREST

Where a potential heritage resource was identified within the Study Area, an evaluation of the CHVI of the property was undertaken. Detailed evaluations are contained within Appendix A. As described in Section 2.4, each potential heritage resource was screened according to O. Reg. 9/06, the criteria for determining CHVI. There were 35 potential heritage resources identified, 26 of which were determined to contain cultural heritage resources (Figure 7). Table 3 summarizes the findings.

Table 3: Potential Cultural Heritage Resources

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project Location
1422 Westover Road	No	Farmstead		None identified	No	N/A	Inside the Project Location
1399 Safari Road	No	Farmstead		Residence: one and a half storey structure, high-pitched side gable roof, high-pitched gable dormer, red brick exterior, buff brick detailing seen in quoins, and voussoirs, front entry transom, and covered full-width porch. Barn: gable roof, vertical wood cladding, and stone foundation. Landscape: tree allée laneway, mature Norway Spruce, and stone wall.	Yes	CHR-1	Inside the Project Location

Table 3: Potential Cultural Heritage Resources

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project Location
1441 Safari Road	No	Residence		None identified	No	N/A	Inside the Project Location
1289 Safari Road	Yes	Farmstead		Residence: two storey structure, medium-pitched hip roof, symmetrical exterior, three-bay front façade, and central entrance. Barn: side gable roof.	Yes	CHR-2	Inside the Project Location
1172 Concession 8 West	Yes	Undetermined		Contextual: connection to other late 19th century properties in the surrounding rural area.	Yes	CHR-3	Inside the Project Location

Table 3: Potential Cultural Heritage Resources

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project Location
1437 Middletown Road	Yes	Farmstead		Residence: one and a half storey structure, medium-pitched cross gable roof, medium-pitched gable dormer, and L-shaped plan. Barn: timber frame structure, cross gable roof, and ventilators.	Yes	CHR-4	Outside the Project Location
1412 Middletown Road	No	Residence		Residence: one and a half storey structure, high-pitched cross gable roof, T-shaped plan, high-pitched gable dormers, and brick exterior.	Yes	CHR-5	Outside the Project Location
1006 Concession 8 West	No	Farmstead		None identified	No	N/A	Within the Project Location

Table 3: Potential Cultural Heritage Resources

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project Location
1035 Safari Road	Yes	Farmstead		Residence: one and a half storey structure, and medium-pitched side gable roof. Barn: timber frame structure, and side gable roof. Landscape: long laneway, mature spruce trees, and surrounding agricultural lands.	Yes	CHR-6	Within the Project Location
1470 Brock Road	No	Residence		Residence: one and a half storey structure, medium-pitch cross gable roof, medium-pitched gabled dormers (west and east elevations), 2/2 wood windows, and T-shaped plan.	Yes	CHR-7	Outside the Project Location
1512 Brock Road	No	Residence		None identified	No	N/A	Inside the Project Location

Table 3: Potential Cultural Heritage Resources

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project Location
1514 Brock Road	No	Residence		None identified	No	N/A	Outside the Project Location
964 Concession 8 West	No	Barn		None identified	No	N/A	Inside the Project Location

Table 3: Potential Cultural Heritage Resources

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project Location
812 Concession 8 West	No	Farmstead		Residence: one and a half storey structure, high-pitched cross gable roof, high-pitched gabled dormer, and covered partial wood porch. Barn: timber frame structure with side gable roof.	Yes	CHR-8	Inside the Project Location
919 Safari Road	Yes	Farmstead		Residence: two storey structure, medium-pitched side gable roof, bookend chimneys, symmetrical three-bay front (south) façade, central entrance with transom, stone lintel, and sidelights, stone lintels and sills. Barn: timber frame structure with side gable roof. Landscape: long straight laneway, mature spruce trees, and crop fields.	Yes	CHR-9	Inside the Project Location

Table 3: Potential Cultural Heritage Resources

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project Location
794 Concession 8 West	No	Barn		Barn: timber frame structure, gable roof, and stone foundation. Landscape: mature trees and wood picket fence.	Yes	CHR-10	Inside the Project Location
780 Concession 8 West	No	Commercial		None identified	No	N/A	Inside the Project Location

Table 3: Potential Cultural Heritage Resources

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project Location
750 Concession 8 West	Yes	Farmstead		Contextual: connection to other late 19th century properties in the surrounding rural area.	Yes	CHR-11	Inside the Project Location
716 Concession 8 West	No	Farmstead		Residence: One and a half storey structure, medium-pitched side gable roof, and three-bay front (west) façade with central entrance. Barn: timber frame bank barn structure with a side gable roof. Landscape: Stone piers, wood fencing, and gently rolling topography.	Yes	CHR-12	Inside the Project Location

Table 3: Potential Cultural Heritage Resources

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project Location
700 Concession 8 West	Yes	Farmstead		Residence: one and a half storey structure, steeply-pitched side gable roof, steeply-pitched gabled dormer, and covered partial porch. Barn: timber frame structure with a side gable roof.	Yes	CHR-13	Inside the Project Location
1490 Highway 6	Yes	Residence		Residence: one and a half storey structure, and high-pitched gambrel roof.	Yes	N/A	Outside the Project Location

Table 3: Potential Cultural Heritage Resources

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project Location
1213 Safari Road	Yes	Farmstead		Residence: one and a half storey structure, high-pitched side gable roof, brick chimneys, multiple gable peaks, covered wrap-around wood porch, brick voussoirs with keystones and label stops. Barn: timber frame structure, side gable roof, stone foundation, and wood frame windows.	Yes	CHR-14	Inside the Project Location
1414 Safari Road	Yes	Farmstead		Residence: one and a half storey structure and medium pitched front facing gable roof.	Yes	CHR-15	Outside the Project Location

Table 3: Potential Cultural Heritage Resources

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project Location
1286 Safari Road	Yes	Farmstead		Residence: One and a half storey structure, medium-pitched cross gable roof, brick chimneys, high-pitched gabled dormers with bargeboard (north and east elevations), stone lintels, three-bay front (east) façade with central entrance, recessed front entry with wood panels. Landscape: mature trees.	Yes	CHR-16	Inside the Project Location
1212 Safari Road	Yes	Residence		Residence: two storey structure, medium-pitched hip roof, red brick exterior, segmental arch window openings, brick voussoirs, and concrete windowsills. Landscape: mature spruce trees.	Yes	CHR-17	Inside the Project Location

Table 3: Potential Cultural Heritage Resources

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project Location
1166 Safari Road	Yes	Farmstead		Residence: One and a half storey structure, steeply-pitched side gable roof, and steeply-pitched gable dormer. Barn: timber frame structure and gable roof. Landscape: mature trees and gently rolling topography.	Yes	CHR-18	Inside the Project Location
1126 Safari Road	No	Undetermined		None identified	No	N/A	Inside the Project Location

Table 3: Potential Cultural Heritage Resources

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project Location
1032 Safari Road	Yes	Farmstead		Residence: two and a half storey structure, steeply-pitched hip roof, steeply-pitched gabled dormer with bargeboard, tall brick chimney, red brick exterior, brick voussoirs, and keystones. Barn: timber frame bank barn structure and gambrel roof.	Yes	CHR-19	Inside the Project Location
1054 Safari Road	No	Outbuildings		Barn(s): side gable roof.	Yes	CHR-20	Inside the Project Location

Table 3: Potential Cultural Heritage Resources

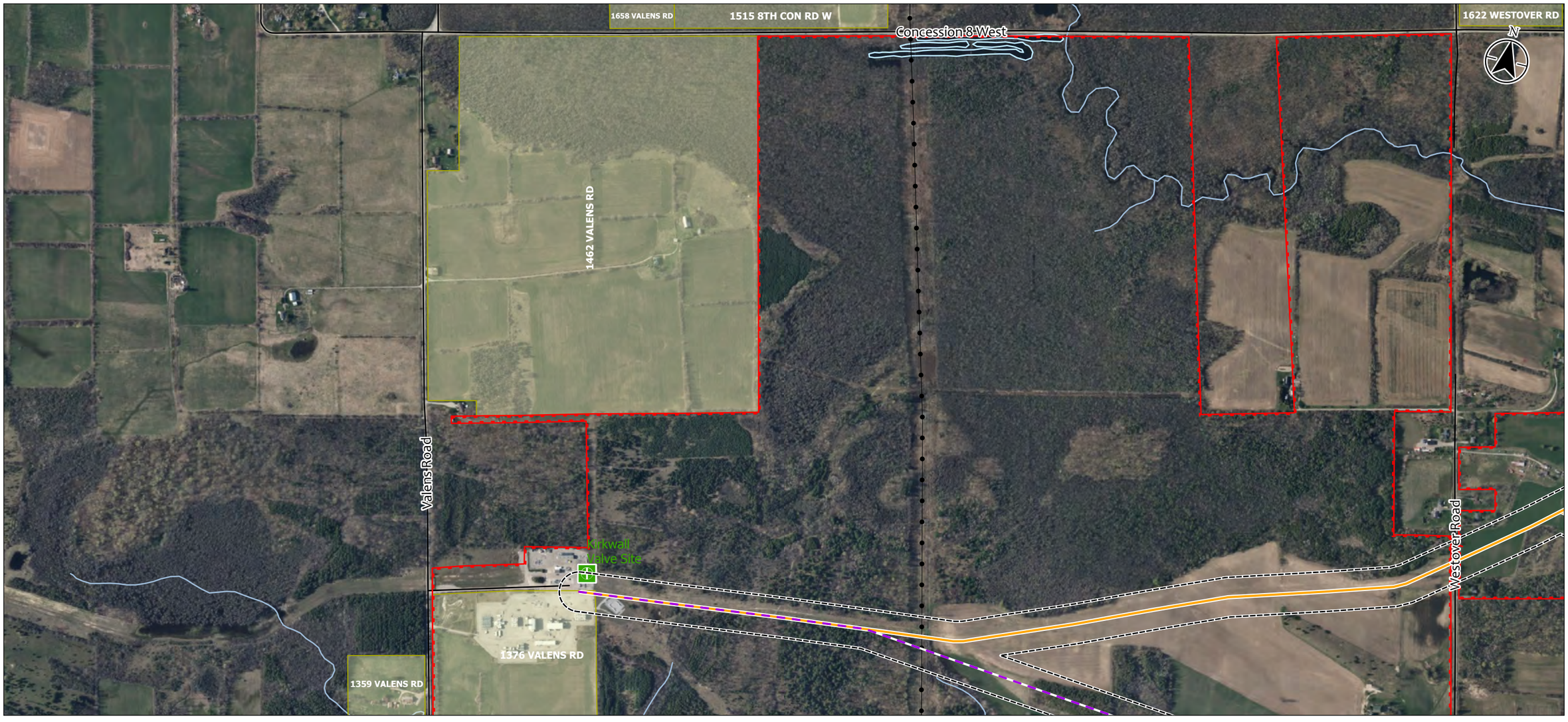
Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project Location
994 Safari Road	Yes	Residence and outbuildings		Undetermined (structures were not visible from the roadway, cultural heritage value or interest based on property's inclusion in 1991 LACAC Inventory)	Yes	CHR-21	Inside the Project Location
954 Safari Road	Yes	Barn		Barn: timber frame structure, cross gable roof, and lightning rods.	Yes	CHR-22	Inside the Project Location

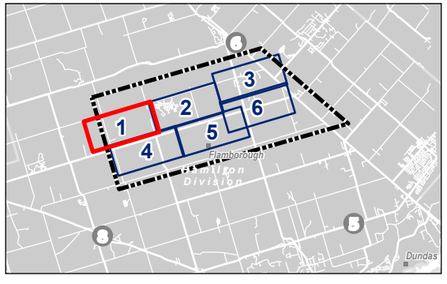
Table 3: Potential Cultural Heritage Resources

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project Location
902 Safari Road	Yes	Residence and outbuilding		Residence: one and a half storey structure, medium-pitched side gable roof, and covered partial porch. Landscape: mature trees.	Yes	CHR-23	Inside the Project Location
875 Safari Road	No	Farmstead		Residence: one and a half storey structure, medium-pitched side gable roof, brick chimney, and brick exterior. Mature spruce and deciduous trees.	Yes	CHR-24	Inside the Project Location

Table 3: Potential Cultural Heritage Resources

Municipal Address	Previous Heritage Recognition	Resource Type	Photograph	Identified Attributes	CHVI	CHR Number	Relationship to Project Location
1436 Brock Road	No	Residence		Residence: one and a half storey structure, medium-pitched cross gable roof, steeply-pitched gabled dormer, pointed arch window, segmental and semi-circular wood frame window openings, brick exterior, brick voussoirs, keystone, and covered partial porch. Landscape: mature trees and wood white picket fence.	Yes	CHR-25	Inside the Project Location
1157 Safari Road	No	Farmstead		Barn: timber frame structure, gable roof, smaller gable roof and shed roof outbuilding additions. Landscape: mature trees and rolling topography.	Yes	CHR-26	Inside the Project Location





Legend

- Study Area
- 50 m Buffer
- Inventoried Heritage Property - Not Designated
- Existing Enbridge Station
- Preliminary Preferred Route (A)
- Route Deviation A2
- Route Alternative (B)
- Road
- Hydro Line
- Waterbody
- Watercourse

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Notes

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Stantec

Project Location
City of Hamilton

160961299
Prepared by AMW on 2019-04-10
Technical Review by ABC on yyyy-mm-dd

Client/Project
Enbridge Gas Inc.
Kirkwall to Hamilton Pipeline

Figure No.
5.1

Title
Previously Identified Heritage Properties

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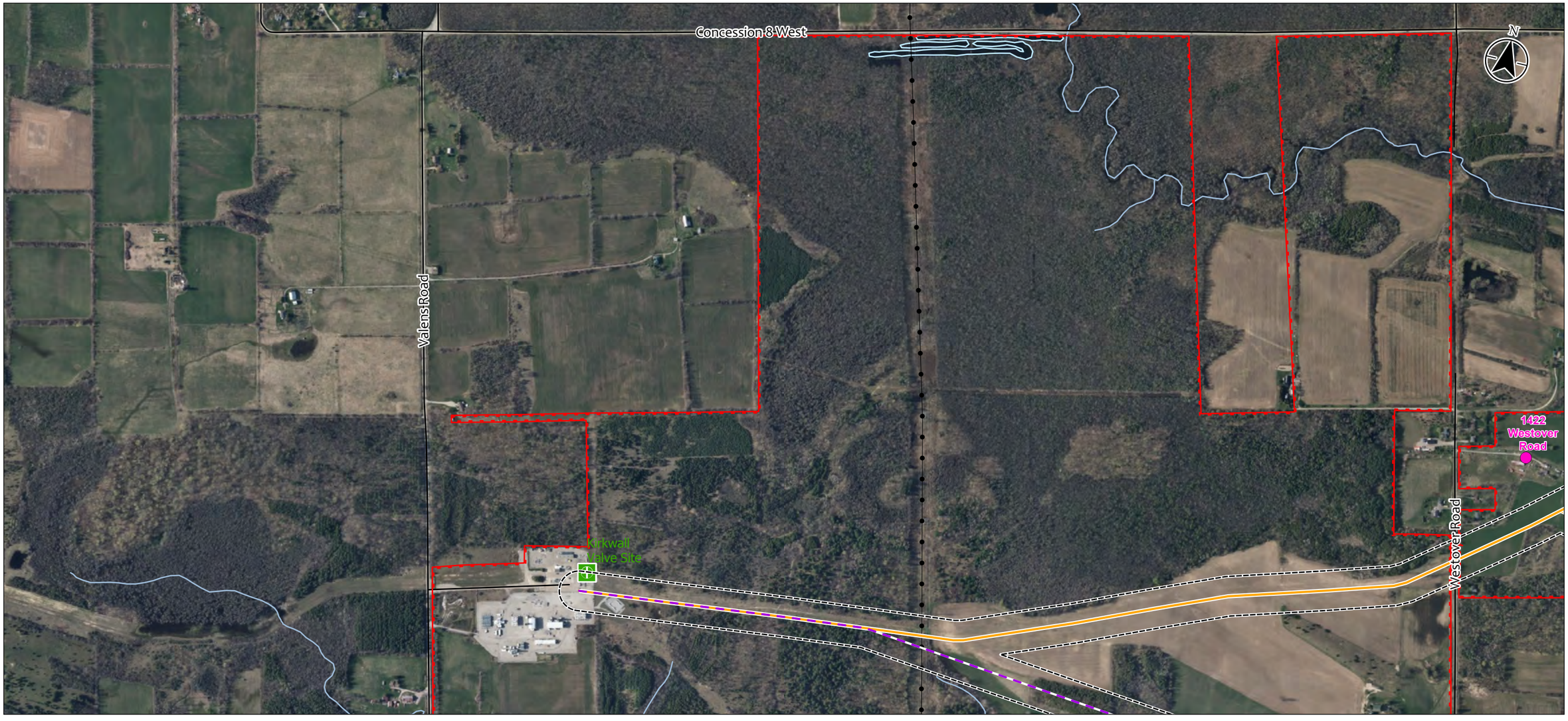

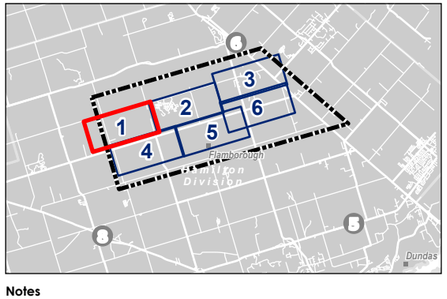

Legend

- Study Area
- 50 m Buffer
- Potential Heritage Resource
- Existing Enbridge Station
- Preliminary Preferred Route (A)
- Route Deviation A2
- Route Alternative (B)
- Road
- Hydro Line
- Waterbody
- Watercourse

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Stantec

Project Location
City of Hamilton

160961299
Prepared by AMW on 2019-04-08
Technical Review by ABC on yyyy-mm-dd

Client/Project
Enbridge Gas Inc.
Kirkwall to Hamilton Pipeline

Figure No.
6.1

Title
Potential Heritage Properties

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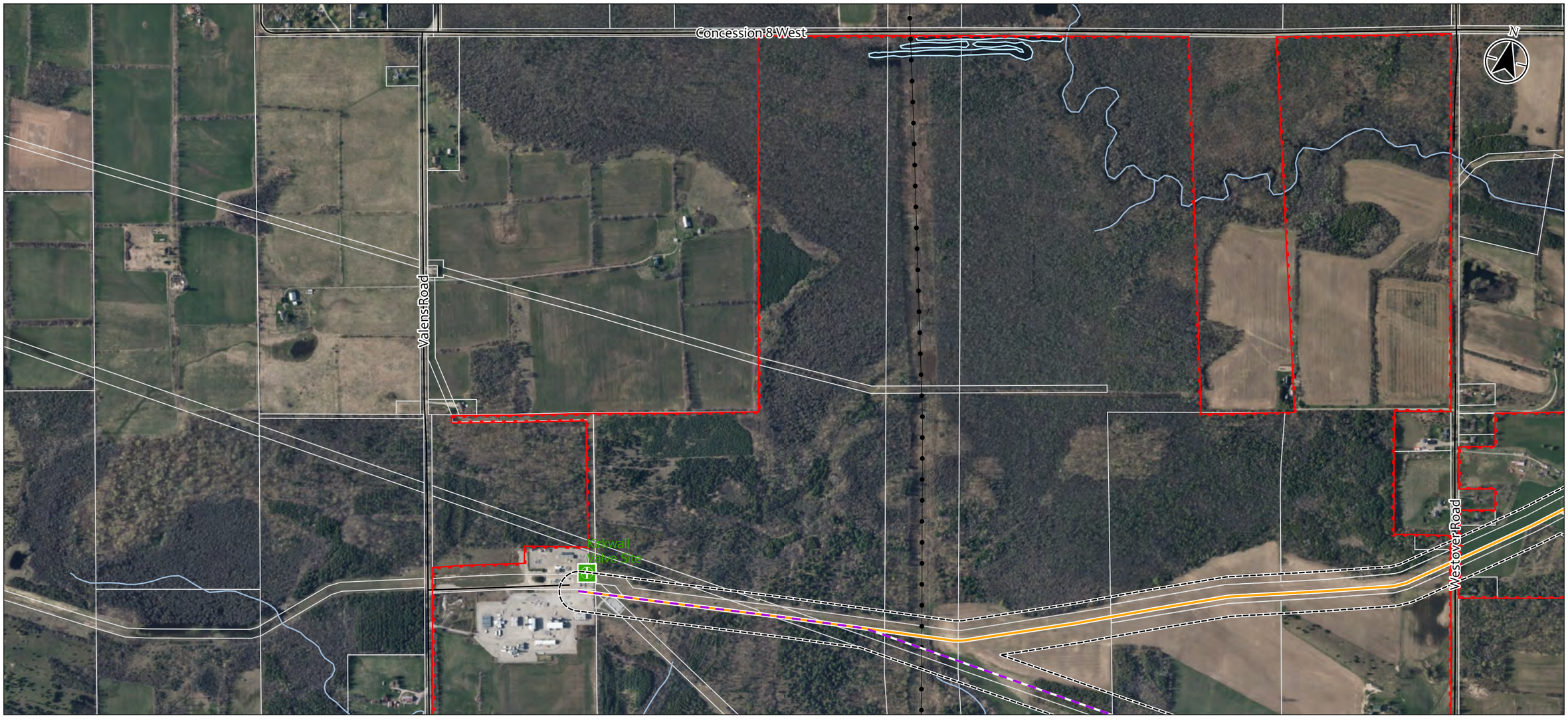

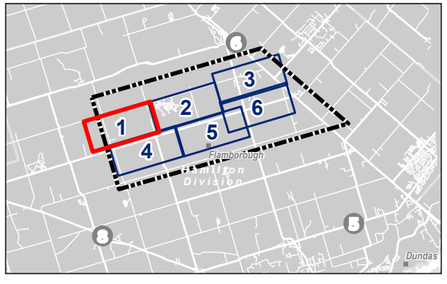

Legend

- Study Area
- 50 m Buffer
- Preliminary Preferred Route (A)
- Route Deviation A2
- Route Alternative (B)
- Existing Enbridge Station
- Road
- Hydro Line
- Property Boundary
- Waterbody
- Watercourse

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Stantec

Project Location
City of Hamilton

160961299
Prepared by AMW on 2019-04-10
Technical Review by ABC on yyyy-mm-dd

Client/Project
Enbridge Gas Inc.
Kirkwall to Hamilton Pipeline

Figure No.
7.1

Title
Identified Cultural Heritage Resources

\\Cd1220-f01\01492\active\160961299\03_drawings\gis_cad\arcgis\160961299 Kirkwall Hamilton Pipeline\160961299 Kirkwall Hamilton Pipeline.aprx Revised: 2019-04-10 By: AWhite

5.0 EVALUATION OF ANTICIPATED IMPACTS AND MITIGATION OPTIONS

5.1 DESCRIPTION OF UNDERTAKING

Route A has been selected as the preferred route for the Project. The final construction footprint and technique will be determined during detailed design. As described in Section 1.3, the pipeline construction process involves the following activities:

- Constructing the Proposed Pipeline
  - Site Preparation and clearing
  - Grading and Stripping
  - Stringing
  - Pipe Fabrication
  - Trenching and Lowering
  - Backfilling
  - Hydrostatic Testing
  - Clean-Up and Restoration

5.2 RELATIONSHIP TO PROJECT

Given the proposed undertaking, the evaluation of potential impacts was undertaken where an identified heritage attribute of a built heritage resource or cultural heritage landscape was positioned within the Study Area of Route A. No impacts are anticipated to identified heritage resources beyond the 50-metre buffer and so these are not considered further in the impact assessment presented below in Section 5.3. The positions of heritage resources are outlined in relation to the Project Location in Table 3 and on Figure 7.

5.3 ANTICIPATED IMPACTS

No removals of built heritage resources (e.g., residences or barns) or cultural heritage landscape elements (e.g., tree lined driveways or historic fence rows) are planned. This will need to be confirmed once final construction drawings are available for the project.

Where a heritage resource was determined to be situated within the Study Area of the preferred Route A, the impacts of the proposed Project on identified heritage attributes were evaluated. The impacts, both direct and indirect, were evaluated according to InfoSheet #5 (Government of Ontario 2006b). See Section 2.5 for further discussion of the impacts assessed.

Within Table 4, the following acronyms denote the assessment of impacts: NA = Not Anticipated, A = Anticipated Impact, P = Potential Impact.

Table 4: Evaluation of Potential Impacts

Address	Direct Impact		Indirect Impact					Discussion
	Destruction	Alteration	Shadows	Isolation	Obstruction	Change in Land Use	Land Disturbances	
1289 Safari Road (CHR-2)	NA	NA	NA	NA	NA	NA	NA	Route A is located north of the farmstead. Project components are proposed more than 50 metres south of the identified heritage attributes associated with the built structures. **Therefore, mitigation measures are not required.**
1172 Concession 8 West (CHR-3)	NA	NA	NA	NA	NA	NA	NA	Route A is located south of the structures and transverses the property. Project components are proposed more than 50 metres south of the identified heritage attributes associated with the built structures. **Therefore, mitigation measures are not required.**
1437 Middletown Road (CHR-4)	NA	NA	NA	NA	NA	NA	NA	Route A is located north of the farmstead. Project components are proposed more than 50 metres from the identified heritage attributes associated with the built structures. **Therefore, mitigation measures are not required.**
1412 Middletown Road (CHR-5)	NA	NA	NA	NA	NA	NA	NA	Route A is located north of the residence. Project components are proposed more than 50 metres from the identified heritage attributes associated with the residence. **Therefore, mitigation measures are not required.**
1035 Safari Road (CHR-6)	NA	NA	NA	NA	NA	NA	NA	Route A is located north of the farmstead. Project components are proposed more than

Table 4: Evaluation of Potential Impacts

Address	Direct Impact		Indirect Impact					Discussion
	Destruction	Alteration	Shadows	Isolation	Obstruction	Change in Land Use	Land Disturbances	
								50 metres from the identified heritage attributes associated with the farmstead. **Therefore, mitigation measures are not required.**
812 Concession 8 West (CHR-8)	NA	NA	NA	NA	NA	NA	NA	Route A is located south of the farmstead. Project components are proposed more than 50 metres from the identified heritage attributes associated with the farmstead. **Therefore, mitigation measures are not required.**
794 Concession 8 West (CHR-10)	NA	NA	NA	NA	NA	NA	NA	Route A is located south of the residence and barn. Project components are proposed more than 50 metres from the identified heritage attributes associated with the barn and the landscape. **Therefore, mitigation measures are not required.**
750 Concession 8 West (CHR-11)	NA	NA	NA	NA	NA	NA	P	Route A crosses mid-way through the property. There is one structure related to the farmstead that is situated within 50 metres of project components. All other structures related to the farmstead are situated south of Route A, more than 50 metres. The position of the structure within 50 metres of the Project Location has the potential for indirect impacts resulting from land disturbance during construction activities. **Therefore, mitigation measures must be prepared to mitigate potential indirect impacts**.

Table 4: Evaluation of Potential Impacts

Address	Direct Impact		Indirect Impact					Discussion
	Destruction	Alteration	Shadows	Isolation	Obstruction	Change in Land Use	Land Disturbances	
716 Concession 8 West (CHR-12)	NA	NA	NA	NA	NA	NA	NA	Route A crosses directly south of the farmstead structures through the equestrian yard. Project components are proposed more than 50 metres from the identified heritage attributes associated with the farmstead. **Therefore, mitigation measures are not required.**
700 Concession 8 West (CHR-13)	NA	NA	NA	NA	NA	NA	NA	Route A is located south of the farmstead. Project components are proposed more than 50 metres from the identified heritage attributes associated with the farmstead. **Therefore, mitigation measures are not required.**
1213 Safari Road (CHR-14)	NA	NA	NA	NA	NA	NA	NA	Route A is located north of the farmstead. Project components are proposed more than 50 metres from the identified heritage attributes associated with the farmstead. **Therefore, mitigation measures are not required.**
1157 Safari Road (CHR-26)	NA	NA	NA	NA	NA	NA	NA	Route A is located north of the farmstead. Project components are proposed more than 50 metres from the identified heritage attributes associated with the barn. **Therefore, mitigation measures are not required.**

5.3.1 Summary of Impacts

Following the assessment of impacts presented in Table 4, one property was determined to be situated within 50 metres of planned construction activities and is at risk for indirect, vibration-related impacts:

- 750 Concession 8 West (CHR-11)

5.4 MITIGATION OPTIONS

Where potential impacts are identified, either direct or indirect, measures to mitigate them have been prepared. The impetus for avoidance of impacts comes from two sources, the *OEB Environmental Guidelines* and the PPS (see Section 2.1). The former requires that cultural heritage resources be protected by "appropriate conservation, avoidance and mitigation," while the latter requires conservation of "significant" heritage resources as well as the "heritage attributes of the protected heritage property" (see Section 2.1 for full excerpts of requirements). When combined, precautions are required to conserve heritage resources through avoidance and mitigation where the potential for a Project to impact heritage resources has been identified. Therefore, the below mitigation options have been developed to provide for the conservation of heritage attributes of the heritage resources. These are based on mitigation or avoidance measures developed by the MTCS and contained within InfoSheet #5 (Government of Ontario 2006b). See Section 2.6 for further discussion of the mitigation methods assessed.

The proposed undertaking involves installation of a pipeline within municipal RoWs, Enbridge Gas property, and private property. As the land will be returned to its current state as much as possible, the anticipated impacts are related to the construction phase of the Project. Where potential impacts have been identified for CHR-11, components of the heritage resources are positioned within the 50-metre buffer but outside the direct Project Location. As a result, a preventive approach to mitigation measures will contribute to a reduction in risk of indirect impacts. contains a summary of the evaluation of mitigation options.

Table 5: Evaluation of Mitigation and Avoidance Options

Methods	Discussion
Alternative Development	The current approach involves minimal land disturbance. Therefore, alternative developments are not required.
Isolation of Development	Isolation of Project construction activities from the CHRs will prevent unanticipated direct and indirect impacts.
Harmonization of Design Guidelines	The Project will not introduce any above ground features and will return the landscape to current conditions. Therefore, no additional design guidelines are required.
Limitation of Construction	The Project will not introduce any above ground features and will return the landscape to current conditions. Therefore, no limitations on height or density of construction are required.
Compatible Additions	The Project will not introduce any above ground features and will return the landscape to current conditions. Therefore, compatible additions are not required.
Reversible Alterations	The Project is not anticipated to introduce any above ground features. It is anticipated that any alterations to the identified laneway and crop fields will be returned to its current conditions.
Planning Mechanisms	Various planning mechanisms have been introduced to the Project to evaluate impacts of the Project on multiple aspects of the surrounding environment. As these mechanisms pertain to heritage resources, the use of a 50-metre buffer surrounding the Project Location is the most significant planning mechanism. The use of buffer zones on construction maps to indicate where a heritage resource is positioned within the Project Location will indicate to construction crews the need for complete avoidance of construction activities in the vicinity of the resource. The depiction of buffer zones on construction mapping should be used only where a heritage resource has been identified



Methods	Discussion
	within the 50-metre zone. Where this occurs, physical markers will be used during Project activities to demarcate the appropriate buffer zone.

6.0 RECOMMENDATIONS

6.1 AVOIDANCE OF CULTURAL HERITAGE RESOURCES

Staging areas and construction activities associated with preferred Route A should be planned and undertaken in a manner to avoid the heritage attributes of the identified CHRs. Should future work require an expansion of the current Study Area for Route A and/or the development of other alternatives, then a qualified heritage consultant should be consulted.

6.2 SITE PLAN CONTROLS

A total of 13 cultural heritage resources was determined to be situated within the Study Area of the preferred Route A. In order to prevent negative indirect Project Impacts, these heritage resources should be isolated from construction-related activities. It is recommended that site plan controls be put in place prior to construction to prevent potential impacts as a result of the Project. These controls should be indicated on all construction mapping and communicated to the construction team leads.

As described in Section 5.4, site plan controls should include mapping heritage resources within 50 metres of Project activities on construction maps and physically demarcating these properties to communicate the presence of these properties to construction crews. Physical protective measures should include at a minimum the installation of temporary fencing around CHRs. Depending on the proximity or Project activities, additional measures may be required such as stabilization of built heritage attributes in close proximity to construction work.

6.2.1 Condition Surveys and Vibration Monitoring

One cultural heritage resource, 750 Concession 8 West (CHR-11), is located within 50 metres of Project activities. This resource is at risk for indirect impacts resulting from construction-related ground vibration. It is recommended that Enbridge consult with a qualified building conditions specialist or geotechnical engineer with previous experience working with heritage structures to identify appropriate vibration mitigation measures in advance of construction. Mitigation measures for vibration may include developing an appropriate vibration setback distance, a vibration attenuation study, and/or a construction monitoring program.

6.3 ENVIRONMENTAL MONITORING AND REPORTING

Enbridge Gas' on-site inspection team should monitor the construction phase of this project so that construction activities do not occur within 50 metres of built heritage attributes of CHRs and that no cultural heritage landscape elements are impacted during construction. Monitoring for impacts should also be carried out by Enbridge Gas during post-construction rehabilitation. It is anticipated that, as a condition of Project approval, the Ontario Energy Board will require post-construction monitoring reports; such reports will document the implementation and effectiveness of environmental mitigation and protective measures, including the installation and maintenance of site plan controls.



6.4 DEPOSIT COPIES

To assist in the retention of historic information, copies of this report should be deposited with local repositories of historic material and municipalities. Therefore, it is recommended that this report be deposited at the following locations:

Hamilton Public Library – Central Library
55 York Boulevard
Hamilton, ON
L8N 4E4

Hamilton Municipal Heritage Committee
71 Main Street West
Hamilton, ON
L8P 4Y5

7.0 CLOSURE

This report has been prepared for the sole benefit of Enbridge Gas, and may not be used by any third party without the express written consent of Stantec Consulting Ltd. Any use which a third party makes of this report is the responsibility of such third party.

We trust this report meets your current requirements. Please do not hesitate to contact us should you require further information or have additional questions about any facet of this report.

Yours truly,

STANTEC CONSULTING LTD.

Jeffrey Muir, BA, CAHP
Project Archaeologist
Phone: 905-381-3209
Jeff.Muir@stantec.com

Tracie Carmichael, BA, B.Ed.
Managing Principal, Environmental Services
Phone: 519-675-6603
Tracie.Carmichael@stantec.com

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APPENDIX A
Cultural Heritage Resource Inventory

Municipal Address: 1422 Westover Road

Former Township: Township of Beverly

Lot, Concession: 31, 7

Municipality: City of Hamilton

Resource Type: Farmstead

Associated Dates: 1950-1975

Relationship to Project: Within the Project Location



Description: This property contains a farmstead with outbuildings and a residence. The farmstead is set back from the roadway off a long laneway.

Views of the residence are obscured by distance from the public roadway. The residence is a one storey structure with a medium-pitched side gable roof.

The main outbuilding is a gable roof structure with metal cladding. Its windows and entrance are boarded with plywood on the west and north elevations. Immediately to the south of this building is a small shed roof outbuilding clad with metal. The property contains split rail fencing, post and wire fencing, and metal fencing. The landscape includes deciduous trees, shrubs, and a rolling topography.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None Identified.

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 1399 Safari Road

Former Township: Township of Beverly

Lot, Concession: 30, 7

Municipality: City of Hamilton

Resource Type: Farmstead

Associated Dates: Prior to 1875

Relationship to Project: Within the Project Location



Description: This property contains a farmstead with a residence and outbuildings. The farmstead is set far back from the roadway by way of a long tree allée laneway. Near the roadway the laneway is lined with a stone wall.

The residence is a one and a half storey structure with a high-pitched side gable roof with asphalt shingles. The front (south) façade has a central high-pitched gable dormer. The residence has a red brick exterior with buff brick details seen in voussoirs and quoins. The three-bay front façade has a covered full width wooden porch. The central entrance has a transom window. The residence has a rear gable roof addition. The foundation of the residence is not visible from the roadway.

The property contains a gable roof barn clad in metal with a stone foundation. The property is landscaped with mature Norway spruce trees, mature deciduous trees, and shrubs. The property has a gently rolling topography and a pond.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,	✓	
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,	✓	
ii. Is physically, functionally, visually or historically linked to its surroundings, or	✓	
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: The construction of this farmstead dates prior to 1875, determined through historical mapping. The residence has design value as an Ontario vernacular structure with Gothic Revival design influences expressed through its one and a half storey massing and central gable dormer. The barn is a representative late 19th century Ontario vernacular barn. This property supports the late 19th century rural character of the area and is physically and historically linked to its surroundings.

Identified Heritage Attributes: Residence: one and a half storey structure, high-pitched side gable roof, high-pitched gable dormer, red brick exterior, buff brick detailing seen in quoins, and voussoirs, front entry transom, and covered full-width porch. Barn: gable roof, vertical wood cladding, and stone foundation. Landscape: tree allée laneway, mature Norway Spruce, and stone wall.

Identification of CHVI: Yes	**Cultural Heritage Resource Number:** CHR-1
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 1441 Safari Road

Former Township: Township of Beverly

Lot, Concession: 29, 7

Municipality: City of Hamilton

Resource Type: Residence

Associated Dates: 1955-1975

Relationship to Project: Within the Project Location

Description: This property contains a residence.



The residence is a one storey structure with a medium pitched hip roof that is clad in metal. The exterior of the residence is clad in buff brick and stone. The residence has a modern bay window and modern casement windows on the front (south) façade. The main entrance has a modern door with modern sidelights. The residence has an attached single-car garage and a concrete foundation. The property is landscaped with intermediate deciduous trees, intermediate spruce trees, small spruce trees, shrubs, and foundation plantings.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified.

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 1289 Safari Road

Former Township: Township of Beverly

Lot, Concession: 32, 7

Municipality: City of Hamilton

Resource Type: Farmstead

Associated Dates: 1875-1900

Relationship to Project: Within the Project Location

Description: The property contains a farmstead set far back from the roadway by way of a long laneway. The residence is set within the slope of the property and is surrounded by trees. The view of the residence and outbuildings is obstructed by set-back and vegetation.

The residence is a two-storey structure with a medium-pitched hip roof. The structure has a rectangular plan. The symmetrical three-bay front façade (south) has a central entrance. The property also contains a gable roof barn.

The property is listed on the 1991 Local Architectural Conservation Authority Committee's (LACAC) inventory for the City of Hamilton.





Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,	✓	
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,	✓	
ii. Is physically, functionally, visually or historically linked to its surroundings, or	✓	
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: The construction of this farmstead dates to 1875 to 1900, determined through historical mapping and the LACAC Inventory. The residence has design value as an Ontario vernacular structure with Georgian style design influences expressed through its symmetrical three-bay front façade with central entrance. This property supports the late 19th century rural character of the area and is physically and historically linked to its surroundings.

Identified Heritage Attributes: Residence: two storey structure, medium-pitched hip roof, symmetrical exterior, three-bay front façade, and central entrance. Barn: side gable roof.

Identification of CHVI: Yes	**Cultural Heritage Resource Number:** CHR-2
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 1172 Concession 8 West

Former Township: Township of Beverly

Lot, Concession: 35, 7

Municipality: City of Hamilton

Resource Type: Undetermined

Associated Dates: Prior to 1875

Relationship to Project: Within the Project Location

Description: This property contains structures set far back from the roadway by way of a long straight tree lined laneway. The view of the structures is not visible from the roadway.

The property is listed on the 1991 LACAC inventory for the City of Hamilton.



A residence is depicted on the property on the 1875 Township of Beverly map in *Illustrated Historical Atlas of the County of Wentworth* (Figure 4). The residence on the historic map is situated in relation to the current structure on the property. The map depicts the property owner as George Cook Sr.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,	✓	
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,	✓	
ii. Is physically, functionally, visually or historically linked to its surroundings, or	✓	
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: The construction of the structures on the property date prior to 1875, determined through historical mapping and the LACAC Inventory. This property supports the late 19th century rural character of the area and is physically and historically linked to its surroundings.

Identified Heritage Attributes: Contextual: connection to other late 19th century properties in the surrounding rural area.

Identification of CHVI: Yes	**Cultural Heritage Resource Number:** CHR-3
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 1437 Middletown Road

Former Township: Township of Beverly

Lot, Concession: 36, 7

Municipality: City of Hamilton

Resource Type: Farmstead

Associated Dates: Residence: Prior to 1875, Barn: 1880-1930

Relationship to Project: Within the Study Area



Description: This property contains a farmstead named "Hunter Hills Stables" with a residence and barn. Hunter Hills stables provides services for the horse racing industry.

The residence is a one and a half storey structure with a medium-pitched cross gable roof that has asphalt shingles. The residence has an L-shaped plan. The south elevation has a medium-pitched gable dormer. The exterior is clad in modern board and batten siding and has modern windows. The residence has a modern door set with an enclosed partial porch. The entry has a portico with a gable roof. The foundation of the residence is not visible.

The timber frame barn has a cross gable roof with ventilators. The barn has concrete foundation with horizontal sliding windows. The property is landscaped with mature deciduous trees, mature spruce trees, metal fencing, and areas for equestrian use bounded by wooden fencing.

The property is listed on the 1991 LACAC inventory for the City of Hamilton. A structure is depicted on the property on the 1875 Township of Beverly map in the *Illustrated Historical Atlas of Wentworth* (Figure 4). The owner depicted on the property is William Johnson (Johnstone).

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,	✓	
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,	✓	
ii. Is physically, functionally, visually or historically linked to its surroundings, or	✓	
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: The construction of this residence dates between prior to 1875, determined through historical mapping. The residence is representative of a late 19th century Ontario vernacular structure. This property supports the late 19th century rural character of the area and is physically and historically linked to its surroundings.

Identified Heritage Attributes: Residence: one and a half storey structure, medium-pitched cross gable roof, medium-pitched gable dormer, and L-shaped plan. Barn: timber frame structure, cross gable roof, and ventilators.

Identification of CHVI: Yes	**Cultural Heritage Resource Number:** CHR-4
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 1412 Middletown Road

Former Township: Township of West Flamborough

Lot, Concession: 1, 7

Municipality: City of Hamilton

Resource Type: Residence

Associated Dates: Prior to 1875

Relationship to Project: Within the Study Area

Description: This property contains a residence and outbuildings. The residence is setback far back from the roadway by way of a long laneway. The residence is set on the slope of the property and is surrounded by trees. The view of the residence is obscured by set back and vegetation.

The residence is a one and a half storey structure with a high-pitched cross gable roof with asphalt shingles and brick chimney. The front (south) and west elevation of the roofline has high-pitched gabled dormers. The residence has a red brick exterior, a T-shaped plan, and a covered partial porch on its west elevation. The foundation was not visible from the roadway.

The property has a gently rolling topography and mature trees.

The property is listed on the 1991 LACAC inventory for the City of Hamilton.





Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,	✓	
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,	✓	
ii. Is physically, functionally, visually or historically linked to its surroundings, or	✓	
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: The construction of this residence dates prior to 1875, determined through historical mapping. The residence is representative of a late 19th century Ontario vernacular residence with Gothic Revival design influences seen in its one and a half storey massing and gabled dormers. This property supports the late 19th century rural character of the area and is physically and historically linked to its surroundings.

Identified Heritage Attributes: Residence: one and a half storey structure, high-pitched cross gable roof, T-shaped plan, high-pitched gable dormers, and brick exterior.

Identification of CHVI: Yes	**Cultural Heritage Resource Number:** CHR-5
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 1006 Concession 8 West

Former Township: Township of West Flamborough

Lot, Concession: 3, 7

Municipality: City of Hamilton

Resource Type: Farmstead

Associated Dates: *circa* 1950-1964

Relationship to Project: Within the Project Location



Description: This property contains a farmstead with residence and outbuildings. The residence fronts the roadway, while the outbuildings are located to the rear. The farm is known as Dutchman's Gold Inc. and sells honey and maple syrup.

The residence is a one storey structure with a medium-pitched cross gable roof with a brick chimney. The roof cladding was obscured by snow cover. The exterior of the residence is clad in modern siding and has 1/1 and horizontal sliding windows. The residence has a concrete foundation.

The property contains multiple modern outbuildings associated with farm operations. The property is landscaped with mature spruce trees, mature and intermediate deciduous trees, and foundation plantings.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None Identified.

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 1035 Safari Road

Former Township: Township of West Flamborough

Lot, Concession: 2, 7

Municipality: City of Hamilton

Resource Type: Farmstead

Associated Dates: Prior to 1875

Relationship to Project: Within the Project Location



Description: The property contains a farmstead and a modern residence. The farmstead is set far back from the roadway and is accessed by way of a long laneway. The farmstead is set on the slope of the property.

The residence is a one and a half storey structure with a medium-pitched side gable roof that is clad in metal and has a metal chimney. The three-bay front (south) façade has been altered with the addition of modern windows. The structure is clad in modern siding. The foundation is not visible from the roadway.

The property contains a timber frame barn with a side gable roof that is clad in metal. The foundation of the barn is not visible from the roadway. Adjacent to the barn are metal silos and an outbuilding. The outbuilding has a side gable roof that is clad in metal. Its exterior is clad in metal and has a concrete block foundation. Adjacent to the residence is a detached single-car garage. Adjacent to the modern residence is a few small outbuildings, including one side gable roof structure with a vertical wood exterior. The property has mature spruce trees, cedar trees, and agricultural fields.

The property is listed on the 1991 LACAC inventory for the City of Hamilton. A structure is depicted on the property on the 1875 Township of West Flamborough Map, in the *Illustrated Historical Atlas of the County of Wentworth* (Figure 4). The map lists the property owner as James Porter.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,	✓	
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,	✓	
ii. Is physically, functionally, visually or historically linked to its surroundings, or	✓	
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: The construction of this residence dates prior to 1875, determined through historical mapping. The residence is representative of a mid to late 19th century Ontario vernacular residence with Ontario Cottage design influences seen in its one and a half storey

massing, with former three-bay front façade. This property supports the late 19th century rural character of the area and is physically and historically linked to its surroundings.

Identified Heritage Attributes: Residence: one and a half storey structure, and medium-pitched side gable roof. Barn: timber frame structure, and side gable roof. Landscape: long laneway, mature spruce trees, and surrounding agricultural lands.

Identification of CHVI: Yes	**Cultural Heritage Resource Number:** CHR-6
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 1470 Brock Road

Former Township: Township of West Flamborough

Lot, Concession: 7, 7

Municipality: City of Hamilton

Resource Type: Residence

Associated Dates: Prior to 1875

Relationship to Project: Within the Study Area



Description: This property contains a residence.

The residence is a one and a half storey structure with a medium-pitched cross gable roof with asphalt shingles, and a metal chimney. The front (west) and south elevations of the roofline have medium-pitched gabled dormers. The exterior of the residence is clad in modern siding and has 2/2 wood windows with wood window surrounds. The residence has a balcony and enclosed porch with modern windows. The residence has a T-shaped plan, and the foundation is not visible from the roadway.

The property is landscaped with mature deciduous trees, shrubs, and blue spruce trees

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,	✓	
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,	✓	
ii. Is physically, functionally, visually or historically linked to its surroundings, or	✓	
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: The construction of this residence dates to prior to 1875, determined through historical mapping. The residence is representative of a late 19th century Ontario vernacular residence. This property supports the late 19th century rural character of the area and is physically and historically linked to its surroundings.

Identified Heritage Attributes: Residence: one and a half storey structure, medium-pitch cross gable roof, medium-pitched gabled dormers (west and east elevations), 2/2 wood windows, and T-shaped plan.

Identification of CHVI: Yes	**Cultural Heritage Resource Number:** CHR-7
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 1512 Brock Road

Former Township: Township of West Flamborough

Lot, Concession: 7, 7

Municipality: City of Hamilton

Resource Type: Residence

Associated Dates: 1950-1964

Relationship to Project: Within the Project Location



Description: This property contains a residence and outbuilding.

The residence is a one storey structure with a medium-pitched hip roof with a brick chimney, metal chimney, and asphalt shingles. The exterior of the residence is clad in modern siding and has a modern windows and doors. The residence has a concrete foundation. The outbuilding is a detached two-car garage with a gable roof and modern siding.

The property is landscaped with mature Norway spruce trees, mature cedar trees, shrubs, and deciduous trees, including a birch tree.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None Identified.

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 1514 Brock Road

Former Township: Township of West Flamborough

Lot, Concession: 7, 7

Municipality: City of Hamilton

Resource Type: Residence

Associated Dates: 1950-1964

Relationship to Project: Within the Study Area

Description: This property contains a residence.



The residence is a one storey structure with a medium-pitched side gable roof with a brick chimney. The roof cladding was obscured by snow cover. The exterior of the residence is clad in modern siding and has a modern picture window, modern horizontal sliding windows, and modern 1/1 windows. The residence has modern entrance doors and a partial wood porch. The foundation of the residence is concrete.

The property is landscaped with mature spruce trees and mature deciduous trees.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None Identified.

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 964 Concession 8 West

Former Township: Township of West Flamborough

Lot, Concession: 4, 7

Municipality: City of Hamilton

Resource Type: Barn

Associated Dates: 1938-1975

Relationship to Project: Within the Project Location

Description: This property contains a barn.

The barn has a gambrel roof that is clad in metal. The exterior of the bar is clad in vertical wood and has wood entrance doors. The foundation of the barn is concrete block. The barn is partially surrounded by a split rail fence. The property is landscaped with mature deciduous trees.



Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified.

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 812 Concession 8 West

Former Township: Township of West Flamborough

Lot, Concession: 8, 7

Municipality: City of Hamilton

Resource Type: Farmstead

Associated Dates: Prior to 1875

Relationship to Project: Within the Project Location



Description: The property contains a farmstead, with a residence, barn, and outbuildings. The structures are not visible from the public roadway, as they are set back off a long laneway. The view is obscured by set back and vegetation.

The farmstead is operated as Cedarbrook Farm Bed & Breakfast. A description of the farmstead was taken from the photographs on the Bed & Breakfast website (BedBreakfast Home 2011). The residence is a one and a half storey structure with a high-pitched cross gable roof. The front (north) elevation has a high-pitched gabled dormer with a central placed pointed arch window. The front façade has a covered partial wood porch.

The property contains a timber frame barn with a side gable roof that is clad in metal. The property also contains a coach house, and drive shed. The property is landscaped with mature cedar trees and deciduous trees. The property contains a tree lined laneway with a post and wire fence on the south side.

Structures are depicted on the property on the 1875 Township of West Flamborough map in the *Illustrated Historical Atlas of the County of Wentworth* (Figure 4). The structure south of creek is situated in relation to the current residence on the property. The owner depicted on the 1875 map is Angus Fraser.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,	✓	
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,	✓	
ii. Is physically, functionally, visually or historically linked to its surroundings, or	✓	
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: The construction of this residence dates to prior to 1875, determined through historical mapping. The residence is representative of a late 19th century Ontario vernacular residence. This property supports the late 19th century rural character of the area and is physically and historically linked to its surroundings.

Identified Heritage Attributes: Residence: one and a half storey structure, high-pitched cross gable roof, high-pitched gabled dormer, and covered partial wood porch. Barn: timber frame structure with side gable roof.

Identification of CHVI: Yes	**Cultural Heritage Resource Number:** CHR-8
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 919 Safari Road

Former Township: Township of Beverly

Lot, Concession: 5, 7

Municipality: City of Hamilton

Resource Type: Farmstead

Associated Dates: Prior to 1875

Relationship to Project: Within the Project Location



Description: This property contains a farmstead, with a residence, barn, silo, and outbuildings. The structures are set back from the roadway off a long straight laneway. They are set on the slope of the property.

The residence is a two storey structure with a medium-pitched side gable roof that is clad in metal and has bookend chimneys. The structure has a symmetrical three-bay front (south) façade with a central entrance. The entrance has a transom, stone lintel, and sidelights. The residence has modern windows with stone sills and lintels. The foundation is not visible from the roadway.

The barn is a timber frame structure with a side gable roof that is clad in metal. The structure has a concrete foundation. Northeast of the barn is a cast-in-place concrete silo and stone ruins of a former barn. The structures are surrounded by crop fields. Adjacent to the residence are mature spruce trees.

The property is listed on the 1991 LACAC inventory for the City of Hamilton.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,	✓	
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,	✓	
ii. Is physically, functionally, visually or historically linked to its surroundings, or	✓	
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: The construction of this residence dates to prior to 1875, determined through historical mapping. The residence is representative of a late 19th century Ontario vernacular residence with Georgian Revival design influences seen in its two storey structure, and symmetrical three-bay front (south) façade. This property supports the late 19th century rural character of the area and is physically and historically linked to its surroundings.

Identified Heritage Attributes: Residence: two storey structure, medium-pitched side gable roof, bookend chimneys, symmetrical three-bay front (south) façade, central entrance with transom, stone

lintel, and sidelights, stone lintels and sills. Barn: timber frame structure with side gable roof. Landscape: long straight laneway, mature spruce trees, and crop fields.

Identification of CHVI: Yes	**Cultural Heritage Resource Number:** CHR-9
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 794 Concession 8 West

Former Township: Township of West Flamborough

Lot, Concession: 8, 7

Municipality: City of Hamilton

Resource Type: Residence

Associated Dates: Residence: 1900-1930; Barn: Prior to 1875

Relationship to Project: Within the Project Location

Description: This property contains a farmstead named "Field Mouse Farm".





The residence is a one storey structure with a medium-pitched side gable roof. The roof cladding was obscured by snow cover. The residence has modern siding, modern 1/1 windows with shutters, and a modern entrance door. The residence has a modern addition on the north façade with board and batten siding. The foundation of the residence is poured concrete.

The driveshed is a one storey structure with a side gable roof. The roof cladding of this outbuilding was obscured by snow cover. The exterior of this outbuilding is vertical wood siding.

The bank barn is a timber frame structure with a side gable roof that is clad with metal and has ventilators and a brick chimney. The exterior of the barn has modern windows. The barn has a stone foundation. The barn has been converted into a residential or commercial space. The property contains mature deciduous and coniferous trees, and a wood picket fence.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,	✓	
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,	✓	
ii. Is physically, functionally, visually or historically linked to its surroundings, or	✓	
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: The construction of this barn dates to the late 19th century, determined through historical mapping and construction materials. The barn is

representative of a later 19th century Ontario vernacular barn. This property supports the late 19th century rural character of the area and is physically and historically linked to its surroundings.

Identified Heritage Attributes: Barn: timber frame structure, gable roof, and stone foundation. Landscape: mature trees and wood picket fence.

Identification of CHVI: No	**Cultural Heritage Resource Number:** CHR-10
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 780 Concession 8 West

Former Township: Township of West Flamborough

Lot, Concession: 9, 7

Municipality: City of Hamilton

Resource Type: Commercial

Associated Dates: Outbuilding 1938-1964

Relationship to Project: Within the Project Location



Description: Views of this potential resource are obscured by vegetation and setback from publicly accessibly roadway. The property has a metal fence and gate with an automated access panel. The gate has a sign for “Green Relief”, a cannabis manufacturing company.

The property contains an outbuilding that dates between 1938 and 1964 determined through topographic mapping. The outbuilding is not visible from the roadway. The remaining structures on the property are modern.

The property is landscaped with mature and intermediate deciduous and coniferous trees and a rolling topography.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None Identified.

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 750 Concession 8 West

Former Township: Township of West Flamborough

Lot, Concession: 9, 7

Municipality: City of Hamilton

Resource Type: Farmstead

Associated Dates: Prior to 1875

Relationship to Project: Within the Project Location



Description: The property contains a farmstead that is set far back from the roadway. Structures on the property are accessed by way of a long winding driveway. No structures are visible from the roadway.

A structure is depicted on the property on the 1875 Township of West Flamborough map in the *Illustrated Historical Atlas of Wentworth* (Figure 4). It is shown in relation to the current structure on the property. Structures are also depicted in relation to the residence in early 20th century topographic mapping.

The property is listed on the 1991 LACAC inventory for the City of Hamilton.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,	✓	
ii. Is physically, functionally, visually or historically linked to its surroundings, or	✓	
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: The construction of this farmstead dates to prior to 1875, determined through historic mapping. This property supports the late 19th century rural character of the area and is physically and historically linked to its surroundings.

Identified Heritage Attributes: Contextual: connection to other late 19th century properties in the surrounding rural area.

Identification of CHVI: Yes	**Cultural Heritage Resource Number:** CHR-11
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 716 Concession 8 West

Former Township: Township of West Flamborough

Lot, Concession: 10, 7

Municipality: City of Hamilton

Resource Type: Farmstead

Associated Dates: Prior to 1875

Relationship to Project: Within the Project Location



Description: The property contains a farmstead. The property contains a barn, outbuildings, and a residence. The structures associated with the farmstead are set far back from the roadway off a long driveway. Views of the structures are obstructed by set back and vegetation.

The residence is a one and a half storey structure with a medium-pitched side gable roof. The structure has a three-bay front (west) façade with a central entrance. The residence has multiple rear additions.

The bank barn is a timber frame structure with a side gable roof that is clad in metal. The property has additional outbuildings related to equestrian facilities. Additional details about these outbuildings are obscured by distance from roadway and vegetation. The property contains split rail fencing, small, intermediate, and mature deciduous and coniferous trees, and a gently rolling topography. The driveway entry has stone piers.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,	✓	
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,	✓	
ii. Is physically, functionally, visually or historically linked to its surroundings, or	✓	
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: The construction of this farmstead dates prior to 1875, determined through historic mapping. The residence and barn are representative of late 19th century Ontario vernacular structures. This property supports the late 19th century rural character of the area and is physically and historically linked to its surroundings.

Identified Heritage Attributes: Residence: one and a half storey structure, medium-pitched side gable roof, and three-bay front (west) façade with central entrance. Barn: timber frame bank barn structure with a side gable roof. Landscape: Stone piers, wood fencing, and gently rolling topography.

Identification of CHVI: Yes	**Cultural Heritage Resource Number:** CHR-12
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 700 Concession 8 West

Former Township: Township of West Flamborough

Lot, Concession: 10, 7

Municipality: City of Hamilton

Resource Type: Farmstead

Associated Dates: Prior to 1875

Relationship to Project: Within the Project Location



Description: The property contains a farmstead, with a residence, barn, and outbuildings. The structures are set back from the roadway off a long laneway. Bronte Creek crosses the property, with the structures set on a rise on the south side of the creek. Views of the structures are obstructed from the roadway by set back and vegetation.

The residence is a one and a half storey structure with a steeply-pitched side gable roof with asphalt shingles. The north elevation has a steeply-pitched gabled dormer. The residence has modern 1/1 windows and a covered partial porch. The foundation is not visible from the roadway.

The barn is a timber frame structure with a side gable roof that is metal clad. The property is landscaped with mature Norway spruce trees, mature deciduous trees, mature cedar trees, and intermediate and mature deciduous trees. The property has a split rail fence and a rolling topography.

The property is listed on the 1991 LACAC inventory for the City of Hamilton.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,	✓	
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,	✓	
ii. Is physically, functionally, visually or historically linked to its surroundings, or	✓	
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: The construction of this farmstead dates prior to 1875, determined through historic mapping. The residence and barn are representative of late 19th century Ontario vernacular structures. This property supports the late 19th century rural character of the area and is physically and historically linked to its surroundings.

Identified Heritage Attributes: Residence: one and a half storey structure, steeply-pitched side gable roof, steeply-pitched gabled dormer, and covered partial porch. Barn: timber frame structure with a side gable roof.

Identification of CHVI: Yes	**Cultural Heritage Resource Number:** CHR-13
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 1490 Highway 6

Former Township: Township of East Flamborough

Lot, Concession: 13, 9

Municipality: City of Hamilton

Resource Type: Residence

Associated Dates: 1929-1936

Relationship to Project: Adjacent to the Study Area

Description: The property contains a residence and modern outbuildings.



The residence is a one and a half storey structure with a high-pitched gambrel roof that is clad in asphalt shingles. The residence has been heavily modified with modern siding and modern windows and doors. The front (west) elevation has an enclosed front porch with a gabled entry. The residence has a rear addition and a concrete foundation.

The property is listed on the 1991 LACAC inventory for the City of Hamilton.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,	✓	
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: This residence dates between 1929 to 1936 determined through topographic mapping. The residence is representative of an early 20th century Ontario vernacular residence.

Identified Heritage Attributes: Residence: one and a half storey structure, and high-pitched gambrel roof.

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 1213 Safari Road

Former Township: Township of Beverly

Lot, Concession: 34, 7

Municipality: City of Hamilton

Resource Type: Farmstead

Associated Dates: 1875-1916

Relationship to Project: Within the Project Location



Description: The property contains a farmstead, with a residence, barn, and outbuildings. The structures are set back from the roadway off a long laneway. The structures are set lower than the roadway within a valley area.

The residence is a one and a half storey structure with a high-pitched side gable roof with asphalt shingles and a brick chimney. The residence has multiple gable peaks. The residence has a red brick exterior and a covered wrap-around wood porch. Some of the exterior windows have brick voussoirs, with a central keystone and label stops. All windows have concrete sills. The structure has projecting bay window on its west elevation, and rear additions. The foundation is not visible from the roadway.

The timber frame barn has a side gable roof that is clad in metal. The structure has a concrete foundation and wood frame windows. The structures are surrounded by agricultural fields. The property also contains a garden, and a mixture of deciduous and coniferous trees.

The property is listed on the 1991 LACAC inventory for the City of Hamilton.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,	✓	
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,	✓	
ii. Is physically, functionally, visually or historically linked to its surroundings, or	✓	
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: The construction of this farmstead dates to between 1875 to 1916, determined through historic and topographic mapping. The residence and barn are representative of late 19th century Ontario vernacular structures. This property supports the late 19th to early 20th century rural character of the area and is physically and historically linked to its surroundings.

Identified Heritage Attributes: Residence: one and a half storey structure, high-pitched side gable roof, brick chimneys, multiple gable peaks, covered wrap-around wood porch, brick voussoirs with keystones and label stops. Barn: timber frame structure, side gable roof, stone foundation, and wood frame windows.

Identification of CHVI: Yes	**Cultural Heritage Resource Number:** CHR-14
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 1414 Safari Road

Former Township: Township of Beverly

Lot, Concession: 29, 6

Municipality: City of Hamilton

Resource Type: Farmstead

Associated Dates: 1875-1916

Relationship to Project: Within the Study Area

Description: The property contains a farmstead, with two residences, a barn, and outbuildings.





The westernmost residence is a one and a half storey residence with a medium-pitched front facing gable roof. The roof cladding was obscured by snow cover. The exterior of the residence is clad in modern siding and contains modern 1/1 and horizontal sliding windows. The foundation is not visible from the roadway.

The easternmost residence is a modern two storey structure with a medium-pitched side gable roof. The exterior is clad in brick and siding and has 1/1 windows and a modern bay window on the front façade (north elevation). The residence has an attached two car garage.

The property contains a side gable roof barn. Views to the barn are obscured by distance and vegetation. Adjacent to the barn is a cast-in-place concrete silo. East of the barn are modern outbuildings and silos.

The property is landscaped with mature deciduous and coniferous trees, a lawn, a meadow, and a gravel driveway. The property has a gently rolling topography.

The property is listed on the 1991 LACAC inventory for the City of Hamilton.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,	✓	
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,	✓	
ii. Is physically, functionally, visually or historically linked to its surroundings, or	✓	
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: The construction of this farmstead dates to between 1875 and 1916, determined through historical and topographic mapping. The west residence has design value as a representative Ontario vernacular structure. This property supports the late 19th century rural character of the area and is physically and historically linked to its surroundings.

Identified Heritage Attributes: Residence: one and a half storey structure and medium pitched front facing gable roof. Barn: side gable roof.

Identification of CHVI: Yes	**Cultural Heritage Resource Number:** CHR-15
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 1286 Safari Road

Former Township: Township of Beverly

Lot, Concession: 32, 6

Municipality: City of Hamilton

Resource Type: Farmstead

Associated Dates: Prior to 1875

Relationship to Project: Within the Project Location

Description: The property contains a residence and outbuildings.





The residence is a one and a half storey structure with a medium-pitched cross gable roof with asphalt shingles, and two brick chimneys. The front (east) and north elevations have high-pitched gabled dormers with bargeboard and a centrally placed pointed arch window opening. The three-bay front façade has a central recessed entrance with wood panelling. The entry door and transom are modern. The stone exterior has modern 6/6 windows with stone lintels. The front and west elevations contain a covered a wrap verandah. The foundation of the residence is not visible from the roadway.

East of the residence the property contains a small gable roof outbuilding clad in metal with wood siding and windows. Adjacent to the outbuilding is a small modern shed roof outbuilding. West of the residence are modern outbuildings. The property is landscaped with mature trees, a split rail fence, and post and wire fence.

The property is listed on the 1991 LACAC inventory for the City of Hamilton.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,	✓	
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,	✓	
ii. Is physically, functionally, visually or historically linked to its surroundings, or	✓	
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: The construction of this residence dates prior to 1875 determined through historical mapping. The residence is representative of a late 19th century

Ontario vernacular residence with Gothic Revival design influences seen in its gabled dormer with bargeboard and centrally placed pointed arch window. This property supports the late 19th century rural character of the area and is physically and historically linked to its surroundings.

Identified Heritage Attributes: Residence: one and a half storey structure, medium-pitched cross gable roof, brick chimneys, high-pitched gabled dormers with bargeboard (north and east elevations), stone lintels, three-bay front (east) façade with central entrance, recessed front entry with wood panels, Landscape: mature trees.

Identification of CHVI: Yes	**Cultural Heritage Resource Number:** CHR-16
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 1212 Safari Road

Former Township: Township of Beverly

Lot, Concession: 34, 6

Municipality: City of Hamilton

Resource Type: Residence

Associated Dates: Prior to 1875

Relationship to Project: Within the Project Location



Description: The property contains a residence and outbuildings. The residence is set back from the roadway on a rise.

The residence is a two-storey structure with a medium-pitched hip roof with asphalt shingles and a brick chimney. The red brick exterior has segmental arch window openings with modern windows, a modern fanlight window and a flat-headed window with a semi-circular transom. The windows have brick voussoirs and concrete sills. The residence has a modern gable roof addition on the south elevation with a metal chimney. The foundation is not visible from the roadway.

The outbuilding is obscured by distance from roadway and elevation but appears to have a side gable roof. The property is landscaped with mature spruce trees along the driveway and mature deciduous, coniferous trees. The property has a post and wire fence and split rail fence.

The property is listed on the 1991 LACAC inventory for the City of Hamilton.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,	✓	
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,	✓	
ii. Is physically, functionally, visually or historically linked to its surroundings, or	✓	
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: The construction of this two storey residence dates prior to 1875, determined through historical mapping. The residence has design value as a representative Ontario vernacular structure. The property supports the rural 19th century character of the area. The residence is visually connected to its surroundings through its set-back location on the property rise.

Identified Heritage Attributes: Residence: two storey structure, medium-pitched hip roof, red brick exterior, segmental arch window openings, brick voussoirs, and concrete windowsills. Landscape: mature spruce trees.

Identification of CHVI: Yes	**Cultural Heritage Resource Number:** CHR-17
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 1166 Safari Road

Former Township: Township of Beverly

Lot, Concession: 35, 6

Municipality: City of Hamilton

Resource Type: Farmstead

Associated Dates: Prior to 1875

Relationship to Project: Within the Project Location

Description: The property contains a farmstead, with a residence, barn, and outbuildings.





The residence is a one and a half storey structure with a steeply-pitched side gable roof with asphalt shingles. The front (north) elevation has a central steeply-pitched gable dormer. The exterior of the residence is clad in modern siding and stone and has modern 1/1 windows. The three-bay front façade has a central entrance. The residence contains a covered wrap-around verandah and a modern rear addition. The foundation of the residence is not visible from the roadway.

The timber frame barn has a cross gable roof with ventilators and metal roof cladding. The exterior of the barn is clad in timber. Adjacent to the barn is a concrete block silo.

The property is landscaped with deciduous trees and coniferous trees, a lawn, meadows, and has a gently rolling topography.

The property is listed on the 1991 LACAC inventory for the City of Hamilton.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,	✓	
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,	✓	
ii. Is physically, functionally, visually or historically linked to its surroundings, or	✓	
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: The construction of this farmstead dates prior to 1875, determined through historical mapping. The residence is a representative Ontario vernacular structure with Gothic Revival design influences expressed through its one and a half storey massing and central gable dormer. The barn is a representative of a later 19th century Ontario vernacular barn. This property supports the late 19th century rural character of the area and is physically and historically linked to its surroundings.

Identified Heritage Attributes: Residence: one and a half storey structure, steeply-pitched side gable roof, and steeply-pitched gable dormer. Barn: timber frame structure and gable roof. Landscape: mature trees and gently rolling topography.

Identification of CHVI: Yes	**Cultural Heritage Resource Number:** CHR-18
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 1126 Safari Road

Former Township: Township of Beverly

Lot, Concession: 36, 6

Municipality: City of Hamilton

Resource Type: Undetermined

Associated Dates: 1938-1964

Relationship to Project: Within the Project Location



Description: This property contains structures set far back from the roadway by way of a long tree lined laneway. The view of the structures is not visible from the roadway. The property is landscaped with mature deciduous and spruce trees and contains a laneway.

Structures do not appear on the 1938 topographic map of Galt, Ontario, but the driveway layout and three structures are shown on the 1964 topographic map of Westover, Ontario.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,		✓
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,		✓
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: N/A

Identified Heritage Attributes: None identified.

Identification of CHVI: No	**Cultural Heritage Resource Number:** N/A
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 1032 Safari Road

Former Township: Township of West Flamborough

Lot, Concession: 2, 6

Municipality: City of Hamilton

Resource Type: Farmstead

Associated Dates: Prior to 1875

Relationship to Project: Within the Project Location

Description: The property contains a farmstead, with a residence, barn, and outbuildings.





The residence is a two and a half storey structure with a steeply-pitched hip roof with metal cladding and a tall brick chimney. The front (north) elevation has a high-pitched gabled dormer with bargeboard and a centrally placed semi-circular window. The red brick asymmetrical exterior has fixed flat-headed windows with semi-circular transoms. The windows have brick voussoirs and keystones. The front façade has an enclosed front porch, with an upper entry way. The residence has a one storey gable roof addition on its west elevation. The foundation of the residence is not visible from the roadway.

The timber frame bank barn has a gambrel roof clad with a metal, and two ventilators. Adjacent to the barn is a cast-in-place concrete silo.

The property is landscaped with a laneway, mature deciduous trees, mature coniferous trees, a meadow, a lawn, and wooden fencing.

The property is listed on the 1991 LACAC inventory for the City of Hamilton.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,	✓	
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,	✓	
ii. Is physically, functionally, visually or historically linked to its surroundings, or	✓	
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: The construction of this farmstead dates to prior to 1875, determined through historical mapping. The residence has design value as a representative Ontario vernacular structure with Queen Anne Revival design influences. The barn is a representative late 19th century Ontario vernacular barn. This property supports the late 19th century rural character of the area and is physically and historically linked to its surroundings.

Identified Heritage Attributes: Residence: two and a half storey structure, steeply-pitched hip roof, steeply-pitched gabled dormer with bargeboard, tall brick chimney, red brick exterior, brick voussoirs, and keystones. Barn: timber frame bank barn structure and gambrel roof.

Identification of CHVI: Yes	**Cultural Heritage Resource Number:** CHR-19
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 1054 Safari Road

Former Township: Township of West Flamborough

Lot, Concession: 2, 6

Municipality: City of Hamilton

Resource Type: Outbuildings

Associated Dates: Prior to 1875

Relationship to Project: Within the Project Location



Description: The property contains a modern residence and outbuildings. Structures are set far back from the roadway by way of a long tree lined gravel laneway. Views to the structures are obstructed by distance and vegetation.

To the rear of the residence are two to three barn structures with side gable roofs. A structure is depicted on the property in relation to the outbuildings on the 1875 Township of West Flamborough Map, in the *Illustrated Historical Atlas of the County of Wentworth* (Figure 4). The owner listed on the map is William Patton. Structures are also depicted on the property in relation to the outbuildings on the 1916 topographic map of Galt, Ontario.

The property is landscaped with mature trees, wooden fencing, post and wire fencing, and agricultural fields.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,	✓	
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,	✓	
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: The barns on the property date to the late 19th century determined through historical and topographic mapping. The barn structures are potentially representative of late 19th century Ontario vernacular barns. They potentially support the late 19th century character of the area.

Identified Heritage Attributes: Barn(s): side gable roof.

Identification of CHVI: Yes	**Cultural Heritage Resource Number:** CHR-20
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 994 Safari Road

Former Township: Township of West Flamborough

Lot, Concession: 3, 6

Municipality: City of Hamilton

Resource Type: Residence and outbuildings

Associated Dates: 1900-1923

Relationship to Project: Within the Project Location (residence is more than 300 metres from Project Location)



Description: The property contains a residence and outbuildings that are setback from the roadway by a long laneway. The view of the residence is obstructed by distance and vegetation. The property contains mature deciduous and coniferous trees.

A structure is depicted on the property in relation to the current residence on the 1923 topographic map of Galt, Ontario. As the property is listed on the 1991 LACAC inventory for the City of Hamilton, there is potential cultural heritage value or interest. Additional assessment is required for the property's evaluation against O. Reg. 9/06. The following indicators of cultural heritage value or interest are based on the potential cultural heritage value from the LACAC inventory and topographic mapping.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,	✓	
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,	✓	
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: Undetermined.

Identified Heritage Attributes: Undetermined

Identification of CHVI: Undetermined	**Cultural Heritage Resource Number:** CHR-21
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 954 Safari Road

Former Township: Township of West Flamborough

Lot, Concession: 4, 6

Municipality: City of Hamilton

Resource Type: Barn

Associated Dates: Barn 1938-1964

Relationship to Project: Within the Project Location



Description: The property contains a modern residence, a barn, and outbuildings.

The timber frame barn has a cross gable roof with lightning rods and metal cladding. The exterior of the barn is clad in timber and the foundation of the barn is concrete block.

The property contains two modern gable roof outbuildings with metal roof cladding and metal exterior cladding. The property also contains a modern silo.

The property is landscaped with mature trees, a meadow, and contains a gravel laneway.

The property is listed on the 1991 LACAC inventory for the City of Hamilton.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,	✓	
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,	✓	
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: The barn on the property dates between 1938 and 1964 determined through topographic mapping. The barn is representative of an early to mid 20th century Ontario vernacular barn. The barn supports the early to mid-20th century rural character of the area.

Identified Heritage Attributes: Barn: timber frame structure, cross gable roof, and lightning rods.

Identification of CHVI: Yes	**Cultural Heritage Resource Number:** CHR-22
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 902 Safari Road

Former Township: Township of West Flamborough

Lot, Concession: 5, 6

Municipality: City of Hamilton

Resource Type: Residence

Associated Dates: Prior to 1875

Relationship to Project: Within the Project Location

Description: The property contains a residence and an outbuilding.



This property contains a one and a half storey residence with a medium-pitched side gable roof. The exterior of the residence is clad in modern siding and has modern 1/1 windows. The front (north) façade has a covered partial porch. The east elevation has a modern hip roof addition. The foundation of the residence is not visible from the roadway.

The barn is a gambrel roof structure with a shed roof dormer. The barn is clad in metal. Additional details about the barn are obscured by distance from roadway.

The property is landscaped with mature deciduous and spruce trees, a lawn, and the residence is surrounded by foundation plantings.

The property is listed on the 1991 LACAC inventory for the City of Hamilton.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,	✓	
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or	✓	
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,	✓	
ii. Is physically, functionally, visually or historically linked to its surroundings, or	✓	
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: The construction of this residence dates prior to 1875, determined through historical mapping. The residence has design value as an Ontario vernacular residence. This property supports the late 19th century rural character of the area and is physically and historically linked to its surroundings.

Identified Heritage Attributes: Residence: one and a half storey structure, medium-pitched side gable roof, and covered partial porch. Landscape: mature trees.

Identification of CHVI: Yes	**Cultural Heritage Resource Number:** CHR-23
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 875 Safari Road

Former Township: Township of West Flamborough

Lot, Concession: 6, 7

Municipality: City of Hamilton

Resource Type: Residence

Associated Dates: 1916-1923

Relationship to Project: Within the Project Location

Description: The property contains a residence and outbuildings.



The residence is a one and a half storey structure with a medium-pitched side gable roof with asphalt shingles and a brick chimney. The front (south) façade has a medium-pitched gable dormer with modern windows. The exterior of the residence is clad in brick. The asymmetrical front entry has a stone surround. The residence has modern windows and doors. The front façade has a covered full width porch. The foundation is not visible from the roadway.

The property is landscaped with mature and intermediate deciduous and spruce trees and has a pond.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,	✓	
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,	✓	
ii. Is physically, functionally, visually or historically linked to its surroundings, or		✓
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: The construction of this residence dates to between 1916 and 1923, determined through topographic mapping. The residence has design value as an early 20th century an Ontario vernacular structure. The property supports the rural early 20th century character of the area.

Identified Heritage Attributes: Residence: one and a half storey structure, medium-pitched side gable roof, brick chimney, and brick exterior. Landscape: Mature spruce and deciduous trees.

Identification of CHVI: Yes	**Cultural Heritage Resource Number:** CHR-24
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 1436 Brock Road

Former Township: Township of West Flamborough

Lot, Concession: 7, 7

Municipality: City of Hamilton

Resource Type: Residence

Associated Dates: Prior to 1875

Relationship to Project: Within the Project Location



Description: The property contains a residence.

The residence is a one and a half storey structure with a medium-pitched cross gable roof with asphalt shingles. The front (west) façade has a steeply-pitched gable dormer with central pointed arch window. The red brick exterior has segmental and semi-circular wood frame windows with brock voussoirs and stone sills. The front lower storey window has a brick voussoir with central keystone. The front façade has a covered partial porch. The foundation is not visible from the roadway.

The property is landscaped with mature Norway spruce trees, mature deciduous trees, a white picket fence and a lawn.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,	✓	
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,	✓	
ii. Is physically, functionally, visually or historically linked to its surroundings, or	✓	
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: The construction of this residence dates to prior to 1875, determined through historical mapping. The residence is representative of a late 19th century Ontario vernacular residence. This property supports the late 19th century rural character of the area and is physically and historically linked to its surroundings.

Identified Heritage Attributes: Residence: one and a half storey structure, medium-pitched cross gable roof, steeply-pitched gabled dormer, pointed arch window, segmental and semi-circular wood frame window openings, brick exterior, brick voussoirs, keystone, and covered partial porch. Landscape: mature trees and wood white picket fence.

Identification of CHVI: Yes	**Cultural Heritage Resource Number:** CHR-25
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

Municipal Address: 1157 Safari Road

Former Township: Township of Beverly

Lot, Concession: 35, 7

Municipality: City of Hamilton

Resource Type: Farmstead

Associated Dates: Prior to 1875

Relationship to Project: Within the Project Location



Description: The property contains a residence, a barn, and outbuildings. Views of the residence are obscured by vegetation and distance from the roadway.

The barn is a timber frame structure with a gable roof that is clad in metal. The barn has a timber exterior. Attached to the barn are smaller outbuildings. Two are timber have side gable roofs clad with metal, and one is a shed roof clad with metal.

The property is landscaped with mature deciduous and coniferous trees, meadows, and a post and wire fence on a rolling topography.

Indicators of Cultural Heritage Value or Interest from O. Reg. 9/06:

	Yes	No
1. The property has design value or physical value because it,		
i. Is a rare, unique, representative or early example of a style, type, expression, material or construction method,	✓	
ii. Displays a high degree of craftsmanship or artistic merit, or		✓
iii. Demonstrates a high degree of technical or scientific achievement.		✓
2. The property has historical value or associative value because it,		
i. Has direct associations with a theme, event, belief, person, activity organization or institution that is significant to a community,		✓
ii. Yields, or has the potential to yield, information that contributes to an understanding of a community of culture, or		✓
iii. Demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.		✓
3. The property has contextual value because it,		
i. Is important in defining, maintaining or supporting the character of an area,	✓	
ii. Is physically, functionally, visually or historically linked to its surroundings, or	✓	
iii. Is a landmark.		✓

Draft Statement of Cultural Heritage Value or Interest: The construction of this farmstead dates prior to 1875, determined through historical mapping. The barn is a representative of a late 19th century Ontario vernacular barn. This property supports the late 19th century rural character of the area and is physically and historically linked to its surroundings.

Identified Heritage Attributes: Barn: timber frame structure, gable roof, smaller gable roof and shed roof outbuilding additions. Landscape: mature trees, and rolling topography.

Identification of CHVI: Yes	**Cultural Heritage Resource Number:** CHR-26
Completed by (name): Frank Smith	**Date Completed:** January 30, 2019.

APPENDIX H:
PHOTOMOSAIC



Natural Features	12
Infrastructure	1
Aquatic Features	
Floodplain/ Regulated Area	4 (HCA)
Landuse	15
Cultural Resources	8
Geologic Features	16



Notes
1. Coordinate System: NAD 1983 UTM Zone 17N
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Legend

- Preferred Route
- Project Development Area
- Proposed Easement
- Existing Enbridge Station
- Existing Enbridge Pipeline
- Water Well
- Water Well (100 m Buffer)
- Monitoring Well
- Contaminated Site
- Potential Source of Contamination (areas)
- Regulated Area
- Floodplain
- Conservation Authority Admin Boundary
- Hydro Line
- Watercourse (Permanent)
- ANSI, Life Science
- Potential for Shallow Bedrock
- Wetland, Provincially Significant
- Parcel Boundary (ARN)

Construction Mitigation Notes:
Note 1: Crossing permit required from third party power or hydrocarbon transmitter. Refer to Section 4.4.4 Infrastructure of the ER.
Note 2: Groundwater wells present – Refer to Section 4.2.3 Hydrogeology of the ER.
Note 3: Water well monitoring program recommended. Refer to Section 6.1.2 Monitoring - Water Wells of the ER.
Note 4: Permit from HCA, CH or GRCA required. Refer to Section 4.2.8 of the ER.
Note 5: Crossing permissions required from Provincial and Municipal Road authorities. Refer to Section 4.4.4 Infrastructure of the ER.
Note 6: Access to businesses and residences. Maintain emergency egress. Refer to Section 4.4.4 Infrastructure of the ER.
Note 7: Construction adjacent to rural residental areas. Refer to Section 4.4.4 Infrastructure, Section 4.4.5 Air and Noise and Section 4.4.7 Waste Management of the ER.
Note 8: Potential to encounter cultural heritage and/or archaeological resources. Refer to Section 4.4.9 Archaeological Resouces and 4.4.10 Cultural Heritage Resouces and 6.2.3 Unexpected Finds: Archaeological or Heritage Resources and Unknown Contaminated Soils of the ER.
Note 9: Open Cut water course crossing construction method. Refer to Section 4.3.1 Aquatic Features, 6.1.3 Monitoring - Watercourse Crossings and 6.3 Watercourse Sedimentation of the ER.
Note 10: Coldwater watercourse crossing - In-water work permitted from July 1 to September 15. Refer to Section 4.3.1 Aquatic Features of the ER.
Note 11: Warmwater watercourse crossing - In-water work permitted from July 1 to March 14. Refer to Section 4.3.1 Aquatic Features of the ER.
Note 12: No clearing activities during the migratory breeding bird restricted activity period (April 1 – August 31) without preconstruction nesting surveys. Refer to Section 4.3.3 Wildlife, Wildlife Habitat and Species at Risk and Section 6.1.4 Monitoring - Vegetation and Wetlands of the ER.
Note 13: Overall Benefit Permit under the Endangered Species Act, 2007 from the MECP may be required if the species, or protected habitat, are impacted by project activities.Refer to Section 4.3.2 Designated Natural Areas and Vegetation, Section 4.3.3 Wildlife, Wildlife Habitat and Species at Risk of the ER.
Note 14: Potential for encountering Potential Sources of Contamination (PSOC).Refer to Section 4.4.6 Contamination and 6.2.3 Unexpected Finds: Archaeological or Heritage Resources and Unknown Contaminated Soils of the ER.
Note 15: Construction accross active agricultural lands. Refer to Section 4.2.5 Soil and Soil Capability and Section 4.2.6 Agricultural Tile Drains of the ER.
Note 16: Potential to encounter shallow bedrock that may require blasting during construction. Refer to Section 4.2.1 Bedrock Geology of the ER.
Acronyms List:
ER: Environmental Report (Stantec 2019). HCA: Hamilton Conservation Authority. CH: Conservation Halton. GRCA: Grand River Conservation Authority. MECP: Ministry of Environment, Conservation and Parks.

Stantec

Project Location
City of Hamilton

160961299 REVA
Prepared by AMW on 2020-02-25
Technical Review by RR on 2020-02-18

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
1.1

Title
Mitigation Photomosaic

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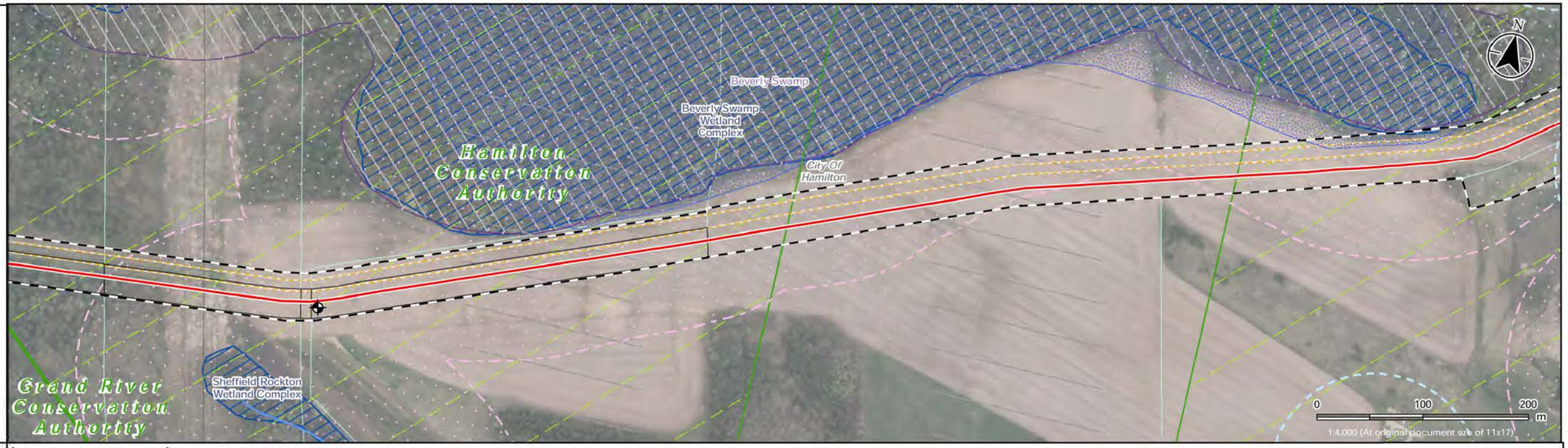

Natural Features	12
Infrastructure	1
Aquatic Features	
Floodplain/ Regulated Area	4 (HCA)
Landuse	15
Cultural Resources	8
Geologic Features	16 ; 16



Notes
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2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2019.
3. Orthoimagery © First Base Solutions, 2020. Imagery Date, 2019.

Legend
- Preferred Route
- Project Development Area
- Proposed Easement
- Existing Enbridge Pipeline
- Water Well (100 m Buffer)
- Monitoring Well
- Regulated Area
- Floodplain
- Conservation Authority Admin Boundary
- Hydro Line
- Watercourse (Permanent)
- ANSI, Life Science
- Potential for Shallow Bedrock
- Wetland, Provincially Significant
- Parcel Boundary (ARN)

Construction Mitigation Notes:
Note 1: Crossing permit required from third party power or hydrocarbon transmitter. Refer to Section 4.4.4 Infrastructure of the ER.
Note 2: Groundwater wells present – Refer to Section 4.2.3 Hydrogeology of the ER.
Note 3: Water well monitoring program recommended. Refer to Section 6.1.2 Monitoring - Water Wells of the ER.
Note 4: Permit from HCA, CH or GRCA required. Refer to Section 4.2.8 of the ER.
Note 5: Crossing permissions required from Provincial and Municipal Road authorities. Refer to Section 4.4.4 Infrastructure of the ER.
Note 6: Access to businesses and residences. Maintain emergency egress. Refer to Section 4.4.4 Infrastructure of the ER.
Note 7: Construction adjacent to rural residental areas. Refer to Section 4.4.4 Infrastructure, Section 4.4.5 Air and Noise and Section 4.4.7 Waste Management of the ER.
Note 8: Potential to encounter cultural heritage and/or archaeological resources. Refer to Section 4.4.9 Archaeological Resouces and 4.4.10 Cultural Heritage Resouces and 6.2.3 Unexpected Finds: Archaeological or Heritage Resources and Unknown Contaminated Soils of the ER.
Note 9: Open Cut water course crossing construction method. Refer to Section 4.3.1 Aquatic Features, 6.1.3 Monitoring - Watercourse Crossings and 6.3 Watercourse Sedimentation of the ER.
Note 10: Coldwater watercourse crossing - In-water work permitted from July 1 to September 15. Refer to Section 4.3.1 Aquatic Features of the ER.
Note 11: Warmwater watercourse crossing - In-water work permitted from July 1 to March 14. Refer to Section 4.3.1 Aquatic Features of the ER.
Note 12: No clearing activities during the migratory breeding bird restricted activity period (April 1 – August 31) without preconstruction nesting surveys. Refer to Section 4.3.3 Wildlife, Wildlife Habitat and Species at Risk and Section 6.1.4 Monitoring - Vegetation and Wetlands of the ER.
Note 13: Overall Benefit Permit under the Endangered Species Act, 2007 from the MECP may be required if the species, or protected habitat, are impacted by project activities.Refer to Section 4.3.2 Designated Natural Areas and Vegetation, Section 4.3.3 Wildlife, Wildlife Habitat and Species at Risk of the ER.
Note 14: Potential for encountering Potential Sources of Contamination (PSOC).Refer to Section 4.4.6 Contamination and 6.2.3 Unexpected Finds: Archaeological or Heritage Resources and Unknown Contaminated Soils of the ER.
Note 15: Construction accross active agricultural lands. Refer to Section 4.2.5 Soil and Soil Capability and Section 4.2.6 Agricultural Tile Drains of the ER.
Note 16: Potential to encounter shallow bedrock that may require blasting during construction. Refer to Section 4.2.1 Bedrock Geology of the ER.
Acronyms List:
ER: Environmental Report (Stantec 2019). HCA: Hamilton Conservation Authority. CH: Conservation Halton. GRCA: Grand River Conservation Authority. MECP: Ministry of Environment, Conservation and Parks.

Stantec

Project Location
City of Hamilton

160961299 REVA
Prepared by AMW on 2020-02-25
Technical Review by RR on 2020-02-18

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
1.2

Title
Mitigation Photomosaic

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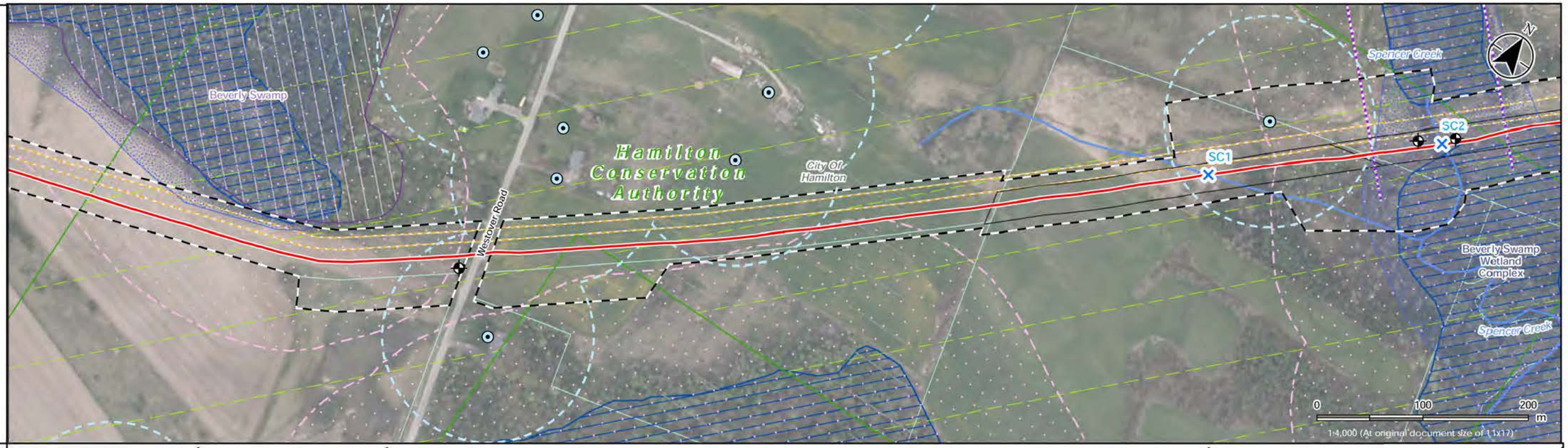
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Hamilton Conservation Authority
City Of Hamilton
Westover Road
Spencer Creek
SC1
SC2
Beverly Swamp Wetland Complex
Spencer Creek
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1:4,000 (At original document size of 11x17)

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Spencer Creek
13
Kells Lane
Glenariff Drive
SC2
SC1
Bushmill Circle
City Of Hamilton
Conservation Halton
Hamilton Conservation Authority
Beverly Swamp Wetland Complex
Spencer Creek
N
0
100
200
m
1:4,000 (At original document size of 11x17)

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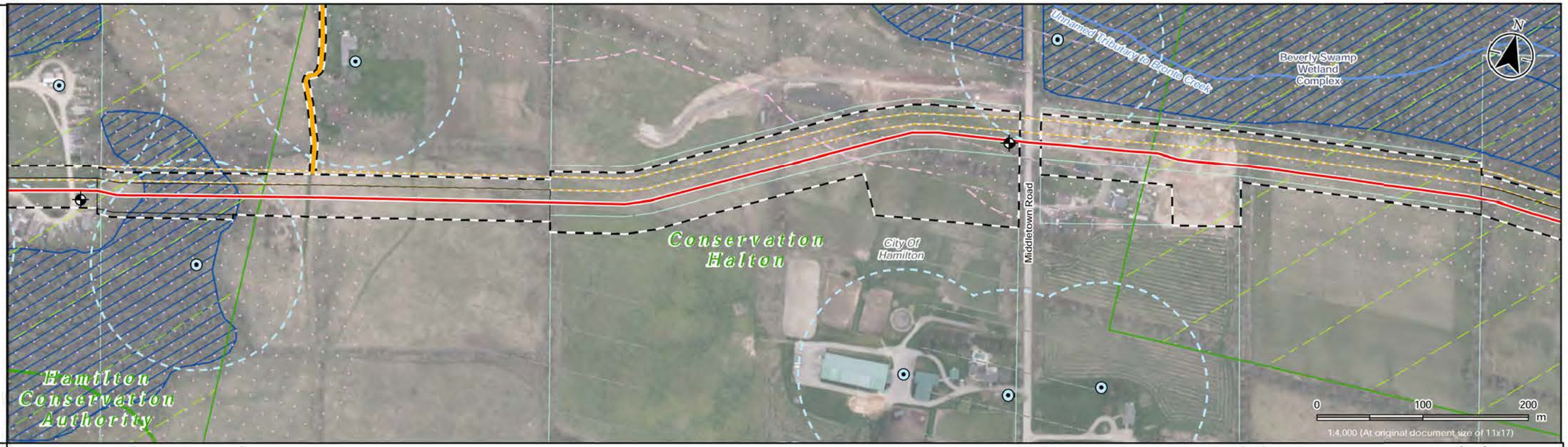

Natural Features	12																					12	12
Infrastructure	5	5	2, 3																			5	2, 3
Aquatic Features																							
Floodplain/ Regulated Area	4 (CH)																					4 (CH)	
Landuse	6		15																			15	
Cultural Resources	7		8																			7	
Geologic Features	16																					16	



Notes
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2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2019.
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Legend
- Preferred Route
- AccessLanewaysOptiona...
- Project Development Area
- Proposed Easement
- Existing Enbridge Pipeline
- Water Well
- Water Well (100 m Buffer)
- Monitoring Well
- Regulated Area
- Conservation Authority Admin Boundary
- Watercourse (Permanent)
- Potential for Shallow Bedrock
- Wetland, Provincially Significant
- Parcel Boundary (ARN)

Construction Mitigation Notes:
Note 1: Crossing permit required from third party power or hydrocarbon transmitter. Refer to Section 4.4.4 Infrastructure of the ER.
Note 2: Groundwater wells present – Refer to Section 4.2.3 Hydrogeology of the ER.
Note 3: Water well monitoring program recommended. Refer to Section 6.1.2 Monitoring - Water Wells of the ER.
Note 4: Permit from HCA, CH or GRCA required. Refer to Section 4.2.8 of the ER.
Note 5: Crossing permissions required from Provincial and Municipal Road authorities. Refer to Section 4.4.4 Infrastructure of the ER.
Note 6: Access to businesses and residences. Maintain emergency egress. Refer to Section 4.4.4 Infrastructure of the ER.
Note 7: Construction adjacent to rural residental areas. Refer to Section 4.4.4 Infrastructure, Section 4.4.5 Air and Noise and Section 4.4.7 Waste Management of the ER.
Note 8: Potential to encounter cultural heritage and/or archaeological resources. Refer to Section 4.4.9 Archaeological Resouces and 4.4.10 Cultural Heritage Resouces and 6.2.3 Unexpected Finds: Archaeological or Heritage Resources and Unknown Contaminated Soils of the ER.
Note 9: Open Cut water course crossing construction method. Refer to Section 4.3.1 Aquatic Features, 6.1.3 Monitoring - Watercourse Crossings and 6.3 Watercourse Sedimentation of the ER.
Note 10: Coldwater watercourse crossing - In-water work permitted from July 1 to September 15. Refer to Section 4.3.1 Aquatic Features of the ER.
Note 11: Warmwater watercourse crossing - In-water work permitted from July 1 to March 14. Refer to Section 4.3.1 Aquatic Features of the ER.
Note 12: No clearing activities during the migratory breeding bird restricted activity period (April 1 – August 31) without preconstruction nesting surveys. Refer to Section 4.3.3 Wildlife, Wildlife Habitat and Species at Risk and Section 6.1.4 Monitoring - Vegetation and Wetlands of the ER.
Note 13: Overall Benefit Permit under the Endangered Species Act, 2007 from the MECP may be required if the species, or protected habitat, are impacted by project activities.Refer to Section 4.3.2 Designated Natural Areas and Vegetation, Section 4.3.3 Wildlife, Wildlife Habitat and Species at Risk of the ER.
Note 14: Potential for encountering Potential Sources of Contamination (PSOC).Refer to Section 4.4.6 Contamination and 6.2.3 Unexpected Finds: Archaeological or Heritage Resources and Unknown Contaminated Soils of the ER.
Note 15: Construction accross active agricultural lands. Refer to Section 4.2.5 Soil and Soil Capability and Section 4.2.6 Agricultural Tile Drains of the ER.
Note 16: Potential to encounter shallow bedrock that may require blasting during construction. Refer to Section 4.2.1 Bedrock Geology of the ER.
Acronyms List:
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Stantec

Project Location
City of Hamilton

160961299 REVA
Prepared by AMW on 2020-02-25
Technical Review by RR on 2020-02-18

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
1.5

Title
Mitigation Photomosaic

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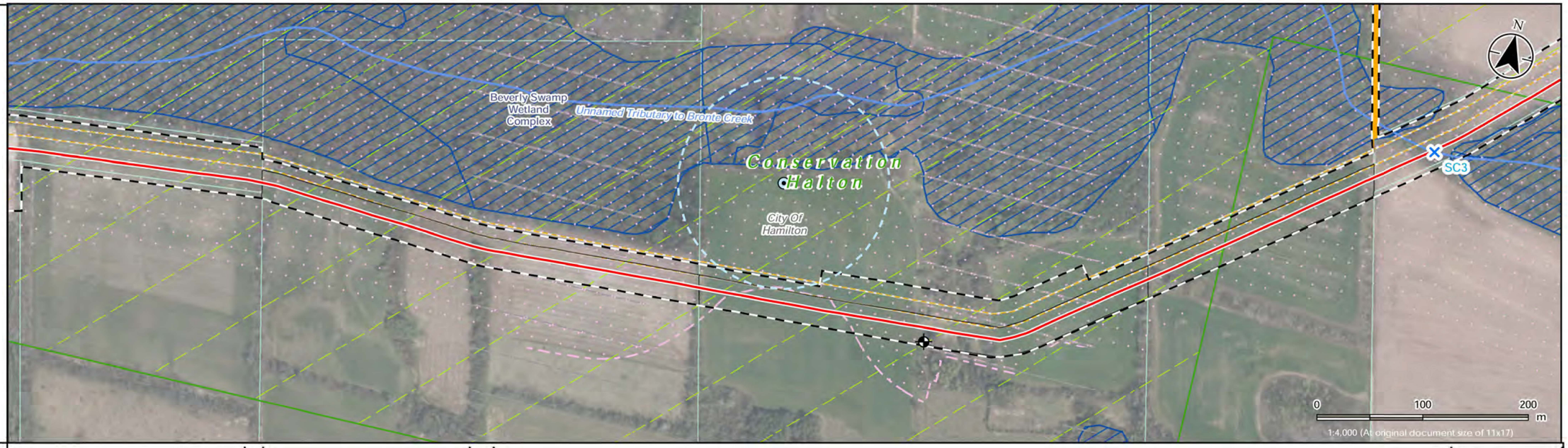
Beverly Swamp Wetland Complex
Unnamed Tributary to Bronte Creek
Conservation Halton
City Of Hamilton
SC3
N
0
100
200
m
1:4,000 (At original document size of 11x17)

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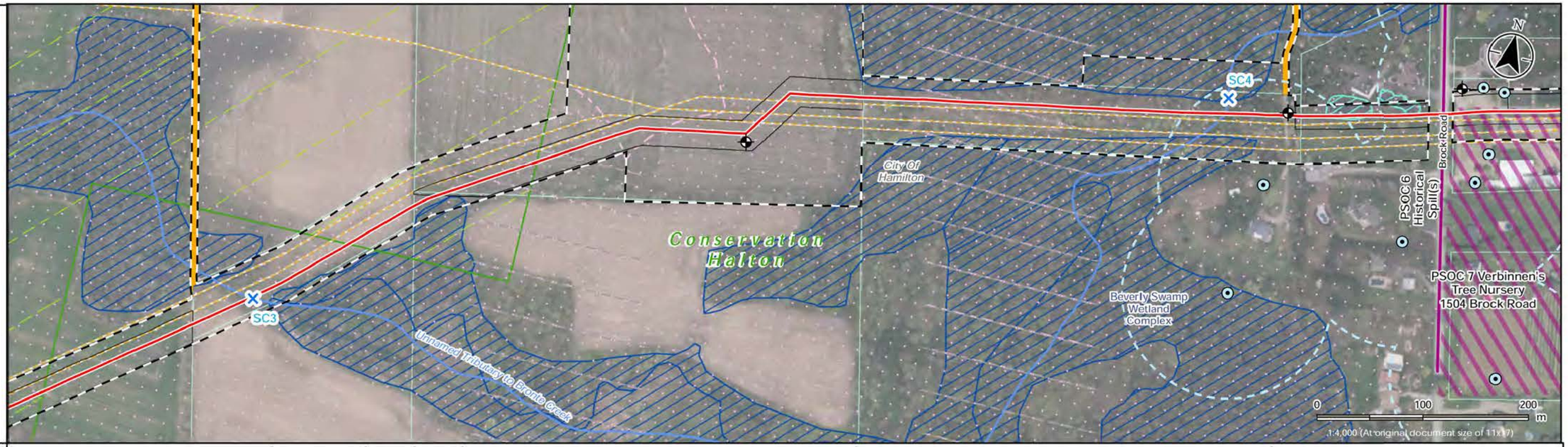

Natural Features	12 · 12 · 12
Infrastructure	2, 3 · 5
Aquatic Features	9 · 9 · 9 · 9
Floodplain/ Regulated Area	4 (CH)
Landuse	15 · 6, 7
Cultural Resources	8
Geologic Features	16 · 16



Notes
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2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2019.
3. Orthoimagery © First Base Solutions, 2020. Imagery Date, 2019.

Legend
- Preferred Route
- AccessLanewaysOptiona...
- Project Development Area
- Proposed Easement
- Existing Enbridge Pipeline
- Watercourse Crossing
- Water Well
- Water Well (100 m Buffer)
- Monitoring Well
- Historic Spill
- Potential Source of Contamination (areas)
- Regulated Area
- Conservation Authority Admin Boundary
- Watercourse (Permanent)
- Potential for Shallow Bedrock
- Wetland, Provincially Significant
- Wetland, Not evaluated per OWES
- Parcel Boundary (ARN)

Construction Mitigation Notes:
Note 1: Crossing permit required from third party power or hydrocarbon transmitter. Refer to Section 4.4.4 Infrastructure of the ER.
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Acronyms List:
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Stantec

Project Location
City of Hamilton

160961299 REVA
Prepared by AMW on 2020-02-25
Technical Review by RR on 2020-02-18

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
1.7

Title
Mitigation Photomosaic

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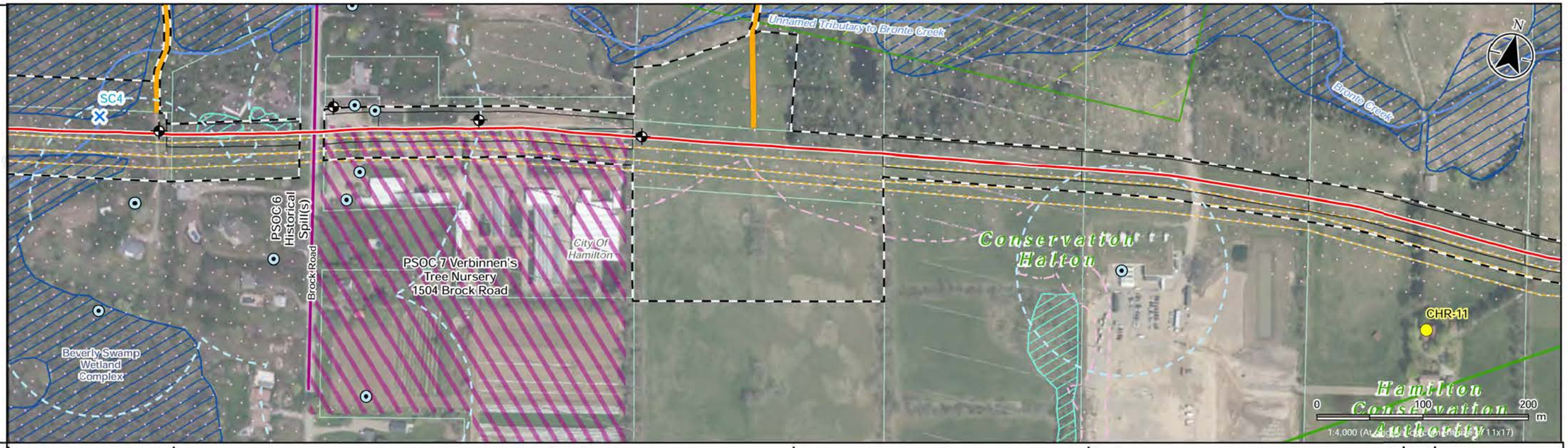

Natural Features	12		12	12
Infrastructure	2, 3	5	2, 3	
Aquatic Features				
Floodplain/ Regulated Area	4 (CH)	4 (CH)	4 (CH)	4 (CH)
Landuse	6		15	
Cultural Resources	7		6, 7	
Geologic Features	8			



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, 2019.
3. Orthoimagery © First Base Solutions, 2020. Imagery Date, 2019.

Legend
- Preferred Route
- AccessLanewaysOptiona...
- Project Development Area
- Proposed Easement
- Existing Enbridge Pipeline
- Cultural Heritage Resource
- Watercourse Crossing
- Water Well
- Water Well (100 m Buffer)
- Monitoring Well
- Historic Spill
- Potential Source of Contamination (areas)
- Regulated Area
- Conservation Authority Admin Boundary
- Watercourse (Intermittent)
- Watercourse (Permanent)
- Potential for Shallow Bedrock
- Wetland, Provincially Significant
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Stantec

Project Location
City of Hamilton

160961299 REVA
Prepared by AMW on 2020-02-25
Technical Review by RR on 2020-02-18

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
1.8

Title
Mitigation Photomosaic

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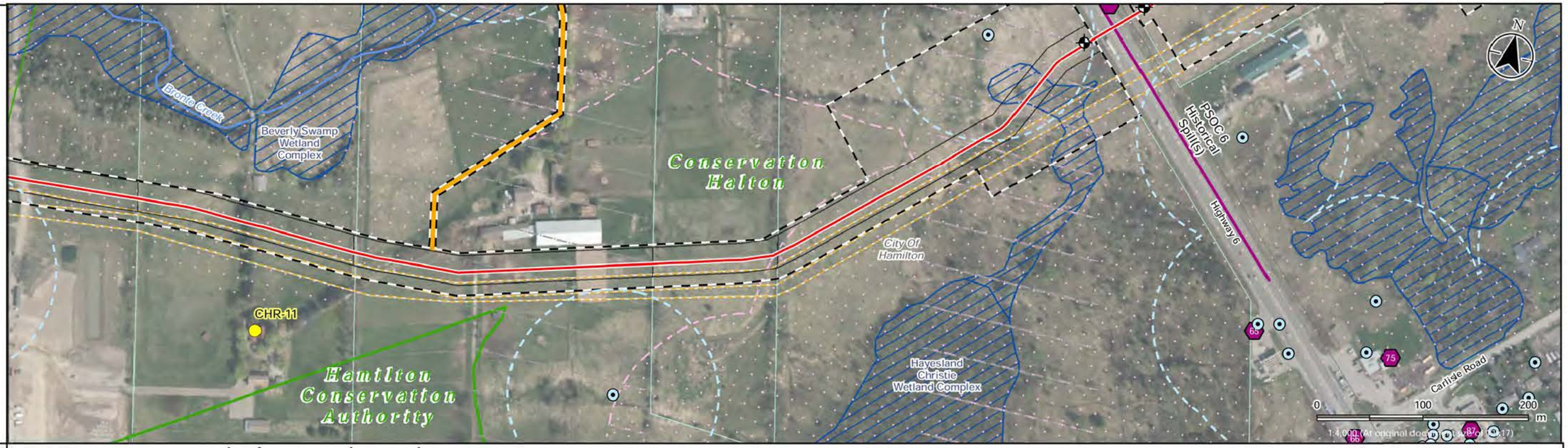
Bronte Creek
Beverly Swamp Wetland Complex
Conservation Halton
City Of Hamilton
PSOC 6 Historical Spill(s)
Highway 6
N
CHR-11
Hamilton Conservation Authority
Hayesland Christie Wetland Complex
Carlisle Road
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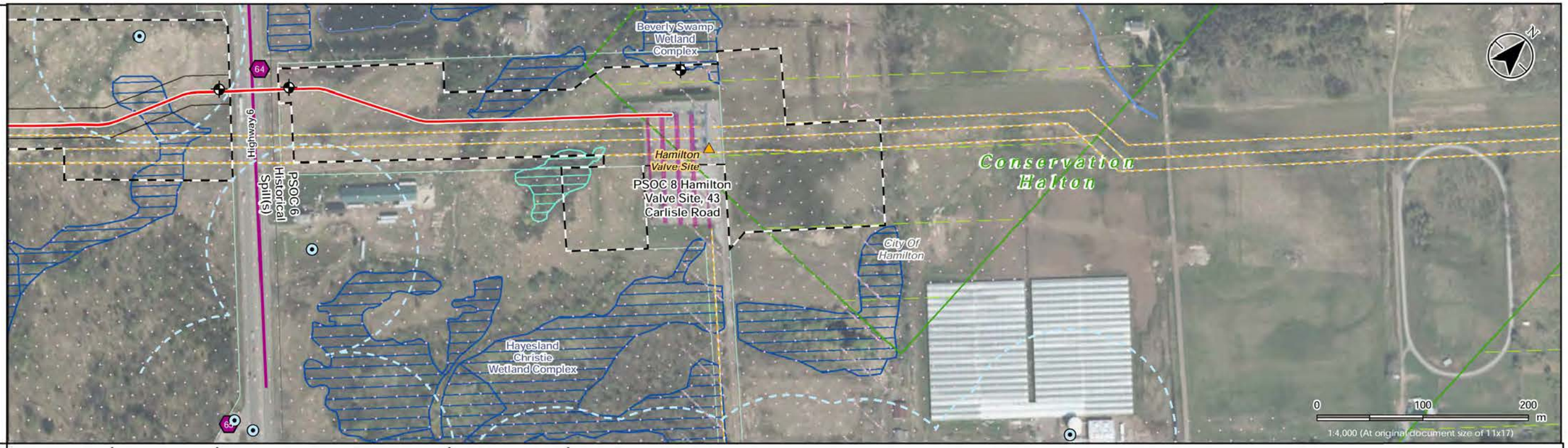

Natural Features	12 12
Infrastructure	2, 3 5 1 2, 3
Aquatic Features	14
Floodplain/ Regulated Area	4 (CH)
Landuse	
Cultural Resources	8 8
Geologic Features	16



Notes
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2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2019.
3. Orthoimagery © First Base Solutions, 2020. Imagery Date, 2019.

Legend
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- Existing Enbridge Station
- Existing Enbridge Pipeline
- Water Well
- Water Well (100 m Buffer)
- Monitoring Well
- Contaminated Site
- Historic Spill
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- Conservation Authority Admin Boundary
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Project Location
City of Hamilton

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Technical Review by RR on 2020-02-18

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT

Figure No.
1.10

Title
Mitigation Photomosaic

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Appendix B Consultation

DRAFT

B.1 Letter of Delegation

DRAFT

Ministry of Energy and Mines

Energy Networks and Indigenous Policy Branch

Indigenous Energy Policy

77 Grenville Street, 6th Floor
Toronto, ON M7A 1B3
Tel: (416) 562-9492

Ministère de l'Énergie et des Mines

Direction Générale des Réseaux Énergétiques et des Politiques Autochtones

Politique Énergétique Autochtones

77 Rue Grenville, 6e Étage
Toronto, ON M7A 1B3
Tel: (416) 562-9492

Ontario

August 19, 2026

VIA EMAIL

Olatunbosun Ishola
Advisor, Regulatory Applications – Leave to Construct
Enbridge Gas Inc.
olatunbosun.ishola@enbridge.com

Re: Dawn Parkway System Renewal - Kirkwall Hamilton

Dear Olatunbosun Ishola,

Thank you for your email dated June 24, 2026 notifying the Ministry of Energy and Mines (MEM) of Enbridge Gas Inc. (Enbridge)'s intention to apply to the Ontario Energy Board (OEB) for Leave to Construct for the Dawn Parkway System Renewal project. The Dawn Parkway System Renewal project consists of two pipeline segments within Enbridge's Dawn Parkway Transmission System: Dawn to Enniskillen, located in Lambton County, and Kirkwall to Hamilton, located in the City of Hamilton. This letter is in relation to the Kirkwall to Hamilton segment (the Project).

MEM understands that Enbridge is proposing to install approximately 10.2 km of new NPS 48 natural gas transmission pipeline between the Kirkwall Valve Site and the Hamilton Gate Station in the City of Hamilton. The new pipeline will be constructed within a new easement generally parallel to the existing Dawn Parkway pipeline, which will remain in service. Station modifications and ancillary facilities will also be required to connect the new pipeline to the existing system. Construction is anticipated to begin in early 2028, with a proposed in-service date of Q4 2028.

On behalf of the Government of Ontario (the Crown), MEM has reviewed the information provided by Enbridge with respect to the Project and assessed it against the Crown's current understanding of the interests and rights of Aboriginal communities who hold or claim Aboriginal, or treaty rights protected under Section 35 of Canada's Constitution Act 1982 (s. 35 rights) in the area. In doing so, MEM has determined that the Project may have the potential to affect such Indigenous communities.

Duty to Consult with Indigenous Communities

The Crown has a constitutional Duty to Consult and, where appropriate, accommodate Indigenous communities when it has knowledge of established or credibly asserted Aboriginal or treaty rights protected under section 35 of Canada's *Constitution Act 1982* (s. 35 rights), and it contemplates conduct that might adversely affect those rights. These consultations are in addition to consultation imposed by statute, though these processes can be integrated.

Although the legal Duty to Consult remains with the Crown, the Crown may delegate the procedural aspects of consultation to project proponents. The procedural aspects of the Duty to Consult refer to those portions of the consultation process, including sharing information, holding meetings, and receiving comments from Indigenous communities. Project proponents are typically best positioned to address the specific planning, technical, and environmental aspects of projects, and, where appropriate, to consider possible ways to address or mitigate concerns raised by Indigenous communities about the project's potential impacts. The Crown remains responsible for the substantive aspects of the consultation, including providing oversight of the consultation process and ensuring the adequacy of consultation with the communities to whom the Duty to Consult is owed.

Delegation of Procedural Aspects of the Crown's Duty to Consult

Based on MEM's review of the information provided by Enbridge concerning the Project, including the nature and location of the Project, anticipated environmental effects, and the Crown's current understanding of established or credibly asserted s. 35 rights in the Project area, MEM has determined that the Crown does have a Duty to Consult with Indigenous communities in respect of the Project. Therefore, on behalf of the Crown, MEM is delegating to Enbridge, through this letter, the procedural aspects of consultation in respect of the Project.

Please see the appendix for detailed information on the respective roles and responsibilities of the provincial Crown and Enbridge. You should seek guidance from MEM at any time if you are unclear about your roles and responsibilities.

Potentially Impacted Indigenous Communities

Based on the Crown's assessment of established and credibly asserted s. 35 rights and potential Project impacts, Enbridge should consult with the following Indigenous communities:

Community	**Contact Information** *(Note: contact information is believed to be accurate, however, personnel may have changed)*
Mississaugas of the Credit First Nation	2789 Mississauga Rd R.R. #6 Hagersville, ON N0A 1H0 T: (905) 768-1133 ClaireS@mncfn.ca Megan.Devries@mncfn.ca

Six Nations of the Grand River	1695 Chiefwood Rd, PO Box 5000 Ohsweken, ON N0A 1M0 T: (519) 445-2201 sngr.chief@sixnations.ca lrcs@sixnations.ca dawnrussell@sixnations.ca
Haudenosaunee Confederacy Chiefs Council (HCCC)	16 Sunrise Court, Suite 600 PO Box 714 Ohsweken, ON N0A 1M0 T: (519) 445-4222 info@hdi.land

This rights-based consultation list is subject to change as new information becomes available, or the scope of the Project evolves. For example, First Nation and/or Métis communities may make new rights assertions at any time, and project-related developments may require additional Indigenous communities to be notified and/or consulted. A community may also indicate that they are not interested in being consulted regarding the Project. If any of the above should occur, Enbridge must notify MEM immediately so that updates to the consultation list can be considered.

We recommend that you contact the Crown if you are unsure about how to address a concern raised by an Indigenous community, particularly if the concern relates to a potential adverse impact on established or credibly asserted s. 35 rights. Consultation is ongoing throughout the project's duration, encompassing project development and design, consultation, approvals, construction, operation, and decommissioning.

If you become aware of potential impacts to s.35 rights of Indigenous communities that are not listed above at any stage of the project, please bring this to the attention of MEM with any supporting information regarding the claim at your earliest convenience.

Depth of Consultation

Based on currently available information about the Project's anticipated impacts, MEM's preliminary assessment has determined that consultation is owed at the low level of the consultation spectrum, at minimum, for the communities noted above.

As such, MEM requires Enbridge to, at a minimum, notify the communities of the project; share information about the project and provide an opportunity for the communities to comment. Any issues raised by the communities should be discussed and considered in light of the potential impact on rights, with mitigation or other forms of accommodation identified where appropriate. Enbridge's initial notice to the communities regarding the Project could include a request to confirm whether the community believes the Project will impact their rights and, accordingly, whether they are interested in being consulted. Should no response be received, Enbridge should continue to provide high-level notifications in accordance with project stage milestones.

Should information become available throughout the consultation process to suggest that project impacts will be significant enough to warrant a deeper level of consultation, Enbridge must inform MEM so that updated guidance can be provided. If no response is received, the proponent should continue to provide high-level notifications at key project stage milestones.

Indigenous Consultation Record

Before, or at the time of, filing applications with the OEB for the Project, please send an Indigenous Consultation Record (ICR) as described in the appendix to the MEM contact identified in this delegation letter. The ICR will provide MEM with an opportunity to review the consultations undertaken to date, to understand any rights-based concerns raised, to assess the adequacy of the rights-based consultation conducted by Enbridge, and, where appropriate, to provide further direction to Enbridge on any additional consultations that should be undertaken. An ICR should be maintained and updated throughout the life of the Project, and ICR updates should be provided to MEM from time to time if any new s.35 rights-based issues or concerns are identified before key Project milestones. Should you have any questions about the appropriate time to provide MEM with an ICR or an ICR update, please contact MEM.

Acknowledgement

Through receipt of this letter, Enbridge acknowledges this Crown delegation, and the procedural consultation responsibilities enumerated in the appendix. Enbridge also acknowledges that it will endeavour to support the Crown's ongoing oversight of the consultation process by continuing to share with MEM any Project-related issues and concerns identified by Indigenous communities throughout the life of the Project. If you have any questions about these requirements, please contact Allison Palmer, Senior Policy Advisor, Indigenous Energy Policy at Allison.Palmer@ontario.ca.

I trust that this information provides clarity and direction regarding the respective roles of the Crown and Enbridge.

Sincerely,

Shannon McCabe

Shannon McCabe
Manager, Strategic Indigenous Initiatives
Ministry of Energy and Mines

c: Samir Adkar, Director, Energy Networks and Indigenous Policy, Ministry of Energy and Mines

Ontario Pipeline Coordinating Committee (OPCC)

APPENDIX: ROLES AND RESPONSIBILITIES OF THE PROPONENT AND THE CROWN RELATED TO THE DUTY TO CONSULT WITH INDIGENOUS COMMUNITIES

Duty to Consult Roles and Responsibilities Delegated to Enbridge (the Proponent)

Please refer to the letter above for specific guidance on the project. On behalf of the Crown, please be advised that your responsibilities as Project Proponent for this Project include:

- providing notice(s) of accurate, complete, and plain language information about the Project to Indigenous communities identified in the letter above, with sufficient detail and at a stage(s) in the process that allows the communities to prepare their views on the Project and, if appropriate, for changes to be made to the Project. Project information may include:
    - a detailed description of the nature and scope of the Project, textual or otherwise, and translations into Indigenous languages where appropriate;
    - a description of the Project location;
    - maps or other visuals showing the Project location and any other affected area(s);
    - information about the Project lands (e.g. whether the Project is on privately owned or Crown-controlled lands);
    - information about the potential negative effects of the Project on the environment, including their severity, geographic scope, and likely duration. This can include, but is not limited to, effects on ecologically sensitive areas, water bodies, wetlands, forests; species at risk and/or the habitat of species at risk;
    - identification of any measures to avoid, minimize or mitigate potential adverse impacts;
    - a description of Project milestones and projected timing for the same;
    - details about other provincial or federal approvals that may be required for the Project to proceed; and
    - any additional information that might be helpful to the community;
- a written request to Indigenous communities to provide in writing or through a face-to-face meeting:
    - any information available to them that should be considered when preparing the Project documentation;
    - any potential adverse Project impacts on their established or credibly asserted s. 35 rights;
    - any suggested measures for avoiding, minimizing or mitigating potential adverse impacts; and
    - information, for the community's approval, about how information provided by the Indigenous community as part of the consultation process will be collected, stored, used, and shared;
    - any additional information that might be helpful to the community;
    - identifying a requested timeline for response(s) from the Indigenous community;
- an indication of the Proponent's availability to discuss the process and provide further information about the Project;

- the Proponent's contact information; and
- any additional information that might be helpful to the community;
- following up, as necessary, with Indigenous communities to ensure they received Project notices and information and are aware of the opportunity to comment, raise questions or concerns and identify potential adverse impacts on their established or credibly asserted rights;
    - If a community is unresponsive to efforts to notify and consult, the Proponent should nonetheless make attempts to update the community on the progress of the Project, the environmental assessment (if applicable) and any other regulatory approvals.
- bearing the reasonable costs associated with the procedural aspects of consultation (e.g., paying for meeting costs, making technical support available) and providing reasonable capacity funding to Indigenous communities to assist in their participation in the consultation process;
- gathering information about how the Project may adversely affect Aboriginal or treaty rights, including gathering information about land use and traditional knowledge;
- consider and respond to comments and concerns raised by Indigenous communities and answer questions about the Project and its potential impacts on established or credibly asserted s. 35 rights;
- as appropriate, discussing and implementing changes to the Project in response to concerns raised by Indigenous communities. This could include modifying the Project to avoid or minimize an impact on established or credibly asserted s. 35 right (e.g., altering the season when construction will occur to avoid interference with mating or migratory patterns of wildlife); and
- informing Indigenous communities about how their concerns were taken into consideration and whether the Project proposal was altered in response. It is considered best practice to provide the Indigenous community with a copy of the consultation record as part of this step for verification purposes.

If you are unclear about the nature of a concern raised by an Indigenous community, you should seek clarification and further details from the community, provide opportunities to listen to community concerns and discuss options, and clarify any issues that fall outside the scope of the consultation process. These steps should be taken to ensure that the consultation process is meaningful and that concerns are heard and, where possible, addressed.

You can also seek guidance from the Crown at any time. It is recommended that you contact the Crown if you are unsure about how to deal with a concern raised by an Indigenous community, particularly if the concern relates to a potential adverse impact on established or asserted Aboriginal or treaty rights.

The consultation process must maintain sufficient flexibility to respond to new information. We request that you make every reasonable effort to establish positive relationships with all Indigenous communities that may be affected by the Project. If you are unclear about the nature of a concern raised by an Indigenous community, you should seek clarification and further details from the community, provide opportunities to listen to community concerns and

discuss options, and clarify any issues that fall outside the scope of the consultation process. These steps should be taken to ensure that the consultation process is meaningful and that concerns are heard and, where possible, addressed. If a community is unresponsive to efforts to notify and consult, you should nonetheless make an effort to update the community on the project's progress, the environmental assessment (if applicable), and other relevant regulatory approvals.

If the Proponent retains sub-contractors to support the procedural aspects of consultation undertaken by the Proponent, Indigenous communities should be made aware of the sub-contractors role, and the Proponent should inform the Crown if any issues concerning established or asserted s. 35 rights arise.

Consultation should occur throughout the project's duration, including project development and design, approvals, construction, operation, and decommissioning. The Proponent should consider how it will support the Crown's ongoing oversight of the consultation process throughout the life of the Project. You should make every reasonable effort to establish positive relationships with all Indigenous communities that may be affected by the Project. You may wish to consider translating communications with communities into Indigenous languages or other languages, where appropriate.

If you reach a business arrangement with an Indigenous community that may affect or relate to the Crown's duty to consult, we ask that the Crown be advised of those aspects of such an arrangement that may relate to or affect the Crown's consultation obligations and that the community itself be apprised of the Proponent's intent to so-apprise the Crown. Whether or not any such business arrangements may be reached with any community, the Crown expects the Proponent to fulfill all its delegated procedural consultation responsibilities to the satisfaction of the Crown.

The Crown reserves the right to participate in the consultation process as it sees fit, including, but not limited to, providing further instructions to proponents on delegated procedural aspects of consultation or directly undertaking additional consultation with Indigenous communities. The Crown reserves the right to add communities throughout the consultation process.

Duty to Consult Roles and responsibilities assumed directly by the Crown

The role of the Crown in fulfilling any duty to consult and accommodate in relation to this Project includes:

- identifying the Proponent and updating, as appropriate, the Indigenous communities to consult for the fulfillment of the Crown duty;
- notifying Indigenous communities that they have been identified for consultation and that the procedural aspects of consultation have been delegated to the Proponent;
- carrying out, from time to time, any necessary assessment of the extent of consultation or, where appropriate, accommodation required for the project to proceed;
- supervising the aspects of the consultation process delegated to the Proponent;

- determining in the course of Project approvals whether the consultation of Indigenous communities was sufficient; and
- determining in the course of Project approvals whether accommodation of Indigenous communities, if required, was appropriate and sufficient.

If the Crown considers that there are outstanding issues related to consultation, the Crown may undertake additional consultation with Indigenous communities.

Indigenous Consultation Record

It is important to ensure that all consultation activities undertaken with Indigenous communities are fully documented. This includes all attempts by the Proponent, or any subcontractors or consultants retained by the Proponent to support the procedural aspects of consultation undertaken by the Proponent, such as notifying or consulting the community, all interactions with and feedback from the community, and all efforts to respond to community concerns. Crown regulators require a comprehensive consultation record to assess whether Aboriginal consultation and any necessary accommodations are sufficient for the Project to receive Ontario government approvals. The consultation record should include, but not be limited to, the following:

- a list of the identified Indigenous communities that were contacted;
- details of all attempts to notify or contact the community regarding the Project, all interactions with and feedback from the community, and all efforts to respond to community concerns, including:
    - copies of correspondence (e.g., letters and electronic communications) sent and received;
    - any evidence that communications were distributed to and received by the Indigenous communities (e.g., courier slips);
- where a community has been non-responsive to multiple efforts to contact the community, a record of such multiple attempts and the responses or lack thereof.
- a written summary of consultations with Indigenous communities and appended documentation such as copies of notices, any meeting summaries or notes including where the meeting took place and who attended, and any other correspondence (e.g., letters and electronic communications sent and received, dates and records of all phone calls);
- Sub-contractors, if any, that are retained by the Proponent to support the procedural aspects of consultation undertaken by the Proponent, information about their role and how Indigenous communities were made aware of the sub-contractor's role as well as any issues that may have arisen concerning established or asserted s. 35 rights.
- responses and information provided by Indigenous communities during the consultation process. This includes information on Aboriginal or treaty rights, traditional lands, claims, or cultural heritage features and information on potential adverse impacts on such Aboriginal or treaty rights and measures for avoiding, minimizing, or mitigating potential adverse impacts to those rights and

- a summary of the rights/concerns and potential adverse impacts on s. 35 rights or on sites of cultural significance (such as burial grounds and archaeological sites) identified by Indigenous communities, how comments or concerns were considered or addressed, and any changes to the Project as a result of the consultation, such as:
    - changing the Project scope or design;
    - changing the timing of proposed activities;
    - minimizing or altering the site footprint or location of the proposed activity;
    - avoiding impacts to the s. 35-related interest;
    - environmental monitoring; and
    - other mitigation strategies.
- Throughout the life of the Project, Indigenous Consultation Records should be updated with any significant interactions regarding s. 35 rights-based issues, and these significant updates should be shared with MEM.

As part of its oversight role, the Crown may, at any time during the consultation and approvals stage of the Project and beyond, request records from the Proponent relating to consultations with Indigenous communities. Any records provided to the Crown will be subject to the *Freedom of Information and Protection of Privacy Act; however, they* may be exempted from disclosure under section 15.1 (Relations with Aboriginal communities) of the Act. Additionally, please note that the information provided to the Crown may also be subject to disclosure where required under any other applicable laws or as part of other dispute resolution proceedings.

The nature of the contents of the consultation record should be shared with the Indigenous communities consulted, and their permission to share this information with the Crown should be obtained. It is considered best practice to share an Indigenous community's consultation record with the community prior to finalizing it, ensuring it is a robust and accurate record of consultation.

B.2 Contact List

DRAFT

Appendix B.2 Project Contact List

Agencies and Elected Officials

Elected Officials

First Name	Surname	Organization	Position	Address	City/Town	Province	Postal Code	Telephone	E-Mail
Donna	Skelly	Government of Ontario	Member of Provincial Parliament Flambrough-Glanbrook	#104 – 2000 Garth Street	Hamilton	ON	L9B 0C1	905-679-3770	donna.skelly@pc.ola.org
Dan	Muys	Government of Canada	Member of Parliament - Flamborough - Glanbrook - Brant North	3194 Hwy #56, Unit 2 P.O. Box 405	Binbrook	ON	L0R 1C0	905-692-2917	dan.muys@parl.gc.ca
Andrea	Horwath	City of Hamilton	Mayor	71 Main Street West. 2nd floor	Hamilton	ON	L8P 4Y5	905-546-4200	mayor@hamilton.ca
Mike	Spadafora	City of Hamilton	Councillor-Ward 13	71 Main Street West. 2nd floor	Hamilton	ON	L8P 4Y5	905-546-2712	mike.spadafora@hamilton.ca
Ted	McMeekin	City of Hamilton	Councillor-Ward 15	71 Main Street West. 2nd floor	Hamilton	ON	L8P 4Y5	905-546-2713	ted.mcmeekin@hamilton.ca

Federal Agencies

First Name	Surname	Organization	Department	Position	Address	City/Town	Province	Postal Code	Telephone	E-Mail
Rob	Clavering	Environment and Climate Change Canada	Environmental Assessment Section, Environmental Protection Branch - Ontario Region Environment and Climate Change Canada	Manager	4905 Dufferin Street	Downsview	ON	M3H 5T4	416-458-9670	robert.clavering@ec.gc.ca
To Whom it May Concern		Fisheries and Oceans Canada	Fish and Fish Habitat Protection Program			Burlington	ON	L7S 1A1	1-855-852-8320	FisheriesProtection@dfo-mpo.gc.ca
To Whom it May Concern		Transport Canada								EnviroOnt@tc.gc.ca

Provincial Agencies

First Name	Surname	Organization	Department	Position	Address	City/Town	Province	Postal Code	Telephone	E-Mail
To Whom it May Concern		Ministry of Environment, Conservation and Parks	Species at Risk Branch		40 St. Clair Ave. W., 14th Floor	Toronto	ON	M4V 1M2		SAROntario@ontario.ca
Zachary	Potts	Ministry of Environment, Conservation and Parks	Environmental Assessment Branch - Indigenous Consultation	Advisor					705-346-0978	zachary.potts@ontario.ca
Aaron	Todd	Ministry of Environment, Conservation and Parks	West Central Region	Director	733 Exeter Rd	London	ON	N6E 1L3	647-633-3351	Aaron.Todd@ontario.ca
Laura	Collings	Ministry of Environment, Conservation and Parks	Source Protection Screening - Conservation and Source Protection Branch	Program Analyst					249-733-1157	SourceProtectionScreening@ontario.ca
To Whom it May Concern		Ministry of Natural Resources	Southern Region	Resources Land Use Planning and Strategic Issues Section	Peterborough	ON	K9J 8MS	Peterborough		SR.Planning@ontario.ca

Conservation Authority

First Name	Surname	Organization	Department	Position	Address	City/Town	Province	Postal Code	Telephone	E-Mail
Angela	Wang	Grand River Conservation Authority	Planning and Regulations	Resource Planner	400 Clyde Road. PO BOX 729	Cambridge	ON	N1R 5W6	519-621-2761 ext. 2292	awang@grandriver.ca
Mike	Stone	Hamilton Conservation Authority	Planning, Stewardship and Ecological Services	Senior Manager	838 Mineral Springs Road	Ancaster	ON	L9G4X1	905-525-2181 ext. 133	mike.stone@conservationhamilton.ca; jtweedle@conservationhamilton.ca
Adam	Heizer	Conservation Halton	Planning and Regulations	Regulations Officer	2596 Britannia Road	Burlington	ON	L7P0G3	905-336-1158 ext. 2254	aheizer@hrca.on.ca; agallaugher@hrca.on.ca

Ontario Pipeline Coordinating Committee

First Name	Surname	Department	Position	Address	City/Town	Province	Postal Code	Telephone	E-Mail	CC List
Zora	Crnojacki	Ontario Energy Board	Sr. Advisor, Natural Gas Applications	2300 Younge Street, PO Box 2319	Toronto	ON	M4P 1E4	416-440-8104	OPCC.Chair@oeb.ca	
Randy	Doradat	Ontario Energy Board	Advisor, Natural Gas Applications	2300 Younge Street, PO Box 2319	Toronto	ON	M4P 1E4	437-880-8925	OPCC.Chair@oeb.ca	
Ken	Mott	Ministry of Agriculture, Food & Agribusiness	Rural Planner	1 Stone Road West, 3rd Floor SE	Guelph	ON	N1G 4Y2	613-290-9112	omafra.eanotices@ontario.ca	
Jackson	Kaufman	Ministry of Citizenship and Multiculturalism	Heritage Planner	400 University Avenue, 5th floor	Toronto	ON	M7A 2R9	613-242-3743	jackson.kaufman@ontario.ca	heritage@ontario.ca james.hamilton@ontario.ca; anastasia.abrazhevich@ontario.ca
Marc	Boucher	Ministry of Energy	Senior Policy Advisor, Indigenous Energy Policy Unit	77 Grenville Street, 6th floor	Toronto	ON	M7A 1B3	416-419-3899	Marc.Boucher@Ontario.ca	shannon.mccabe@ontario.ca
Jake	Noordhof	Ministry of Environment, Conservation and Parks, Environmental Services Environmental Assessment Branch	Manager	135 St. Clair Avenue West, 1st floor	Toronto	ON	M4V 1P5	647-961-4850	jake.noordhof@ontario.ca	sourceprotectionscreening@ontario.ca eanotification.swregion@ontario.ca
Nick	Cole	Infrastructure Ontario	Environmental Manager	2001 - 1 Dundas Street West	Toronto	ON	M5G 2L6	647-264-4499	nick.cole@infrastructureontario.ca	
Carly	Basu	Ministry of Municipal Affairs and Housing Office, Central Municipal Services Office	Manager	777 Bay St, 16th Floor	Toronto	ON	M7A 2J3		Carly.Basu@ontario.ca	
To Whom It May Concern		Ministry of Natural Resources and Forestry,		300 Water Street, 3rd floor south	Peterborough	ON	K9J 3C7		Environmental.Planning.Team@ontario.ca	

First Name	Surname	Department	Position	Address	City/Town	Province	Postal Code	Telephone	E-Mail	CC List
		Environmental Planning Team								
Andre	Nurgel	Technical Standards and Safety Authority, Fuels Safety Program	Engineering Manager	345 Carlingview Drive	Toronto	ON	M9W 6N9	416-734-3521	anurgel@tssa.org	ryu@tssa.org
Daniel	Prelipcean	Ministry of Transportation, Corridor Management Office	Senior Project Manager	301 St. Paul Street	St. Catharines	ON	L2R 7R4	289-407-4238	daniel.prelipcean@ontario.ca	Alicia.Edwards@ontario.ca

Municipal

First Name	Surname	Title	Agency	Department	Address	City/Town	Province	Postal Code	Telephone	E-Mail
Anita	Fabac	Director, Planning & Chief Planner	City of Hamilton	Development Planning	71 Main Street West, 2nd Floor	Hamilton	ON	L8P 4Y5	905-546-2424 Ext. 1258	Anita.Fabac@hamilton.ca
To Whom It May Concern		Clerk	City of Hamilton	Office of the City Clerk	71 Main Street West, 1st Floor	Hamilton	ON	L8P 4Y5	905-546-4408	clerk@hamilton.ca
Marnie	Cluckie	City Manager	City of Hamilton	City Manager's Office	71 Main Street West, 2nd Floor	Hamilton	ON	L8P 4Y5	905-546-2424 ext 5778	marnie.cluckie@hamilton.ca
Charlie	Lauricella	Acting Manager	City of Hamilton	Public Works	71 Main Street West, 2nd Floor	Hamilton	ON	L8P 4Y5	905-546-2424 ext 2440	Charlie.Lauricella@hamilton.ca CC: Rich.Shebib@hamilton.ca ; Jason.Peele@hamilton.ca

Indigenous Communities

First Name	Surname	Organization	Position	Phone Number	Address	City	Province	Postal Code	E-Mail
Claire	Sault	Mississaugas of the Credit First Nation	Chief	905-768-1133	2789 Mississauga Rd R.R. #6	Hagersville	ON	N0A 1H0	claires@mncfn.ca CC: Abby.LaForme@mncfn.ca; Craig.King@mncfn.ca; Mark.LaForme@mncfn.ca
Sherri-Lyn	Hill	Six Nations of the Grand River	Chief	519-445-2201	1695 Chiefwood Rd. PO Box 5000	Ohsweken	ON	N0A1M0	LRCS@sixnations.ca
Raechelle	Williams	Haudenosaunee Confederacy Chiefs Council	HDI Environmental Supervisor	519-445-4222	16 Sunrise Court, Suite 600. PO Box 714	Ohsweken	ON	N0A1M0	raechellewilliams@hdi.land CC: info@hdi.land; aaron@detlorlaw.com

Stakeholders

First Name	Surname	Organization	Position	Phone Number	Address	City	Province	Postal Code	E-Mail
Robyn	Rumney	Conservation Ontario	905-895-0716	905-895-0716	120 Bayview Parkway	Newmarket	ON	L3Y 3W3	rrumney@conservationontario.ca
To Whom It May Concern		Gulliver's Lake RV Resort and Campground		905-659-7300	792 Safari Road	Millgrove	ON	L0R 1V0	
To Whom It May Concern		Hydro One Networks Inc.					ON		
Tiffany	Fung	Hydro One Networks Inc.	Real Estate Land Management	(416) 436-9669					Tiffany.Fung@HydroOne.com; Meghan.DiCosimo@hydroone.com
Paul	Nairn	Ontario Federation of Agriculture	Manager - Western Region	519-272-5533	200 Hanlon Creek Boulevard	Guelph	ON	N1C 0A1	paul.nairn@ofa.on.ca
Kate	Belbeck	Ontario Federation of Agriculture	Zone 5- Halton, Hamilton-Wentworth, Niagara	289-687-7477	200 Hanlon Creek Boulevard	Guelph	ON	N1C 0A1	kate.belbeck@ofa.on.ca
Glen	Prevost	Ontario Woodlot Association	Executive Director	613-713-1525	10 Campus Dr. Unit 4	Kemptville	ON	K0G 1J0	glen.prevost@ontariowoodlot.com

First Name	Surname	Organization	Position	Phone Number	Address	City	Province	Postal Code	E-Mail
Jeff	Clark	Pineland Greens Golf Club	Superintendent & General Manager	905-659-1271	722 Safari Road	Millgrove	ON	L0R 1V0	jclark@pinelandgreens.com
Ed	Fothergill	Ponderosa Nature Resort	Fothergill Planning & Development Inc.	905-577-1077			ON		ed@fothergillplanning.ca CC: pnr@ponderosaresort.ca
[redacted]	[redacted]	Resident		[redacted]	[redacted]	[redacted]	ON	[redacted]	[redacted]

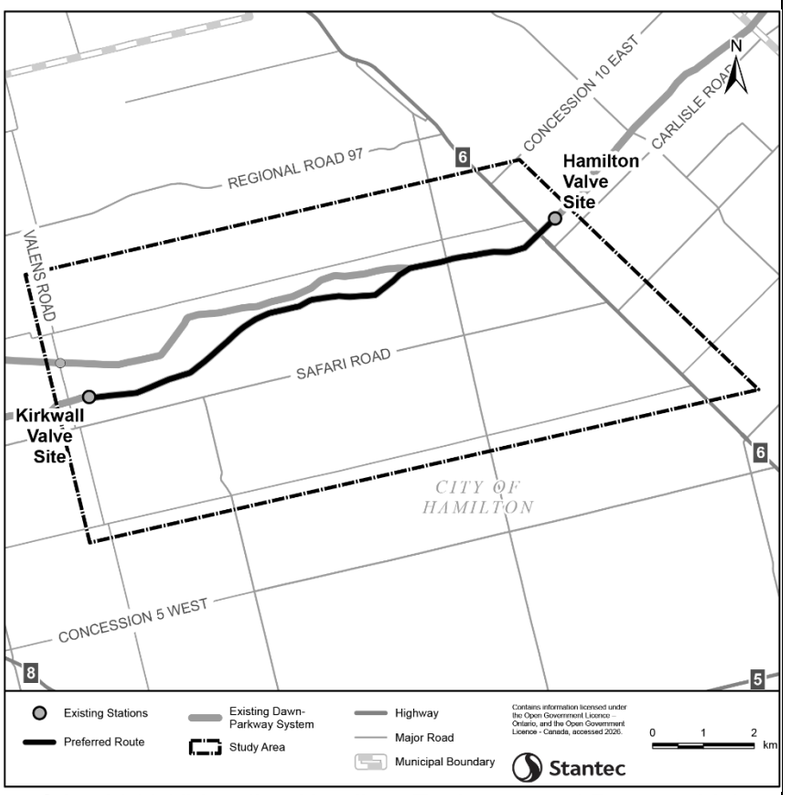
B.3 Notice of Upcoming Environmental Study

DRAFT

Enbridge Gas Inc.
Notice of Upcoming Environmental Study
Dawn Parkway System Renewal Project: Kirkwall to Hamilton

This notice is to inform you of an upcoming Enbridge Gas Inc. (Enbridge Gas) Environmental Study taking place in southwestern Ontario for a potential project that is in early development called the "Dawn Parkway System Renewal Project." The Dawn Parkway Transmission System was built in the 1950s and is the backbone of the natural gas system supporting energy security and economic competitiveness in Ontario and across Canada. It is part of a broader integrated supply network that serves homes and businesses across 500 municipalities in Ontario, Quebec, the Maritimes, and the Northeastern United States.

Through its integrity management program, Enbridge Gas identified several proactive measures to maintain capacity, safety, and reliability, ranging from targeted segment replacements to broader line upgrades. For this Environmental Study, Enbridge Gas is considering improvements to install new 48-inch diameter natural gas pipeline between its existing Kirkwall Valve Site, located northeast of the intersection of Safari Road and Valens Road and the existing Hamilton Valve Site, located east of Highway 6 and north of Carlisle Road. The proposed pipeline location was determined through a route selection process conducted in 2019 and is generally parallel to the three existing Enbridge Gas pipelines, measuring approximately 10.2 km in length. New permanent easements and temporary working space during construction will be required. The study area, existing infrastructure, and Preferred Route are shown in the figure.



Enbridge Gas has retained a third-party environmental consultant, Stantec Consulting Ltd. (Stantec), to reaffirm the findings of the 2019 Kirkwall to Hamilton Environmental Report which will be added as an addendum and will fulfill the requirements of the Ontario Energy Board's (OEB) *Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Projects and Facilities in Ontario, 8th Edition (2023).*

It is anticipated that the Addendum to the Environmental Report will be completed in Q1 2027, after which Enbridge Gas plans to file a Leave to Construct application for the Project with the OEB. The OEB's review and approval is required before the proposed Project can proceed. If approved, construction is anticipated to begin in the spring of 2028.

Enbridge Gas is committed to undertaking consultation and engagement with stakeholders, Indigenous communities, and the public as an integral component of the Environmental Study. Additional details about the Environmental Study and how to become involved during the consultation and engagement process will be provided in future correspondence.

Should you have any questions, comments, or input regarding the Environmental Study, please contact Stantec using the information below. All correspondence will be evaluated and may be considered during the Environmental Study.

Michael Candido
Environmental Scientist
Stantec Consulting Ltd.
Telephone: (519) 585-3439
Email: Kirkwall-HamiltonES@stantec.com

Stantec

ENBRIDGE
Life Takes Energy®

Enbridge
10175 101 St NW
Edmonton, Alberta T5J 0H3
Canada

July 6, 2026

Dear Neighbour,

Re: Enbridge Gas Inc. (Enbridge Gas) – Dawn-Parkway System Renewal

Enbridge Gas is writing to inform you of an upcoming environmental study taking place as part of a potential project called the “Dawn-Parkway System Renewal”. Enbridge Gas is considering improvements to install a new NPS 48 inch diameter natural gas pipeline, between its existing Kirkwall valve site, located northeast of the intersection of Safari Road and Valens Road and the existing Hamilton valve site, located east of Highway 6 and north of Carlisle Road. The proposed pipeline location was determined through a route selection process conducted in 2019, and is generally parallel to the three existing Enbridge Gas pipelines, measuring 10 kilometers in length.

The Dawn Parkway Transmission System is a critical component of Enbridge Gas’s existing natural gas transmission network and one of the most important natural gas transportation routes in Ontario. Its continued operation helps ensure a steady and reliable supply of natural gas for homes, businesses, and industry. The system connects the Dawn Operations Centre in St. Clair Township, the Parkway Compressor Station in the City of Mississauga, and the Kirkwall Valve Site in the City of Hamilton, and forms part of the broader transmission network serving Ontario.

This potential project is in the early stages of development, and the exact routing and footprint will be determined as the detailed design and environmental studies progress. For more information, please refer to the ‘Notice of Upcoming Environmental Study’ enclosed with this letter.

We are committed to engaging openly and respectfully with landowners and stakeholders within the communities we operate. Where potential land access or routing of the pipeline is proposed, we will be reaching out to you in the near future. A land representative will be contacting you on our behalf to introduce themselves, provide information and answer any questions you may have regarding land access if required for upcoming survey work and environmental studies prior to their commencement. Their contact details are also provided in this letter for your reference.

We will be hosting upcoming Information Sessions and will provide you with more information regarding the commencement of environmental studies very shortly.

Should you have any questions regarding this letter or at any time, please contact:

Chad Brown - Field Land Agent, AiM Land Services

Phone Number: 519-281-1098

Email: chad.brown@aimlandandenviro.ca

Sincerely,



Erin Whillans

Sr Advisor, Lands and Right of Way

July 6, 2026

«FIRST_NAME» «SURNAME», «POSITION»
«ORGANIZATION»
«DEPARTMENT»
«ADDRESS»
«CITYTOWN» «PROVINCE» «POSTAL_CODE»
«EMAIL»

Dear «FIRST_NAME» «SURNAME»,

Reference: Enbridge Gas – Dawn Parkway System Renewal Project: Kirkwall to Hamilton: Notice of Upcoming Environmental Study

Enbridge Gas Inc. (Enbridge Gas) will be completing an Environmental Study taking place in southwestern Ontario for a potential project that is in early development called the "Dawn Parkway System Renewal Project." For this Environmental Study, Enbridge Gas is considering improvements to install new 48- inch diameter natural gas pipeline between its existing Kirkwall Valve Site, located northeast of the intersection of Safari Road and Valens Road and the existing Hamilton Valve Site, located east of Highway 6 and north of Carlisle Road. The Preferred Route was determined through a route selection process conducted in 2019 and is generally parallel to the three existing Enbridge Gas pipelines, measuring 10.2 km in length.

Enbridge Gas has retained a third-party environmental consultant, Stantec Consulting Ltd. (Stantec), to complete an Environmental Study for the Project, which will fulfill the requirements of the Ontario Energy Board's (OEB) *Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Projects and Facilities in Ontario, 8th Edition (2023).*

Enbridge Gas is committed to undertaking consultation and engagement with stakeholders, Indigenous communities, and the public as an integral component of the Environmental Study. Additional details about the Environmental Study and how to become involved during the consultation and engagement process will be provided in future correspondence.

Should you have any questions, comments, or input regarding the Environmental Study, please contact Stantec using the information provided in the attached Notice.

Regards,

Michael Candido, B.Sc. (Env.), CAN-CISEC
Stantec Consulting Ltd.
Environmental Scientist
Assessment and Permitting
Phone: (519) 585-3439

Attachment: Notice of Upcoming Environmental Study

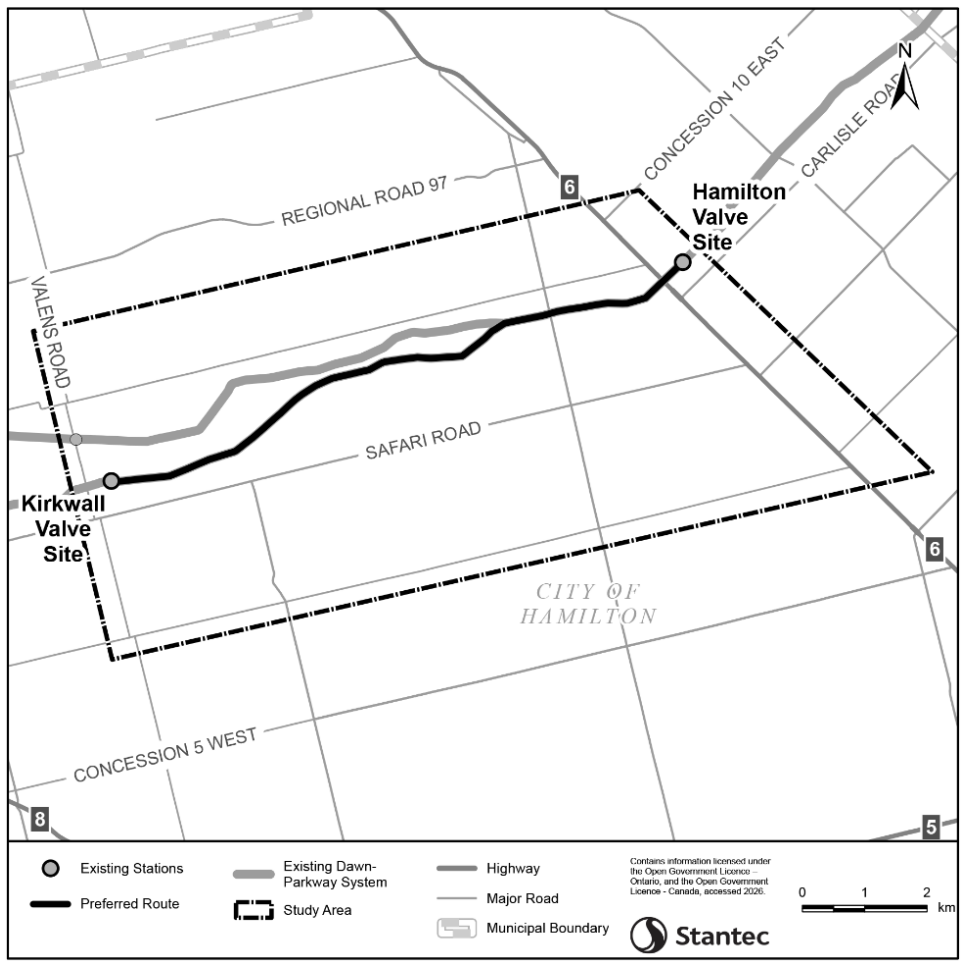
B.4 Notice of Environmental Study Commencement

DRAFT

Enbridge Gas Inc.
Notice of Environmental Study Commencement and Information Session
Dawn Parkway System Renewal Project: Kirkwall to Hamilton

Enbridge Gas Inc. (Enbridge Gas) will be conducting an Environmental Study for the Dawn Parkway System Renewal Project. Through its integrity management program, Enbridge Gas identified several proactive measures to maintain capacity, safety, and reliability along the Dawn Parkway Transmission System, ranging from targeted segment replacements to broader line upgrades.

For the Environmental Study, Enbridge Gas is considering installing a new 48- inch diameter natural gas pipeline between its existing Kirkwall Valve Site, located northeast of the intersection of Safari Road and Valens Road and the existing Hamilton Valve Site, located east of Highway 6 and north of Carlisle Road. The proposed pipeline location was determined through a route selection process conducted in 2019 and is generally parallel to the three existing Enbridge Gas pipelines, measuring approximately 10.2 km in length. New permanent easements and temporary working space during construction will be required.



Consultation and engagement with Indigenous communities, landowners, government agencies, the local municipality, and other interested persons is an integral component of the Project's planning process. As such, an Information Session will be held:

In-Person Information Session:
Millgrove Community Centre
August 25, 2026, 5:00 PM to 8:00 PM
855 Millgrove Side Road
Millgrove, ON L0R 1V0

Virtual Information Session (Online):
August 17 to August 31, 2026
https://www.solutions.com/Kirkwall-HamiltonES

A copy of the consultation materials from the In-Person Information Session will be available for viewing on the Enbridge Gas project webpage provided below. A questionnaire will also be available as part of the Information Session, and you will have the opportunity to provide comments or ask questions about the proposed Project. Input received may be used to develop site-specific environmental protection and mitigation measures for the Project. Input and comments about the Project are requested by September 15, 2026.

Enbridge Gas has retained Stantec Consulting Ltd. (Stantec) to reaffirm the findings of the 2019 Kirkwall to Hamilton Environmental Report and prepare an Addendum that will fulfill the requirements of the Ontario Energy Board's (OEB) *Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Projects and Facilities in Ontario, 8th Edition (2023).* It is anticipated that the Addendum to the Environmental Report will be completed in Q1 2027, after which Enbridge Gas plans to file a Leave to Construct application for the Project with the OEB. The OEB's approval would be required before construction of the proposed Project can proceed. If approved, construction is anticipated to begin in the spring of 2028.

For any questions, comments, or input regarding the Environmental Study, please contact:

Michael Candido
Environmental Scientist
Stantec Consulting Ltd.
Telephone: (519) 585-3439
Email: Kirkwall-HamiltonES@stantec.com
Project Webpage: Enbridgegas.com/dawnparkwayrenewal

Stantec

ENBRIDGE
Life Takes Energy

Enbridge Gas Inc.
50 Keil Drive North
Chatham, ON N7M 5M1

August 6, 2026

Dear Neighbour,

Re: Enbridge Gas Inc. (Enbridge Gas) – Dawn Parkway System Renewal Project: Kirkwall to Hamilton

Enbridge Gas is writing to inform you that we will be conducting an Environmental Study for the Dawn Parkway System Renewal Project. Enbridge Gas is considering improvements to install a new NPS 48 inch diameter natural gas pipeline, between its existing Kirkwall valve site, located northeast of the intersection of Safari Road and Valens Road and the existing Hamilton valve site, located east of Highway 6 and north of Carlisle Road. The proposed pipeline location was determined through a route selection process conducted in 2019, and is generally parallel to the three existing Enbridge Gas pipelines, measuring approximately 10.6 kilometers in length.

The Dawn Parkway Transmission System is a critical component of Enbridge Gas's existing natural gas transmission network and one of the most important natural gas transportation routes in Ontario. Its continued operation helps ensure a steady and reliable supply of natural gas for homes, businesses, and industry. The system connects the Dawn Operations Centre in St. Clair Township, the Parkway Compressor Station in the City of Mississauga, and the Kirkwall Valve Site in the City of Hamilton, and forms part of the broader transmission network serving Ontario.

This potential project is in the early stages of development, and the exact routing and footprint will be determined as the detailed design and environmental studies progress. As the field studies commence, you may notice an increased presence of field representatives in your community.

We are committed to engaging openly and respectfully with landowners and stakeholders within the communities we operate. Where potential land access or routing of the pipeline is proposed, we will be reaching out to you in the near future. A land representative will be in contact with you regarding land access if required for upcoming survey work and environmental studies prior to their commencement. Their contact details are also provided in this letter for your reference.

The details for the upcoming Information Session are provided below:

In-Person Information Session:

Millgrove Community Centre

August 25, 5:00 PM to 8:00 PM

855 Millgrove Side Rd

Hamilton, ON

Virtual Information Session (Online):

August 17 to August 31, 2026

https://www.solutions.ca/Kirkwall-HamiltonES

Should you have any questions regarding this letter or about the Dawn Parkway System Renewal Project, please contact:

Chad Brown - Field Land Agent, AiM Land Services

Phone Number: 519-281-1098

Email: chad.brown@aimlandandenviro.ca

For more information, please refer to the 'Notice of Environmental Study Commencement and Information Session' enclosed with this letter, or visit our Project Website at https://www.enbridgegas.com/about-enbridge-gas/projects.

Sincerely,



Erin Whillans

Sr Advisor, Lands and Right of Way

Stantec Consulting Ltd.
100-300 Hagey Boulevard
Waterloo, ON N2L 0A4

August 4, 2026

FIRST NAME LAST NAME
TITLE
ORGANIZATION
DEPARTMENT
ADDRESS
CITY, POSTAL CODE
EMAIL

SENT VIA EMAIL

Dear FIRST NAME LAST NAME,

Reference: Enbridge Gas Inc. – Dawn Parkway System Renewal Project: Kirkwall to Hamilton
Notice of Environmental Study Commencement and Information Sessions

Enbridge Gas Inc. (Enbridge Gas) will be conducting an Environmental Study for the Dawn Parkway System Renewal Project: Kirkwall to Hamilton. Through its integrity management program, Enbridge Gas identified several proactive measures to maintain capacity, safety, and reliability along the Dawn Parkway Transmission System, ranging from targeted segment replacements to broader line upgrades.

For the Environmental Study, Enbridge Gas is considering installing a new 48 - inch diameter natural gas pipeline between its existing Kirkwall Valve Site, located northeast of the intersection of Safari Road and Valens Road and the existing Hamilton Valve Site, located east of Highway 6 and north of Carlisle Road. The proposed pipeline location was determined through a route selection process conducted in 2019 and is generally parallel to three existing Enbridge Gas pipelines, measuring approximately 10.2 km in length. New permanent easements and temporary working space during construction will be required.

Enbridge Gas has retained Stantec Consulting Ltd. (Stantec) to reaffirm the findings of the 2019 Kirkwall to Hamilton Environmental Report and prepare an Addendum that will fulfill the requirements of the Ontario Energy Board's (OEB) *Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Projects and Facilities in Ontario, 8th Edition (2023).* It is anticipated that the Addendum to the Environmental Report will be completed in Q1 2027, after which Enbridge Gas plans to file a Leave to Construct application for the Project with the OEB. The OEB's approval is required before construction of the proposed Project can proceed. If approved, construction is anticipated to begin in the spring of 2028.

As an agency with jurisdiction or potential interest in developments in the area, you are invited to provide or coordinate comments regarding the proposed Project. Specifically, Stantec is seeking information regarding planning principles or guidelines implemented by your agency that may affect the construction, and operation of the proposed Project. Stantec is also seeking the collection of primary and secondary data to reaffirm and update (as required) the previously compiled environmental and socio-economic inventory. To support the quality of the assessment process, we also request that you share information regarding other proposed developments in the Study Area. This information will be incorporated into the Environmental

Reference: **Enbridge Gas Inc. – Dawn Parkway System Renewal Project: Kirkwall to Hamilton Notice of Environmental Study Commencement and Information Sessions**

Study and related report as a component of the cumulative effects assessment. Stantec will complete an Addendum to the 2019 Environmental Report to reaffirm previously completed efforts. Please contact us to discuss the most efficient way to obtain this information.

Engagement with Indigenous communities, landowners, government agencies, the local municipality, members of the public, and other interested persons is an integral component of the planning process. For this Project, both an In-Person Information Session and Virtual Information Session will be held. Input received will be used to reaffirm the Preferred Route and to develop site-specific environmental protection or mitigation measures for this Project.

In-Person Information Session:
Millgrove Community Centre
August 25, 5:00 PM to 8:00 PM
855 Millgrove Side Rd
Millgrove, ON L0R 1V0

Virtual Information Session (online):
August 17- August 31, 2026
https://www.solutions.com/Kirkwall-HamiltonES

A questionnaire will be available as part of the Information Sessions, and you will have the ability to submit comments and/or questions about the proposed Project.

We kindly request that your agency provide any initial input and comments regarding the Project by September 15, 2026. Please let us know if you are unable to respond by this date but are interested in participating in the consultation process for the Project.

If you have questions or concerns regarding the Project, please do not hesitate to email the Project team at **Kirkwall-HamiltonES@stantec.com** or contact the undersigned.

Regards,

Stantec Consulting Ltd.

Mike Candido, B.Sc. (Env.), CAN-CISEC
Stantec Consulting Ltd.
Environmental Scientist
Assessment and Permitting
Phone: (519) 585-3439

Attachment: Notice of Environmental Study Commencement

Cc: Ryan Park, Specialist, Environment, Enbridge Gas Inc.

Stantec Consulting Ltd.
100-300 Hagey Boulevard
Waterloo, ON N2L 0A4

August 10, 2026

«NAMES»
«ORGANIZATION»
«ADDRESS»
«CITY» «PROVINCE» «POSTAL_CODE»

CORRECTION

Dear «TITLE» «NAMES»,

Reference: Enbridge Gas Inc. – Dawn Parkway System Renewal Project: Kirkwall to Hamilton Notice of Environmental Study Commencement and Information Sessions

Please note that materials dated August 4, 2026 were previously distributed that included the incorrect web address to access the Virtual Information Session. **Please disregard the previous Notice and Letter and use the attached corrected materials.** The correct web address is https://www.solutions.ca/Kirkwall-Hamilton ES, which can be used to access the online materials from August 17, 2026 to August 31, 2026.

If you have questions or concerns regarding the Project, please do not hesitate to email the Project team at **Kirkwall-HamiltonES@stantec.com** or contact the undersigned. Thank you for your understanding.

Sincerely,

Stantec Consulting Ltd.

Michael Candido, B.Sc. (Env.), CAN-CISEC
Stantec Consulting Ltd.
Environmental Scientist
Assessment and Permitting
Phone: (519) 585-3439

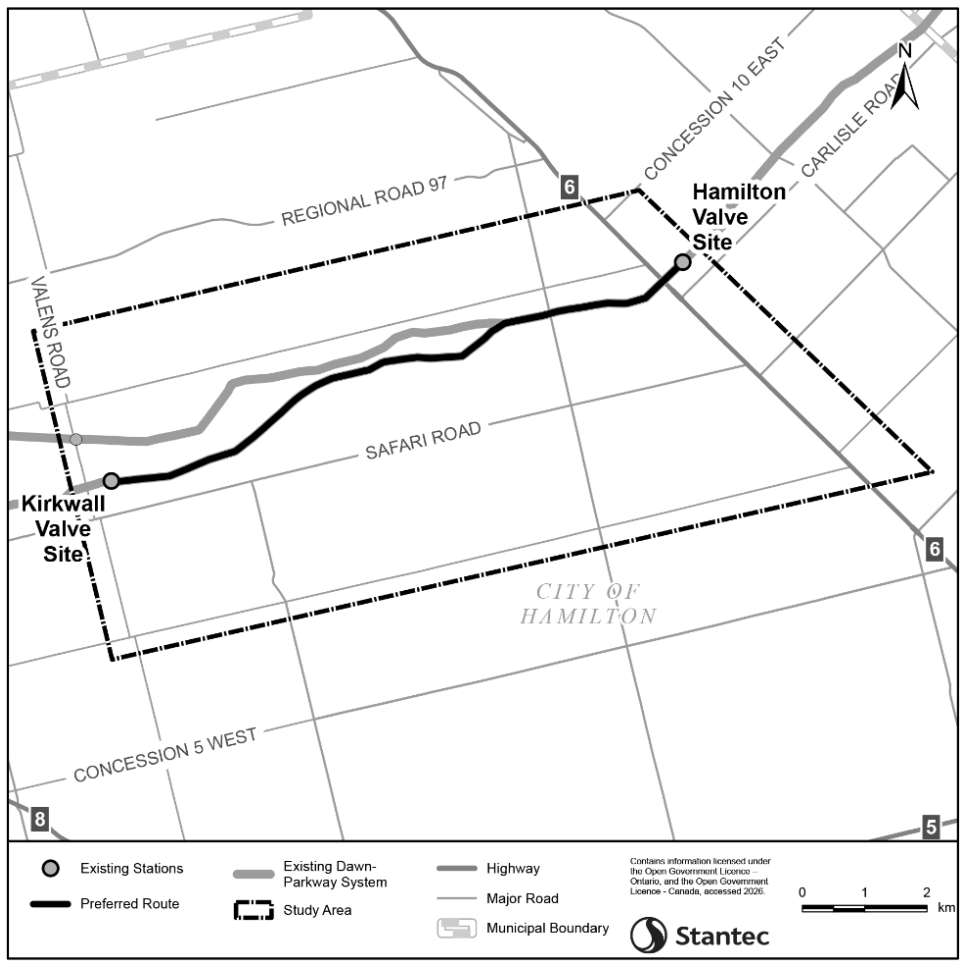
Attachment: **CORRECTED Notice of Environmental Study Commencement**
CORRECTED Enbridge Gas Inc. Landowner Letter

Cc: Ryan Park, Specialist, Environment, Enbridge Gas Inc.

Enbridge Gas Inc.
Notice of Environmental Study Commencement and Information Session
Dawn Parkway System Renewal Project: Kirkwall to Hamilton

Enbridge Gas Inc. (Enbridge Gas) will be conducting an Environmental Study for the Dawn Parkway System Renewal Project. Through its integrity management program, Enbridge Gas identified several proactive measures to maintain capacity, safety, and reliability along the Dawn Parkway Transmission System, ranging from targeted segment replacements to broader line upgrades.

For the Environmental Study, Enbridge Gas is considering installing new 48- inch diameter natural gas pipeline between its existing Kirkwall Valve Site, located northeast of the intersection of Safari Road and Valens Road and the existing Hamilton Valve Site, located east of Highway 6 and north of Carlisle Road. The proposed pipeline location was determined through a route selection process conducted in 2019 and is generally parallel to the three existing Enbridge Gas pipelines, measuring approximately 10.2 km in length. New permanent easements and temporary working space during construction will be required.



Consultation and engagement with Indigenous communities, landowners, government agencies, the local municipality, and other interested persons is an integral component of the Project's planning process. As such, an Information Session will be held:

In-Person Information Session:
Millgrove Community Centre
August 25, 5:00 PM to 8:00 PM
855 Millgrove Side Road
Millgrove, ON L0R 1V0

Virtual Information Session (Online):
August 17 to August 31, 2026
https://www.solutions.ca/Kirkwall-HamiltonES

A copy of the consultation materials from the In-Person Information Session will be available for viewing on the Enbridge Gas project webpage provided below. A questionnaire will also be available as part of the Information Session, and you will have the opportunity to provide comments or ask questions about the proposed Project. Input received may be used to develop site-specific environmental protection and mitigation measures for the Project. Input and comments about the Project are requested by September 15, 2026.

Enbridge Gas has retained Stantec Consulting Ltd. (Stantec) to reaffirm the findings of the 2019 Kirkwall to Hamilton Environmental Report and prepare an Addendum that will fulfill the requirements of the Ontario Energy Board's (OEB) *Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Projects and Facilities in Ontario, 8th Edition (2023).* It is anticipated that the Addendum to the Environmental Report will be completed in Q1 2027, after which Enbridge Gas plans to file a Leave to Construct application for the Project with the OEB. The OEB's approval is required before construction of the proposed Project can proceed. If approved, construction is anticipated to begin in the spring of 2028.

For any questions, comments, or input regarding the Environmental Study, please contact:

Michael Candido
Environmental Scientist
Stantec Consulting Ltd.
Telephone: (519) 585-3439
Email: Kirkwall-HamiltonES@stantec.com
Project Webpage: Enbridgegas.com/dawnparkwayrenewal

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B.5 Newspaper Notice Tear Sheets

DRAFT



Marc Harvey lives at Verolen's Rest Home on Catharine Street South in Hamilton's Corktown neighbourhood. "Every night, I say good night to Billy and he says good night back," he says of his roommate.

TEVIAH MORO PHOTOS/ THE HAMILTON SPECTATOR

Homes

CONTINUED FROM A9

in practice, she also suggests.

Most RCFs, which operate in large, old homes mostly in Hamilton's inner city, aren't equipped for individual meal preparation in self-contained apartments, for instance.

"It sounds great in theory, but if you actually are familiar with the conditions of RCFs, it's something that really doesn't seem tangible," Andersson said.

In presenting the capacity scenarios, the KPMG report also notes Hamilton "maintains a broader portfolio of housing units" outside of RCFs and expects to soon add supportive housing to its stock.

City staff, meanwhile, have emphasized residents, who have rights under the Residential Tenancies Act, won't be abruptly uprooted from RCFs as the network transformation recalibrates to focus on homelessness advances.

As vacancies come up, those spaces will transition to the new operating model, Michelle Baird, housing services director, recently told council, describing a staged implementation with more consultation ahead.

"At this point in time, we're not planning to decrease the number of beds."

Rather, the system will have "different numbers of beds at the different levels of service."

'He says good night back'

Different but similar.

That could be the motto of Verolen's Rest Home, an RCF just south of downtown.

On a recent evening, adults with developmental disabilities sit in a living room while a baseball game plays on TV after dinner.

But Marc Harvey is in his room, flipping through a binder with his hockey cards and lists of songs and movies he likes.

Harvey, 73, says he entered the system after his mother died in her 90s.

The transition from their place in Stoney Creek was difficult, but life in the Catharine Street South residence in Corktown is "not bad," he says.



A shared bedroom at Faith Hope Manor on John Street North in Hamilton.

Harvey shares his room with another older man who has lived there for decades.

"It's someone to talk to," he offers with a smile. "Every night, I say good night to Billy and he says good night back."

That's the sort of harmony operator Yvonne Dunbar says she strives to achieve, noting the home's 13 residents are "on the same level."

"I'm not just trying to fill a bed. I will meet and interview them first to see if they will fit into the fabric of the home," says Dunbar, who also owns Faith Hope Manor.

But she and other operators are anxious as the city advances its plans, which they predict will not improve services and lead to fewer homes for vulnerable residents.

For years, operators have argued subsidies for their homes have been insufficient to keep up with rising operating costs, let alone meet increased service demands.

And, increasingly, violence and conflict have become part of their job as RCFs struggle to accommodate residents with complex mental-health and addiction problems.

"As an operator, it's dangerous," said Calvin Cain at his Sunrise Lodge on Park Street South in the Durand neighbourhood.

That also makes it tough to recruit and retain staff, said Cain who, wearing scrubs, explained he has to be a hands-on owner to keep his RCF running.

But he figures time is running out for already squeezed and exhausted operators. He expects some will sell their buildings once the market rebounds.

"Folks who are sitting on the fence now, as soon as this thing really starts to materialize and they see where they stand in terms of how they can manage their home and business, they're going to opt out."

'A false trade-off'

The RCF system can be improved without serving fewer people.

That's what Chi-Ling Joanna Sinn, a health systems researcher, recently told city officials.

The city's plan includes "important steps forward," such as increasing the personal needs allowance and recognizing more tailored support beyond meal preparation and housekeeping is necessary.

"But it also begs the question how do we fund the additional staff needed to make this model work?"

For instance, placing a new case

SEE HOMES, A11

Enbridge Gas Inc.
Notice of Environmental Study Commencement and Information Session
Dawn Parkway System Renewal Project: Kirkwall to Hamilton

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Telephone: (519) 585-3439
Email: Kirkwall-HamiltonES@stantec.com
Project Webpage: Enbridgegas.com/dawnparkwayrenewal

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HAMILTON THE SPECTATOR
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Hamilton's ninth homicide of the year

Flamborough Public Notices

Stantec

FLAMBOROUGH PUBLIC NOTICES

PUBLIC NOTICE

Aug 8, 2026

Enbridge Gas Inc. Notice of Environmental Study Commencement and Information Session Dawn Pa...

Helping you keep more of what's yours
Learn more
Ontario
Paid for by the Government of Ontario

B.6 Information Session Materials

DRAFT



Dawn Parkway System Renewal Project: Kirkwall to Hamilton

Information Session: Thursday, August 25, 2026

Location: Millgrove Community Centre
855 Millgrove Side Rd, Millgrove, ON L0R 1V0

Time: 5:00 PM to 8:00 PM

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Dawn Parkway System Renewal Project: Kirkwall to Hamilton Information Session



Enbridge Gas' Commitment

Enbridge Gas is dedicated to engaging with Indigenous communities, landowners, agencies, interest groups, and community members. They commit to providing up-to-date information in an open, honest, and respectful manner while carefully considering your input. With over 3.9 million residential, commercial, and industrial customers, Enbridge Gas is committed to delivering natural gas safely and reliably. Environmental stewardship is also a top priority for Enbridge Gas, and they conduct their operations in an environmentally responsible manner.

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Dawn Parkway System Renewal Project: Kirkwall to Hamilton Information Session



Purpose of this Information Session

- Consult with Indigenous communities, and engage with landowners, members of the public and regulatory authorities regarding the proposed pipeline route, potential impacts, and proposed mitigation measures.
- Provide an opportunity for these individuals to review the proposed Project, ask any questions, and/or provide comments to representatives from Enbridge Gas and Stantec.

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Dawn Parkway System Renewal Project: Kirkwall to Hamilton Information Session



Enbridge Gas' Engagement with Indigenous Peoples

Enbridge recognizes the diversity of Indigenous peoples who live where we work and operate. We understand that certain laws and policies have had destructive impacts on Indigenous cultures, languages, and the social and economic well-being of Indigenous peoples. We also recognize the importance of reconciliation between Indigenous peoples and broader society. We are committed to building positive and sustainable relationships with Indigenous peoples based on trust and respect and are focused on finding common goals through open dialogue.

The Indigenous engagement program is based on adherence to the OEB's Guidelines and Enbridge Inc.'s company-wide Indigenous Peoples Policy, which Enbridge Gas follows. Enbridge's Indigenous Peoples Policy lays out key principles for establishing relationships with Indigenous groups, including:

- Recognizing the importance of the United Nations Declaration on the Rights of Indigenous Peoples in the context of existing Canadian law;
- Recognizing the legal and constitutional rights possessed by Indigenous peoples in Canada and the importance of the relationship between Indigenous peoples and their traditional lands and resources;
- Engaging early to achieve meaningful relationships with Indigenous groups by providing timely exchanges of information, understanding and addressing Indigenous project-specific concerns, and ensuring ongoing dialogue regarding its projects, their potential impacts and benefits; and
- Aligning Enbridge's interests with those of Indigenous peoples through meaningful, direct Indigenous economic activity in projects corresponding to community capacity and project needs, where possible.

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Dawn Parkway System Renewal Project: Kirkwall to Hamilton Information Session



Project Overview

- Enbridge Gas is considering installing a new 48-inch diameter natural gas pipeline between its existing Kirkwall Valve Site, located northeast of the intersection of Safari Road and Valens Road and the existing Hamilton Valve Site, located east of Highway 6 and north of Carlisle Road. The proposed pipeline location was determined through a route selection process conducted in 2019 and is generally parallel to three existing Enbridge Gas pipelines, measuring approximately 10.2 km in length. New permanent easements and temporary working space during construction will be required.
- The Project is driven by the need to restore capacity, due to identified integrity features, and to ensure the continued safe and reliable operation of the existing system.

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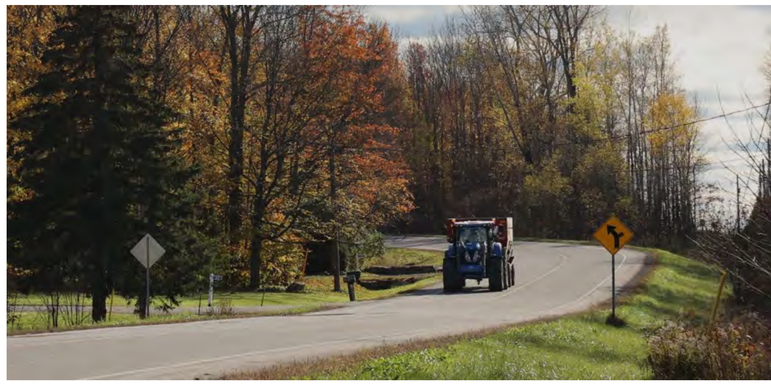
Dawn Parkway System Renewal Project: Kirkwall to Hamilton Information Session



Environmental Study Process

As part of the planning process, Enbridge Gas has retained Stantec to undertake an Environmental Study for the project.

The Environmental Study will fulfill the requirements of the Ontario Energy Board's (OEB) "*Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Projects and Facilities in Ontario, 8th Edition (2023)".*

The Study will:

- Undertake engagement to understand the views of interested and potentially affected parties.
- Consult with Indigenous communities to understand interests and potential impacts.
- Be conducted during the earliest phase of the Project.
- Identify potential impacts of the Project.
- Develop environmental mitigation and protective measures to avoid or reduce potential impacts.
- Develop an appropriate environmental inspection, monitoring, and follow-up program.

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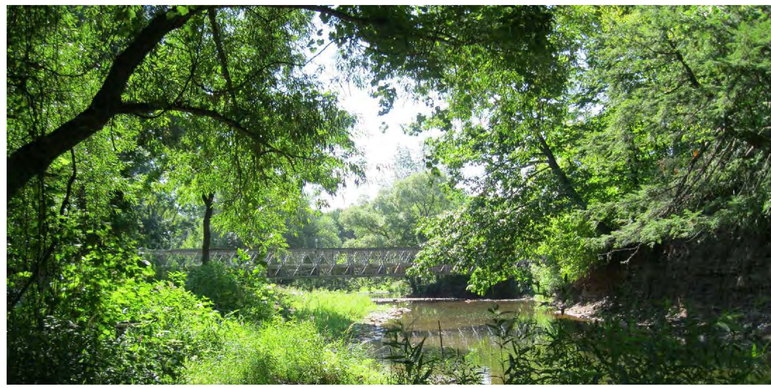
Dawn Parkway System Renewal Project: Kirkwall to Hamilton Information Session



Route Identification

- In June 2016, Stantec conducted a site visit and determined a variety of pipeline routing constraints were present: developed areas (campgrounds, communities and homes), topography (i.e., slope, drumlins), roads, and environmental features such as waterbodies, watercourses, wetlands, and wooded areas.
- Possible pipeline routes were assessed through the routing evaluation methodology which considers routing objectives, existing linear infrastructure, constructability, socio-economic, and environmentally sensitive features. As a result, two potential routes were established as Route A and Route B.

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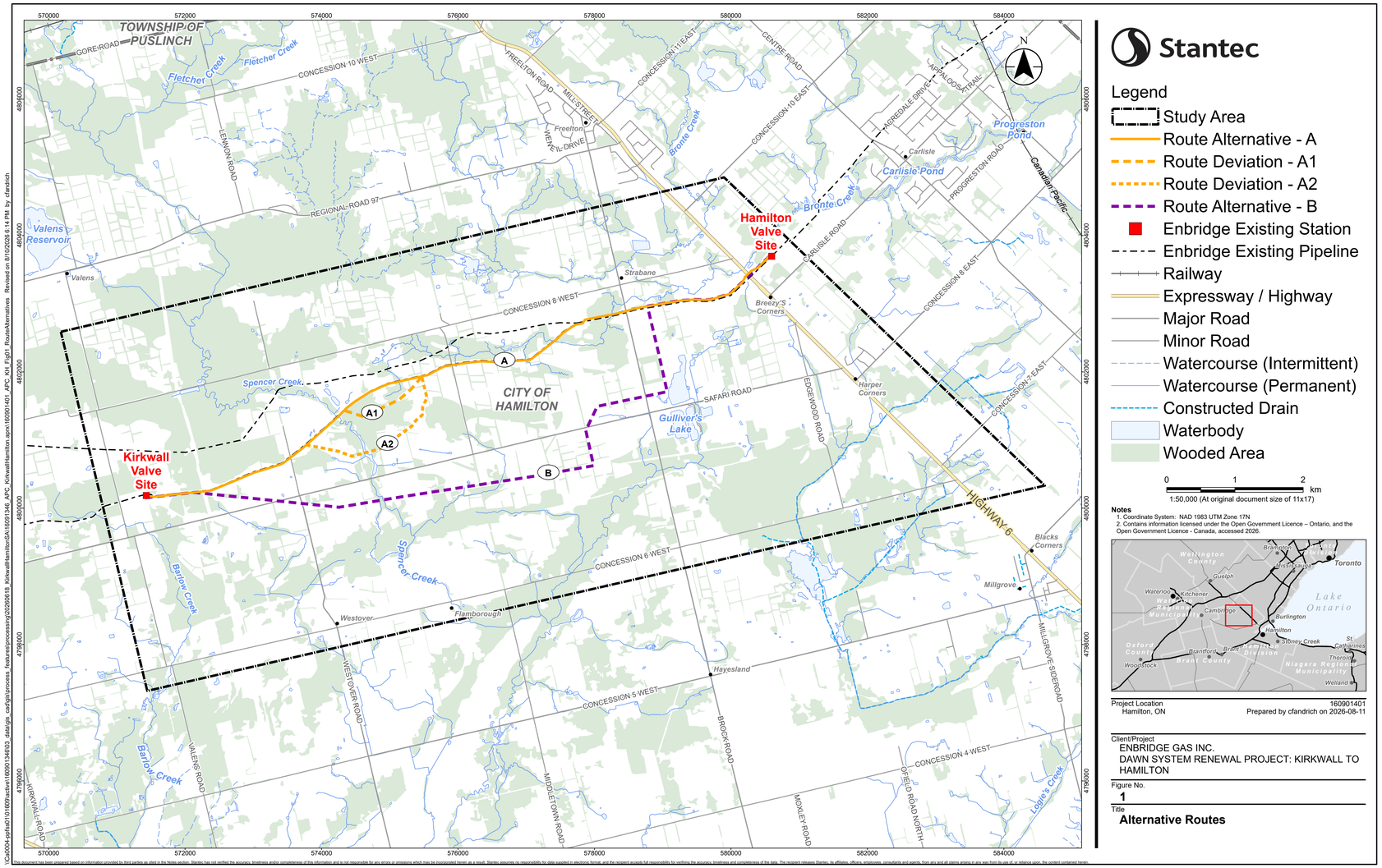
Route Alternatives

- Route A was identified as an existing southern pipeline easement that travelled through the Antrim Glen and Ponderosa Nature Resort communities.
- To avoid these communities, Route A1 and Route A2 were developed.
- Route B was identified and parallels a combination of an existing Hydro One corridor and lot lines. A portion of Route B does not follow the Hydro One corridor and lot lines so as to avoid sensitive environmental features.



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Legend

- Study Area
- Route Alternative - A
- Route Deviation - A1
- Route Deviation - A2
- Route Alternative - B
- Enbridge Existing Station
- Enbridge Existing Pipeline
- Railway
- Expressway / Highway
- Major Road
- Minor Road
- Watercourse (Intermittent)
- Watercourse (Permanent)
- Constructed Drain
- Waterbody
- Wooded Area

0 1 2 km
1:50,000 (At original document size of 11x17)

Notes
1. Coordinate System: NAD 1983 UTM Zone 17N
2. Contains information licensed under the Open Government Licence – Ontario, and the Open Government Licence - Canada, accessed 2026.

Project Location
Hamilton, ON

160901401
Prepared by cfandrich on 2026-08-11

Client/Project
ENBRIDGE GAS INC.
DAWN SYSTEM RENEWAL PROJECT: KIRKWALL TO HAMILTON

Figure No.
1

Title
Alternative Routes

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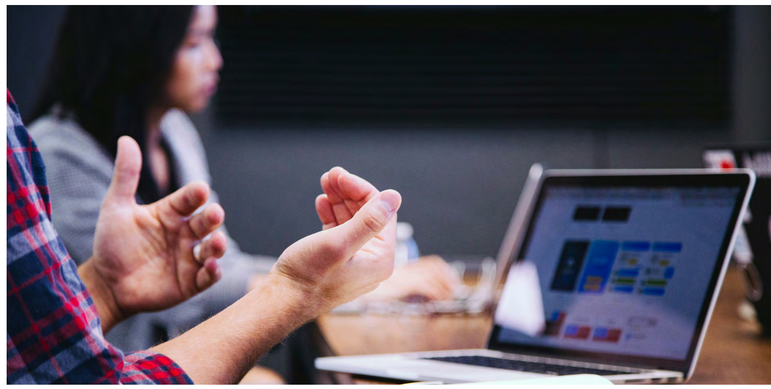
Dawn Parkway System Renewal Project: Kirkwall to Hamilton Information Session



Selection of the Preferred Route

- A comparative evaluation found both Route A and Route B to be environmentally acceptable; however, Route A was preferred because it offers greater operational and construction efficiencies by paralleling and overlapping an existing Enbridge Gas pipeline easement. This reduces impacts on agricultural lands, residential properties, and natural heritage features. As a result, Route A was selected as the Preliminary Preferred Route.
- Input on the Preliminary Preferred Route, route deviations and the alternative route was sought through consultation. Landowners along Route deviations A1 and A2 expressed concerns about impacts on local businesses and tree removal. Landowners along Route A2 expressed concerns due to slope/topography, the crossing of Spencer Creek and tree removal. Feedback on the Preliminary Preferred Route from the community of Antrim Glen included access to residences during construction, access/use of trails during construction, and tree removal.
- The majority of feedback received favoured the Preliminary Preferred Route. As such the Preliminary Preferred Route was confirmed as the Preferred Route.

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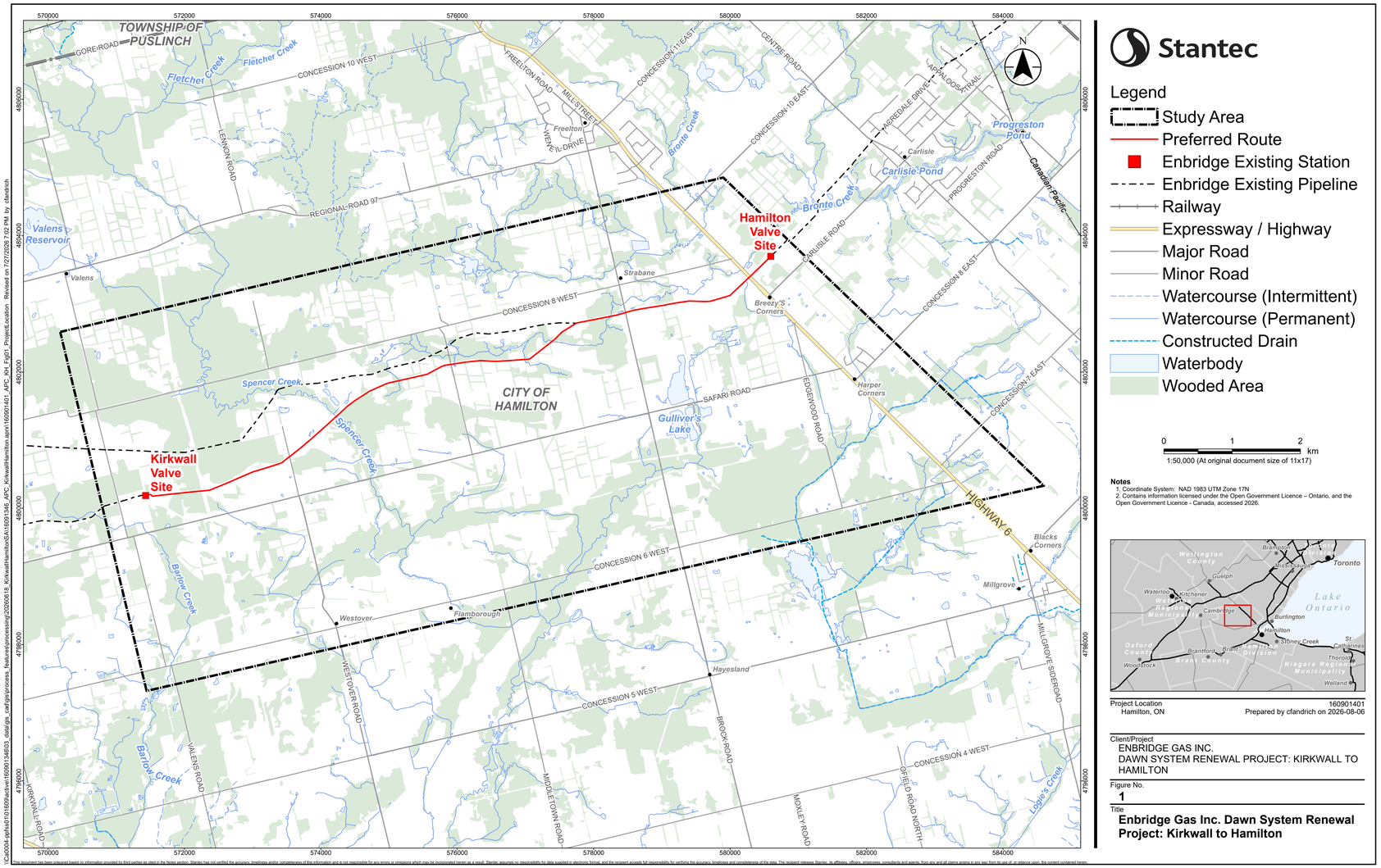
Dawn Parkway System Renewal Project: Kirkwall to Hamilton Information Session

Preferred Route

- This map does not represent the final Project scope/ design. Enbridge Gas will undertake detailed design to determine the exact location of the running line, permanent easement, temporary land use requirements and road/ watercourse crossing methods. Detailed design will also be influenced by supplemental studies (including environmental studies) and site-specific requests from Indigenous communities, landowners and agencies.
- An interactive map of the preferred route can be accessed at: https://www.solutions.ca/Kirkwall-HamiltonES



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OEB Review and Approval Process

An Addendum to the 2019 Environmental Report (ER) for the study is scheduled to be completed in Q1 2027. Once complete, Enbridge Gas plans to file a Leave to Construct (LTC) application with the Ontario Energy Board (OEB) regarding the Project. The LTC application will include the following information about the Project:

- The need for the Project
- Environmental Report Addendum and mitigation measures
- Project costs and economics
- Pipeline design and construction
- Land requirements
- Consultation with Indigenous communities

The OEB's approval is required before construction of the proposed Project can proceed. If approved, construction could begin in spring 2028.

Additional information about the OEB process can be found online at: www.oeb.ca

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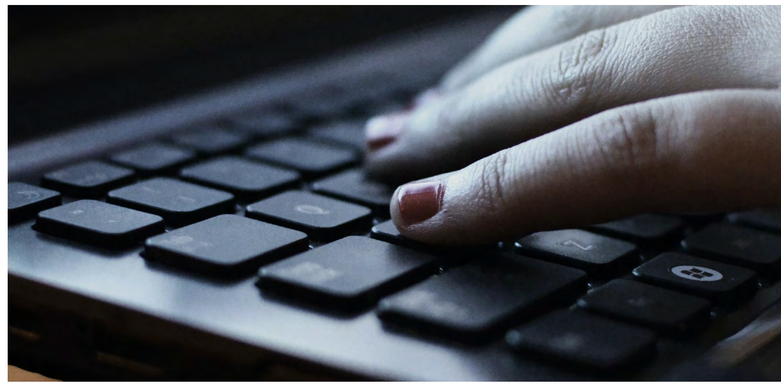
Dawn Parkway System Renewal Project: Kirkwall to Hamilton Information Session



Consultation and Engagement

- Consultation and engagement are key components of the ER.
- At the outset of the project, Enbridge Gas submits a Project Description to the Ministry of Energy (MOE). Upon review, the MOE determines potential impacts on Indigenous or treaty rights and identifies Indigenous communities that Enbridge Gas will consult with during the entirety of the project.
- The consultation and engagement program helps identify and address Indigenous community and stakeholder concerns and issues, provides information about the project to the stakeholders and allows for participation in the project review and development process.
- Input during engagement and consultation will be used to help finalize the pipeline route and mitigation objectives for the project.
- Once the LTC application is made to the OEB, any party with an interest in the project, including members of the public, can participate in the process.

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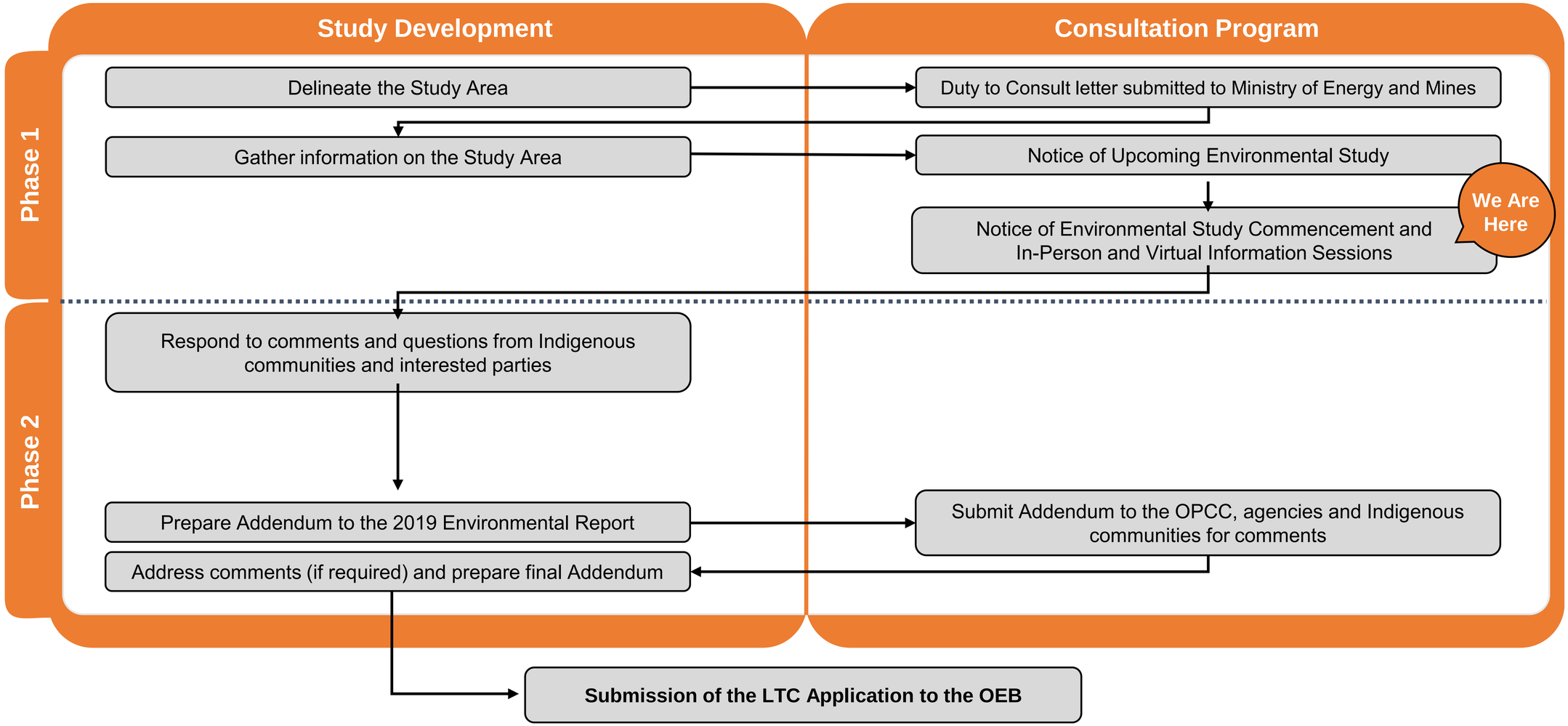
Dawn Parkway System Renewal Project: Kirkwall to Hamilton Information Session

Environmental Study Process



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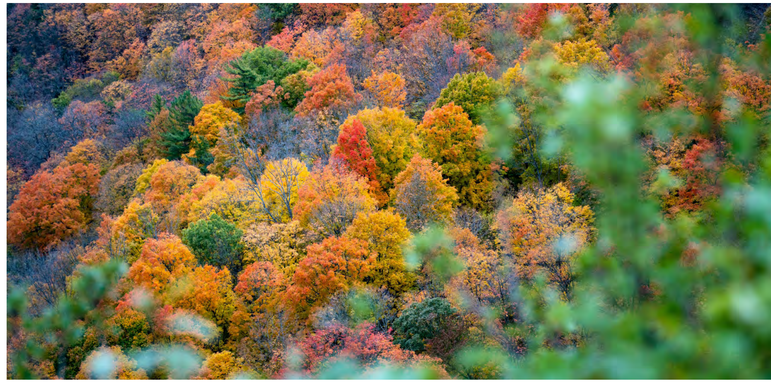

Environment, Health and Safety Policy

Our Commitment

- Enbridge Gas is committed to protecting the health and safety of all individuals affected by our activities.
- Enbridge Gas will provide a safe and healthy working environment and will not compromise the health and safety of any individual.
- The goal is to have no safety incidents and to mitigate impacts on the environment by working with our stakeholders, peers, and others to promote responsible environmental practices and continuous improvement.
- Enbridge Gas is committed to environmental protection and stewardship and recognizes that pollution prevention, biodiversity, and resource conservation are key to a sustainable environment.
- All employees are responsible and accountable for contributing to a safe working environment, for fostering safe working attitudes, and for operating in an environmentally responsible manner.

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Dawn Parkway System Renewal Project: Kirkwall to Hamilton Information Session



Pipeline Design

The natural gas pipeline is designed to meet or exceed the regulations of the Canadian Standards Association *(Z662 Oil and Gas Pipeline Systems)* and the applicable regulations of the Technical Standards and Safety Association (TSSA).

Pipeline Safety and Integrity

Many steps are taken for a safe, reliable operation of the Enbridge Gas network of natural gas pipelines, including:

- Design, construct, and test pipelines to meet or exceed requirements set by industry standards and regulatory authorities.
- Continuously monitor the entire network.
- Perform regular field surveys to detect leaks and confirm that corrosion prevention methods are working as intended.

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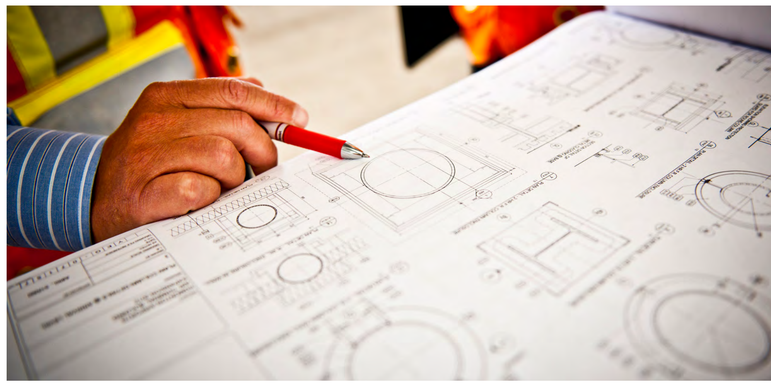

Access and Land Requirements

The proposed pipeline will require access agreements, permanent easement, or temporary working space during construction.

Enbridge Gas has a comprehensive Landowner Relations Program that utilizes dedicated Project Land Agents who would:

- Provide direct contact and act as a liaison between landowners and Enbridge Gas.
- Be available to landowners during the length of the Project and throughout construction activities.
- Act as a point of contact for concerns and questions.
- Address any legal matters relating to the temporary use of property, access agreements, permanent easements, and impacts or remedies to property.

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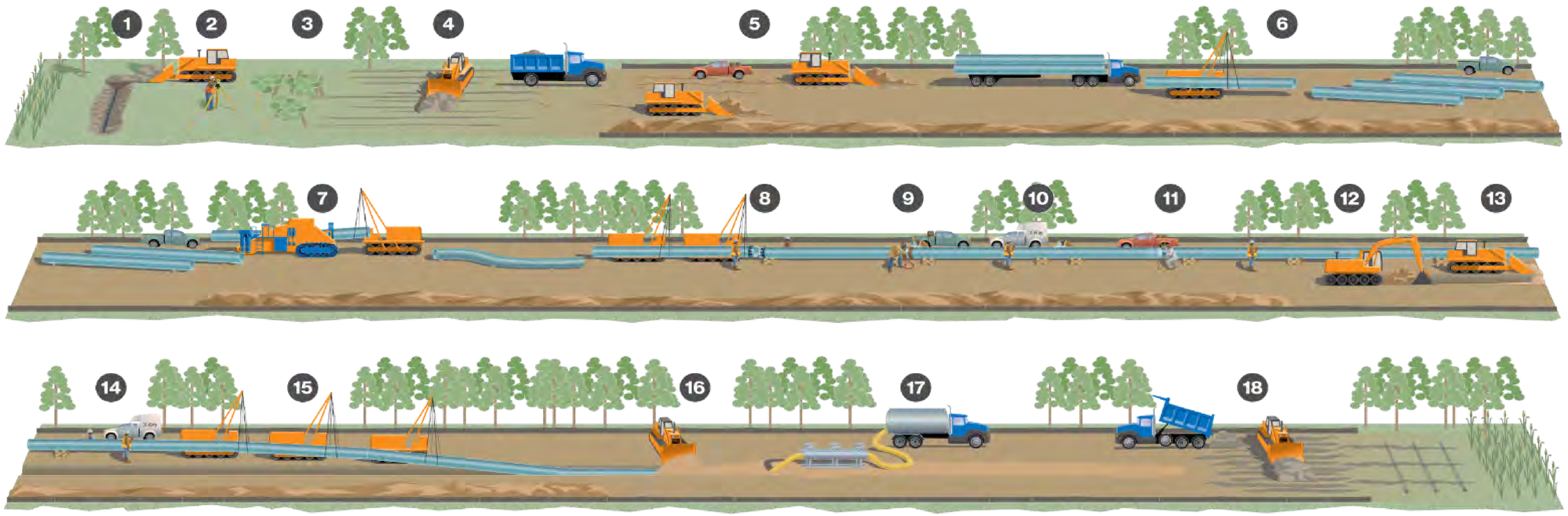
Dawn Parkway System Renewal Project: Kirkwall to Hamilton Information Session

Constructing an Enbridge Gas Pipeline (Open Trenching)



1. Pre-construction tiling
2. Surveying and staking
3. Clearing
4. Right-of-way topsoil stripping
5. Front-end grading
6. Stringing pipe
7. Field bending pipe
8. Lining-up pipe
9. Welding process
10. X-ray or ultrasonic inspection, weld repair
11. Field coating
12. Digging the trench
13. Padding trench bottom
14. Final inspection and coating repair
15. Lowering pipe
16. Backfilling
17. Hydrostatic testing
18. Site restoration and post-construction tiling

Note: The construction infographic is specifically for open-cut steel pipe installation and serves for reference purposes only.

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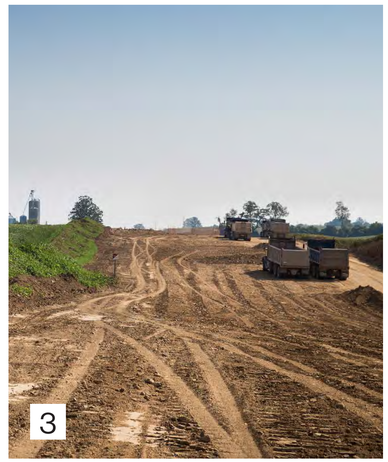
Dawn Parkway System Renewal Project: Kirkwall to Hamilton Information Session


1


2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4

Constructing an Enbridge Gas Pipeline (Open Trenching, continued)

The pipeline construction process includes various procedures, as described in the previous slide.

- **Photo 1:** Shows a typical Enbridge Gas natural gas pipeline. This Project will involve the installation of a 48-inch diameter pipeline.
- **Photo 2:** Represents a typical trench that is created during the installation process.
- **Photo 3:** Represents the backfilled trench.
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Socio-economic Features

The Project will be constructed through private business areas, agricultural and residential land, along with land owned by Hydro One and the Hamilton Conservation Authority.

Potential Impacts

- Temporary increases in noise, dust and air emissions.
- Increased construction traffic volumes.
- Temporary impairment of the use of residential and/or commercial/industrial properties.
- Ornamental vegetation clearing along the pipeline route.

Example Mitigation Measures

- Provide access across the construction area.
- Restrict construction to daylight hours and adhere to applicable noise by-laws.
- Develop and implement a Traffic Control Plan.
- Place fencing at appropriate locations for safety.
- Designate an Enbridge Gas representative to be available prior to and throughout construction.
- Implement dust control measures.
- Re-vegetation of cleared ornamental vegetation areas as needed (including seeding/planting).

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Cultural Heritage Resources

Cultural heritage features such as archaeological finds, heritage buildings, fences, and landscapes may be encountered during construction.

Detailed field surveys will be conducted by independent, third-party archaeologists and cultural heritage professionals prior to construction, if required.

Potential Impacts

- Damage or destruction of archaeological or historical resources.

Example mitigation measures

- Archaeological assessment of the construction footprint, with review and acceptance from the Ministry of Citizenship and Multiculturalism (MCM).
- Cultural heritage assessment (for built heritage features and cultural heritage landscapes) of the construction right-of-way, with review and comment from the MCM.
- Reporting of any previously unknown archaeological or historical resources uncovered, or suspected to be uncovered, during excavation.

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Aquatic Resources

Enbridge Gas understands the importance of protecting watercourses, wetlands, and associated wildlife during construction and therefore will implement recognized mitigation measures to reduce possible environmental effects.

Potential Impacts

- Disruption or alteration to aquatic species and habitat and/or nuisance effects.
- Temporary reduction in surface water quality, fish habitat and alteration of waterflow during construction.
- Increased erosion, sedimentation, and turbidity resulting from removal of vegetation.

Example Mitigation Measures

- Conduct surveys of waterbodies.
- Obtain and abide by all agency permits and approvals.
- Install and maintain erosion and sediment control measures.
- Conform to fish timing window guidelines.
- For in-channel construction, protect aquatic species through methods such as flow diversion/dewatering, fish rescue planning etc., and manage sedimentation and turbidity.
- Restore and seed disturbed areas to establish habitat and reduce erosion.

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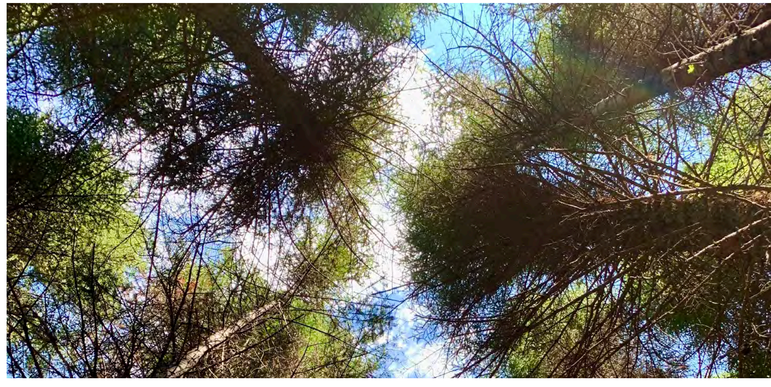

Terrestrial Resources

Natural environment features such as wildlife habitat and vegetated/wooded areas may need to be crossed during construction.

Potential Impacts

- Damage or removal of vegetation and wildlife habitat in the construction area.
- Disturbance and/or mortality to local wildlife.

Example Mitigation Measures

- Conduct surveys (including Species at Risk surveys) in advance of construction to determine opportunities for wildlife habitat to exist.
- Complete tree and vegetation removal outside of sensitive wildlife windows, to the extent possible.
- Clearly mark the construction area to avoid accidental damage.
- Restore and seed disturbed areas to establish habitat and reduce erosion, where appropriate.
- Secure all necessary permits and follow conditions of approval.

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Agricultural Soils

Enbridge Gas has established and tested measures to preserve the integrity of agricultural soils throughout the construction phase:

- A third-party soils specialist will determine topsoil depth prior to stripping and supervise activities so the proper depth of topsoil is removed and replaced.
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- A post-construction cover crop program will be available to landowners.

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Maintaining Agricultural Drainage Systems

- Landowners will be contacted prior to construction to confirm the location and type of existing drains. Any future drainage plans will also be discussed with the landowner.
- Field tile will be temporarily re-routed during pre-construction activities where required to allow proper drainage during construction.
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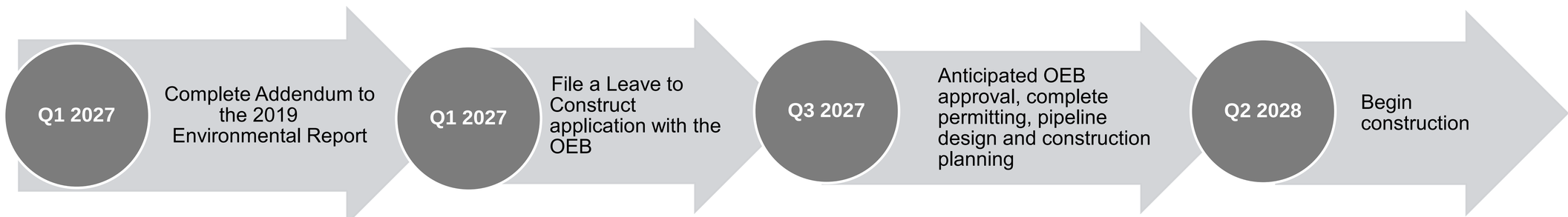
Next Steps

After this Information Session, Enbridge Gas intends to pursue the following schedule of activities:



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Thank-you!

On behalf of the Project Team, thank you for attending the session. Please complete a questionnaire by **September 15, 2026** to have your comments included in the Environmental Report.

Michael Candido
Environmental Scientist
Assessment & Permitting

Stantec Consulting Ltd.
300 Hagey Blvd #100
Waterloo, ON N2L 0A4
Phone: (519) 585-3489

Email: **Kirkwall-HamiltonES@stantec.com**

For more information about the proposed project, please visit the Enbridge Gas project website at:
enbridgegas.com/dawnparkwayrenewal

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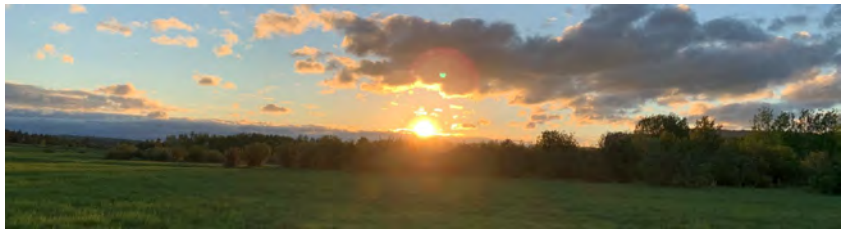

Welcome

Press the next button to navigate to the next slide at any time.

- To return to the previous slide, press the previous button.
- You can mute the audio at any time by pressing the speaker icon.
- This presentation is available for download (see the Resources tab in the top right corner).
- Questions and comments can be submitted using the questionnaire found in the Resources tab.
- If you would like to receive future project updates, please complete the “Contact Information" section of the questionnaire.

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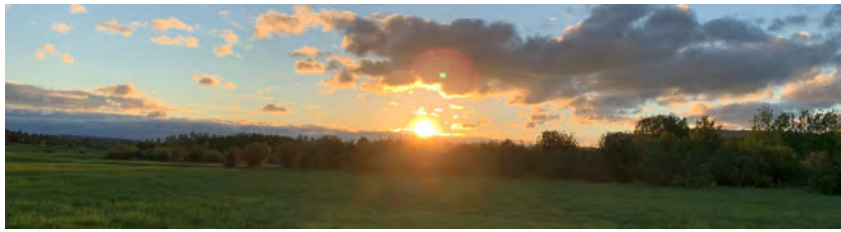

Dawn Parkway System Renewal Project: Kirkwall to Hamilton

Virtual Information Session: Monday August 17, 2026, to Monday, August 31, 2026.

In-Person Information Session: Tuesday, August 25, 2026

Location: Millgrove Community Centre
855 Millgrove Side Rd, Millgrove, ON L0R 1V0

Time: 5:00 PM to 8:00 PM

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Enbridge Gas' Commitment

Enbridge Gas is dedicated to engaging with Indigenous communities, landowners, agencies, interest groups, and community members. They commit to providing up-to-date information in an open, honest, and respectful manner while carefully considering your input. With over 3.9 million residential, commercial, and industrial customers, Enbridge Gas is committed to delivering natural gas safely and reliably. Environmental stewardship is also a top priority for Enbridge Gas, and they conduct their operations in an environmentally responsible manner.

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Purpose of the Information Session

- Consult with Indigenous communities, and engage with landowners, members of the public and regulatory authorities regarding the proposed pipeline route, potential impacts, and proposed mitigation measures.
- Provide an opportunity for these individuals to review the proposed Project, ask any questions, and/or provide comments to representatives from Enbridge Gas and Stantec.

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Dawn Parkway System Renewal Project: Kirkwall to Hamilton Information Session



Enbridge Gas' Engagement with Indigenous Peoples

Enbridge recognizes the diversity of Indigenous peoples who live where we work and operate. We understand that certain laws and policies have had destructive impacts on Indigenous cultures, languages, and the social and economic well-being of Indigenous peoples. We also recognize the importance of reconciliation between Indigenous peoples and broader society. We are committed to building positive and sustainable relationships with Indigenous peoples based on trust and respect and are focused on finding common goals through open dialogue.

The Indigenous engagement program is based on adherence to the OEB's Guidelines and Enbridge Inc.'s company-wide Indigenous Peoples Policy, which Enbridge Gas follows. Enbridge's Indigenous Peoples Policy lays out key principles for establishing relationships with Indigenous groups, including:

- Recognizing the importance of the United Nations Declaration on the Rights of Indigenous Peoples in the context of existing Canadian law;
- Recognizing the legal and constitutional rights possessed by Indigenous peoples in Canada and the importance of the relationship between Indigenous peoples and their traditional lands and resources;
- Engaging early to achieve meaningful relationships with Indigenous groups by providing timely exchanges of information, understanding and addressing Indigenous project-specific concerns, and ensuring ongoing dialogue regarding its projects, their potential impacts and benefits; and
- Aligning Enbridge's interests with those of Indigenous peoples through meaningful, direct Indigenous economic activity in projects corresponding to community capacity and project needs, where possible.

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Dawn Parkway System Renewal Project: Kirkwall to Hamilton Information Session



Project Overview

Enbridge Gas is considering installing a new 48-inch diameter natural gas pipeline between its existing Kirkwall Valve Site, located northeast of the intersection of Safari Road and Valens Road and the existing Hamilton Valve Site, located east of Highway 6 and north of Carlisle Road. The proposed pipeline location was determined through a route selection process conducted in 2019 and is generally parallel to three existing Enbridge Gas pipelines, measuring approximately 10.2 km in length. New permanent easements and temporary working space during construction will be required.

The Project is driven by the need to restore capacity, due to identified integrity features, and to ensure the continued safe and reliable operation of the existing system.

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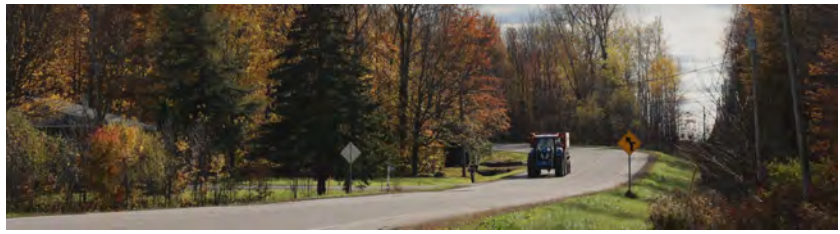

Environmental Study Process

As part of the planning process, Enbridge Gas has retained Stantec to undertake an Environmental Study for the Project. The Environmental Study will fulfill the requirements of the Ontario Energy Board's (OEB) "*Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Projects and Facilities in Ontario, 8th Edition (2023)*".

The study will:

- Undertake engagement to understand the views of interested and potentially affected parties.
- Consult with Indigenous communities to understand interests and potential impacts.
- Be conducted during the earliest phase of the Project.
- Identify potential impacts of the Project.
- Develop environmental mitigation and protective measures to avoid or reduce potential impacts.
- Develop an appropriate environmental inspection, monitoring, and follow-up program.

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Route Identification

- In June 2016, Stantec conducted a site visit and determined a variety of pipeline routing constraints were present: developed areas (campgrounds, communities and homes), topography (i.e., slope, drumlins), roads, and environmental features such as waterbodies, watercourses, wetlands, and wooded areas.
- Possible pipeline routes were assessed through the routing evaluation methodology which considers routing objectives, existing linear infrastructure, constructability, socio-economic, and environmentally sensitive features. As a result, two potential routes were established as Route A and Route B.

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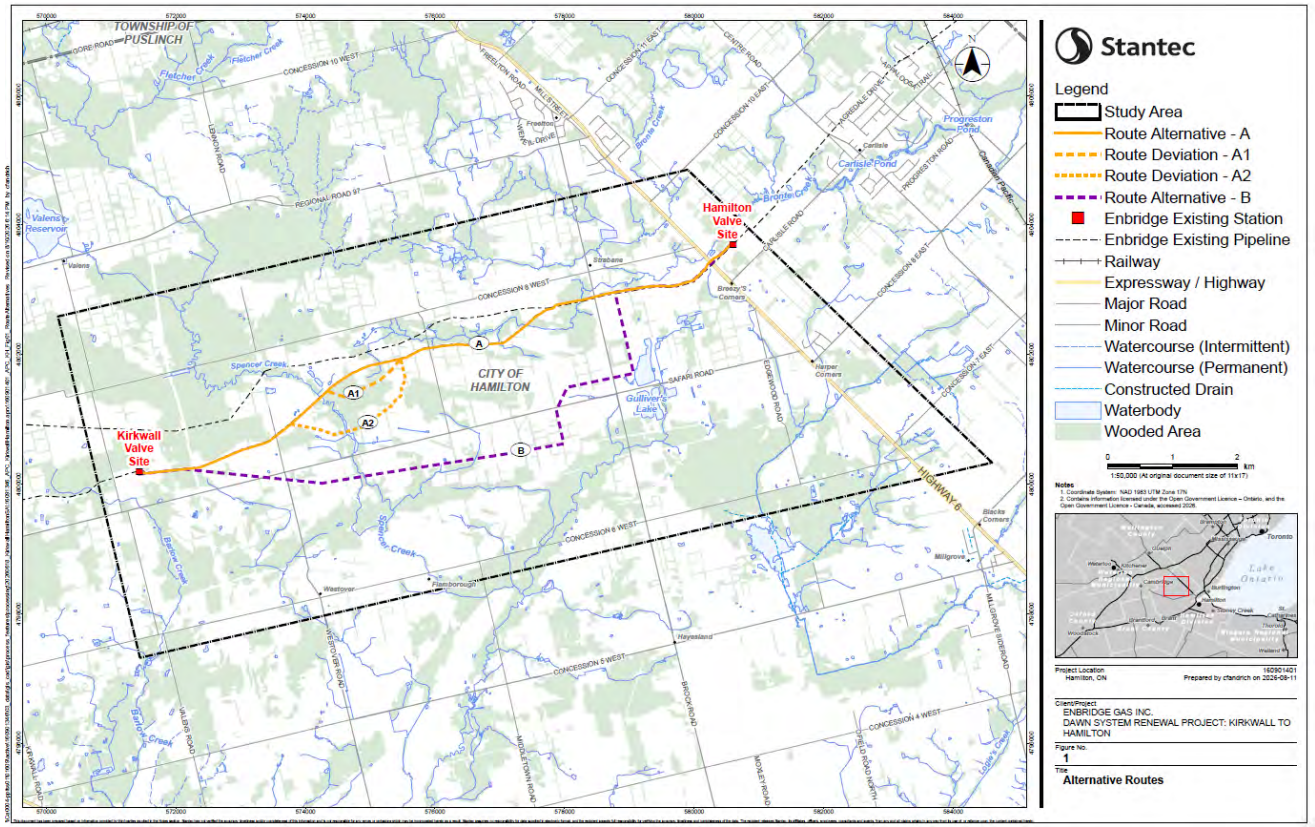
Route Alternatives

- Route A was identified as an existing southern pipeline easement that travelled through the Antrim Glen and Ponderosa Nature Resort communities.
- To avoid these communities, Route A1 and Route A2 were developed.
- Route B was identified and parallels a combination of an existing Hydro One corridor and lot lines. A portion of Route B does not follow the Hydro One corridor and lot lines so as to avoid sensitive environmental features.



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Selection of the Preferred Route

- A comparative evaluation found both Route A and Route B to be environmentally acceptable; however, Route A was preferred because it offers greater operational and construction efficiencies by paralleling and overlapping an existing Enbridge Gas pipeline easement. This reduces impacts on agricultural lands, residential properties, and natural heritage features. As a result, Route A was selected as the Preliminary Preferred Route.
- Input on the Preliminary Preferred Route, route deviations and the alternative route was sought through consultation. Landowners along Route deviations A1 and A2 expressed concerns about impacts on local businesses and tree removal. Landowners along Route A2 expressed concerns due to slope/topography, the crossing of Spencer Creek and tree removal. Feedback on the Preliminary Preferred Route from the community of Antrim Glen included access to residences during construction, access/use of trails during construction, and tree removal.
- The majority of feedback received favoured the Preliminary Preferred Route. As such the Preliminary Preferred Route was confirmed as the Preferred Route.

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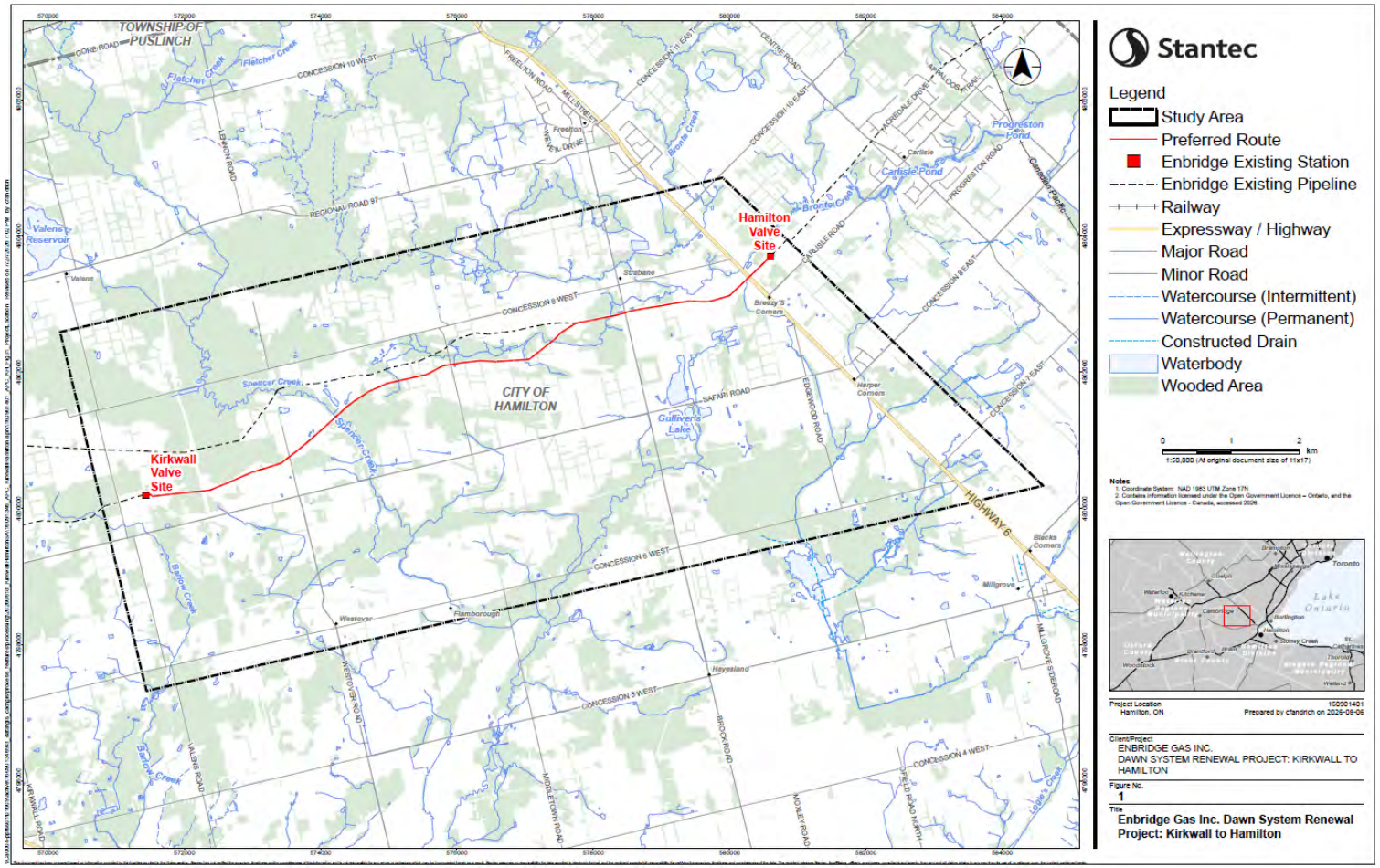
Preferred Route

- This map does not represent the final Project scope/design. Enbridge Gas will undertake detailed design to determine the exact location of the running line, permanent easement, temporary land use requirements and road/watercourse crossing methods. Detailed design will also be influenced by supplemental studies (including environmental studies) and site-specific requests from Indigenous communities, landowners and agencies.
- An interactive map of the preferred route can be accessed at: https://www.solutions.ca/Kirkwall-HamiltonES



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OEB Review and Approval Process

An Addendum to the 2019 Environmental Report (ER) for the study is scheduled to be completed in Q1 2027. Once complete, Enbridge Gas plans to file a Leave to Construct (LTC) application with the Ontario Energy Board (OEB) regarding the Project. The LTC application will include the following information about the Project:

- The need for the Project
- Environmental Report Addendum and mitigation measures
- Project costs and economics
- Pipeline design and construction
- Land requirements
- Consultation with Indigenous communities

The OEB's approval is required before construction of the proposed Project can proceed. If approved, construction could begin in spring 2028.

Additional information about the OEB process may be found online at: www.oeb.ca

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Consultation and Engagement

- Consultation and engagement are key components of the ER.
- At the outset of the Project, Enbridge Gas submits a Project Description to the Ministry of Energy and Mines (MEM). Upon review, the MEM determines the potential impacts on Aboriginal or treaty rights and identifies Indigenous communities that Enbridge Gas will consult with during the entirety of the Project.
- The consultation and engagement program helps to identify and address Indigenous communities' and stakeholders' concerns, provides information about the Project to the stakeholders, and allows participation in the Project's review and development process.
- Input from consultation and engagement will help to finalize the Project details and mitigation plans for the Project.
- Once the LTC application is made to the OEB, any party with an interest in the Project, including members of the public, can participate in the process.

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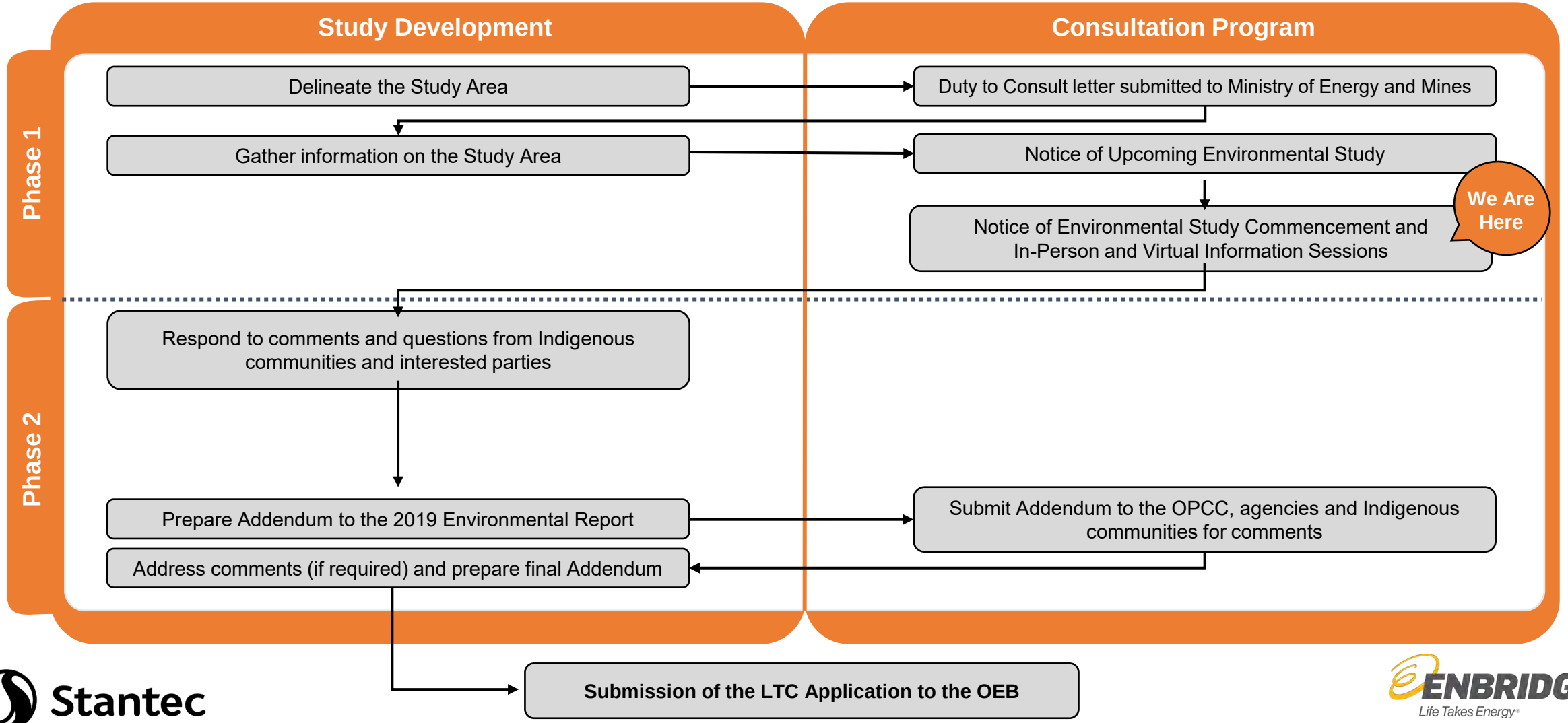
Environmental Study Process



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Environment, Health and Safety Policy

Our Commitment

- Enbridge Gas is committed to protecting the health and safety of all individuals affected by our activities.
- Enbridge Gas will provide a safe and healthy working environment and will not compromise the health and safety of any individual.
- The goal is to have no safety incidents and to mitigate impacts on the environment by working with our stakeholders, peers, and others to promote responsible environmental practices and continuous improvement.
- Enbridge Gas is committed to environmental protection and stewardship and recognizes that pollution prevention, biodiversity, and resource conservation are key to a sustainable environment.
- All employees are responsible and accountable for contributing to a safe working environment, for fostering safe working attitudes, and for operating in an environmentally responsible manner.

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Pipeline Design

The natural gas pipeline is designed to meet or exceed the regulations of the Canadian Standards Association (*Z662 Oil and Gas Pipeline Systems*) and the applicable regulations of the Technical Standards and Safety Association (TSSA).

Pipeline Safety and Integrity

Many steps are taken for a safe, reliable operation of the Enbridge Gas network of natural gas pipelines, including:

- Design, construct, and test pipelines to meet or exceed requirements set by industry standards and regulatory authorities.
- Continuously monitor the entire network.
- Perform regular field surveys to detect leaks and confirm that corrosion prevention methods are working as intended.

Dawn Parkway System Renewal Project: Kirkwall to Hamilton Information Session



Access and Land Requirements

The proposed pipeline will require access agreements, permanent easement, or temporary working space during construction.

Enbridge Gas has a comprehensive Landowner Relations Program that utilizes dedicated Project Land Agents who would:

- Provide direct contact and act as a liaison between landowners and Enbridge Gas.
- Be available to landowners during the length of the Project and throughout construction activities.
- Act as a point of contact for concerns and questions.
- Address any legal matters relating to the temporary use of property, access agreements, permanent easements, and impacts or remedies to property.

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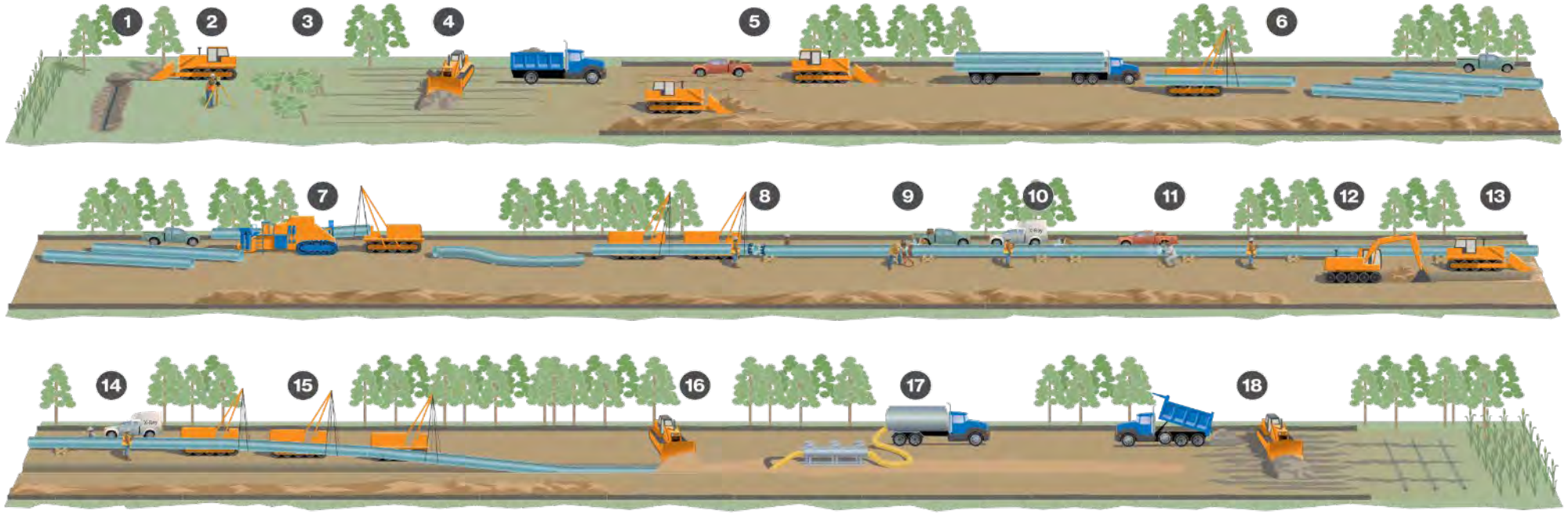
Constructing an Enbridge Gas Pipeline (Open Trenching)



1. Pre-construction tiling
2. Surveying and staking
3. Clearing
4. Right-of-way topsoil stripping
5. Front-end grading
6. Stringing pipe
7. Field bending pipe
8. Lining-up pipe
9. Welding process
10. X-ray or ultrasonic inspection, weld repair
11. Field coating
12. Digging the trench
13. Padding trench bottom
14. Final inspection and coating repair
15. Lowering pipe
16. Backfilling
17. Hydrostatic testing
18. Site restoration and post-construction tiling

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Note: The construction infographic is specifically for open-cut steel pipe installation and serves for reference purposes only.

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Constructing an Enbridge Gas Pipeline (Open Trenching, continued)

The pipeline construction process includes various procedures, as described in the previous slide.

- **Photo 1:** Shows a typical Enbridge Gas natural gas pipeline. This Project will involve the installation of a 48-inch diameter pipeline.
- **Photo 2:** Represents a typical trench that is created during the installation process.
- **Photo 3:** Represents the backfilled trench.
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Socio-economic Features

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Potential Impacts

- Temporary increases in noise, dust and air emissions.
- Increased construction traffic volumes.
- Temporary impairment of the use of residential and/or commercial/industrial properties.
- Ornamental vegetation clearing along the pipeline route.

Example Mitigation Measures

- Provide access across the construction area.
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Detailed field surveys will be conducted by independent, third-party archaeologists and cultural heritage professionals prior to construction, if required.

Potential Impacts

- Damage or destruction of archaeological or historical resources.

Example Mitigation Measures

- Archaeological assessment of the construction footprint, with review and acceptance from the Ministry of Citizenship and Multiculturalism (MCM).
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Maintaining Agricultural Drainage Systems

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Dawn Parkway System Renewal Project: Kirkwall to Hamilton Information Session



Next Steps

After this Information Session, Enbridge Gas intends to pursue the following schedule of activities:

- **Q1 2027** — Complete Addendum to the 2019 Environmental Report
- **Q1 2027** — File a Leave to Construct application with the OEB
- **Q3 2027** — Anticipated OEB approval, complete permitting, pipeline design and construction planning
- **Q2 2028** — Begin construction

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Dawn Parkway System Renewal Project: Kirkwall to Hamilton Information Session



Thank you!

On behalf of the Project Team, thank you for attending the session. Please complete a questionnaire by **September 15, 2026, to have** your comments included in the Environmental Report.

Michael Candido
Environmental Scientist
Assessment & Permitting

Stantec Consulting Ltd.
300 Hagey Blvd #100
Waterloo, ON N2L 0A4
Phone: (519) 585-3489

Email: **Kirkwall-HamiltonES@stantec.com**

For more information about the proposed Project, please visit the Enbridge Gas project webpage at: **Enbridgegas.com/dawnparkwayrenewal**

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Dawn Parkway System Renewal Project: Kirkwall to Hamilton
Information Session Questionnaire

Thank you for attending the Dawn Parkway System Renewal Project: Kirkwall to Hamilton Information Session! We hope the session was informative and we would appreciate your comments and feedback. If you require any assistance or clarification while completing this questionnaire, please send an email to **Kirkwall-HamiltonES@stantec.com**. If you have a question that requires a response, please fill out the **Contact Information** section at the end of this form, and a representative will respond as soon as possible.

Please complete this questionnaire by **September 15, 2026** for feedback to be considered as part of the Environmental Report submitted to the Ontario Energy Board (OEB). Your feedback is important and will also be considered during the planning and permitting stages of the project.

1. **What is your interest in this project?**

   ☐ Directly affected landowner
   ☐ Member of an Indigenous community
   ☐ Business owner
   ☐ Surrounding landowner
   ☐ Interested citizen
   ☐ Member of interest group
   ☐ Government official
   ☐ Other: _____

2. **What is your view of the proposed project?**

3. **Please indicate if the project will have any potential impacts to you, your property, or your business that you would like addressed** (i.e., access, noise, dust, traffic, etc.).

4. **Please identify any features along the pipeline route you feel are important to consider during the environmental study.**

Dawn Parkway System Renewal Project: Kirkwall to Hamilton
Information Session Questionnaire

5. **Were you provided with an adequate understanding of the project as well as the Environmental Study and OEB review and approval process?**

   ☐ Yes

   ☐ No

6. **Do you require additional information about the project and/or planning and review/approval processes? Please note below:**

   _____
   _____
   _____
   _____
   _____
   _____

7. **Are you interested in receiving an electronic copy of the Environmental Report Addendum?**

   ☐ Yes

   ☐ No

8. **Did the content provided in the Information Session meet your needs?**

   _____
   _____
   _____
   _____
   _____
   _____

9. **How did you hear about the Information Session? Check all that apply:**

   ☐ Project Notification Letter

   ☐ Word of Mouth

   ☐ Social Media Post

   ☐ Newspaper

Dawn Parkway System Renewal Project: Kirkwall to Hamilton
Information Session Questionnaire

10. **Do you have any questions or comments about this project, not addressed above, you would like to bring to our attention?**

_____
_____
_____
_____
_____
_____

Thank you for completing this questionnaire. If you would like to be informed of project updates, please provide us with your full contact information. If you have a question about the project that has not been addressed or for which you would like more information, please email us at: **Kirkwall-HamiltonES@stantec.com.**

Contact Information

Name: _____
Address: _____
Email: _____
Phone: (____)_____

Any personal information (PI), such as names and addresses, collected by Enbridge Gas Inc. (EGI) on this comment form (or through the Information Session process) for this project will be used for the purpose of conducting an environmental assessment and related activities, such as creating an environmental assessment report. EGI may also share PI with its consultant(s) for this purpose and will share PI with the Ontario Energy Board (OEB) and other government agencies as required for the project. In accordance with the Ontario Freedom of Information and Protection of Privacy Act, PI provided to the OEB will not be disclosed on the public record or to any third parties. However, comments, questions and other information collected may be disclosed on the public record provided that any PI will be redacted.

B.7 Project Correspondence

DRAFT

Appendix B.7 Project Correspondence

Consultation Correspondence

Agencies and Elected Officials

Comment Number	Stakeholder Group	Name	Method of Communication	Email	Phone Number	Date of Correspondence	Summary of Comment	Date Response Provided	Summary of Response
1	Agencies on the Contact List	Stantec	Email	N/A	N/A	July 6, 2026	Notice of Upcoming Environmental Study (NUES) circulated via email.	N/A	N/A
2	Ministry of Environment, Conservation and Parks (MECP)	Saif Sumbal	Email	Saifullah.Sumbal@ontario.ca	519-873-5001	July 6, 2026	Saif passed on the NUES to a colleague at the West Central MECP office- Aaron Todd.	N/A	N/A
3	Ministry of Environment, Conservation and Parks (MECP)	Aaron Todd	Email	Aaron.Todd@ontario.ca	647-633-3351	July 6, 2026	Confirmed Saif's message (above), shared NUES with Hamilton District office.	N/A	N/A
4	Grand River Conservation Authority (GRCA)	Trevor Heywood	Email	theywood@grandriver.ca	519-621-2761 ext. 2292	July 14, 2026	Acknowledged NUES. GRCA does not anticipate input on the project as it is on the edge of their watershed and there are no regulated features intersecting main valve site or pipeline corridor (map attached). Noted that Hamilton Conservation Authority may have more comments. Requested that main contact be changed to Angela Wang.	N/A	N/A

Comment Number	Stakeholder Group	Name	Method of Communication	Email	Phone Number	Date of Correspondence	Summary of Comment	Date Response Provided	Summary of Response
5	Government of Ontario Elected Officials	Enbridge Gas	Email	N/A	N/A	July 17, 2026 & July 21	NUES sent to Member of Provincial Parliament.	N/A	N/A
6	Hamilton Conservation Authority (HCA)	Jeff Tweedle	Email	jtweedle@conservationhamilton.ca	905-525-2181 Ext. 164	July 24, 2026	Confirmed as HCA's contact for project. Permit from the HCA may be required for development activities, as portions of study area and preferred route are regulated by HCA. Portions of study area are also owned by HCA. Requested to be included in any future consultation and engagement and circulate any updates or technical materials as available.	N/A	N/A
7	Hamilton Conservation Authority	Jeff Tweedle	Email	jtweedle@conservationhamilton.ca	905-525-2181 Ext. 164	July 29, 2026	Additional comments from land management team: If access to HCA properties for testing/construction purposes a Temporary Land Access Agreement Letter may be required. Request to be personally notified if there is proposed access to HCA owned lands as part of the Environmental Study. Also, Environmental Study should identify when access to HCA lands is required for construction activities.	N/A	N/A

Comment Number	Stakeholder Group	Name	Method of Communication	Email	Phone Number	Date of Correspondence	Summary of Comment	Date Response Provided	Summary of Response
8	Agencies on Contact List	Stantec	Email	N/A	N/A	August 4, 2026	Notice of Environmental Study Commencement (NESC) circulated via email.	N/A	N/A
9	Conservation Ontario	Robyn Rumney	Email	rrumney@conservationontario.ca	289-338-8725	August 5, 2026	Acknowledgement of NESC.	N/A	N/A
10	GRCA	Angela Wang	Email	awang@grandriver.ca	519-621-2763 ext. 2270	August 6, 2026	Acknowledgement of NESC. GRCA requests to review any draft reports and documentation as there are some regulated features in the study area.	N/A	N/A
11	Huy Thai and Carrie Mnanchuck - Misintry of Economic Development, Job Creation and Trade	Enbridge Gas	Email	huy.thai@ontario.ca ; carrie.manchuk@ontario.ca	N/A	August 6, 2026	An Enbridge Gas representative sent Brian Morris a copy of the Kirkwall to Hamilton NESC, the Dawn to Enniskillen NESC as well as the Guelph Tie-Over NESC.	N/A	
12	John Thomas and Sylvester Tuz – Invest Ontario	Enbridge Gas	Email	john.thomas@investontario.ca ; sylvester.tuz@investontario.ca	N/A	August 6, 2026	An Enbridge Gas representative sent Brian Morris a copy of the Kirkwall to Hamilton NESC, the Dawn to Enniskillen NESC as well as the Guelph Tie-Over NESC.	N/A	
13	Agencies on Contact List	Stantec	Email	N/A	N/A	August 7, 2026	Update provided noting that NESC circulated on August 4, 2026 had incorrect Virtual Information Session (VIS) web address. An updated NESC with correct VIS address was circulated via email.	N/A	N/A

Comment Number	Stakeholder Group	Name	Method of Communication	Email	Phone Number	Date of Correspondence	Summary of Comment	Date Response Provided	Summary of Response
14	Government of Ontario Elected Officials	Enbridge Gas	Email	N/A	N/A	August 11, 2026 & August 13, 2026	NESC sent to members of provincial parliament.	N/A	N/A
15	Hamilton Conservation Authority (HCA)	Stantec	Email	N/A	N/A	August 26, 2026	Follow-up: Stantec forwarded VIS link, and copies of boards to Mike Stone (HCA), who attended the Open House.	August 26, 2026	Mike Stone will review the attached materials, and follow up with any notes. HCA is in contact with Aim Land re HCA land access agreements and will hopefully have them in place soon.

Ontario Pipeline Coordinating Committee (OPCC)

Comment Number	Stakeholder Group	Name	Method of Communication	Email	Phone Number	Date of Correspondence	Summary of Comment	Date Response Provided	Summary of Response
1	OPCC Members on Contact List	Stantec	Email	N/A	N/A	July 6, 2026	NUES circulated via email.	N/A	N/A
2	Technical Standards and Safety Authority (TSSA), Fuels Safety Program	Robin Yu	Email	ryu@tssa.org	416-734-3402	July 7, 2026	TSSA has no comments at the current stage, request for the submission of an Application for Review of Pipeline Project (link provided).	N/A	N/A

Comment Number	Stakeholder Group	Name	Method of Communication	Email	Phone Number	Date of Correspondence	Summary of Comment	Date Response Provided	Summary of Response
3	Ministry of Citizenship and Multiculturalism	Anastasia Abrazhevich	Email	Anastasia.Abrazhevich@ontario.ca	437-240-2379	July 30, 2026	Acknowledgement of NUES. Advice on how to incorporate consideration of cultural heritage in pipeline projects. Recommendations: combined Stage 1-2 archaeological assessment (AA) for entire study area; minimum Stage 1 AA; make every attempt to complete an Existing Conditions and Preliminary Impact Assessment.	N/A	N/A
4	OPCC Members on Contact List	Stantec	Email	N/A	N/A	August 4, 2026	NESC circulated vis email.	N/A	N/A
5	Technical Standards and Safety Authority (TSSA)	Andre Nurgel	Email	anurgel@tssa.org	416-734-3521	August 5, 2026	TSSA has no comments at the current stage, request for the submission of an Application for Review of Pipeline Project (link provided).	N/A	N/A
6	OPCC Members on Contact List	Stantec	Email	N/A	N/A	August 7, 2026	Update provided noting that NESC circulated on August 4, 2026 had incorrect Virtual Information Session (VIS) web address. An updated NESC with correct VIS address was circulated via email.	N/A	N/A
7	Ministry of Citizenship and Multiculturalism	James Hamilton	Email	James.Hamilton@ontario.ca	416-995-8404	August 7, 2026	Acknowledgement of the NESC and correction. *Replied on behalf of Karla Barboza.	N/A	N/A

Comment Number	Stakeholder Group	Name	Method of Communication	Email	Phone Number	Date of Correspondence	Summary of Comment	Date Response Provided	Summary of Response
8	Ministry of Municipal Affairs and Housing Office	Elain Hardy	Email	Elaine.Hardy@ontario.ca	437-335-7093	August 7, 2027	Request to change contact to Carly Basu.	N/A	N/A
9	Technical Standards and Safety Authority (TSSA)	Robin Yu	Email	ryu@tssa.org	416-734-3402	August 27, 2026	Thanked Stantec for providing the corrected web address. TSSA does not have any comments at this time. Enbridge is to submit an Application for Review of Pipeline Project to TSSA.	N/A	N/A

Municipal

Comment Number	Stakeholder Group	Name	Method of Communication	Email	Phone Number	Date of Correspondence	Summary of Comment	Date Response Provided	Summary of Response
1	Municipal Staff on Contact List	Stantec	Email	N/A	N/A	July 6, 2026	NUES circulated via email.	N/A	N/A
2	City of Hamilton	Christina Fahel	Email	Christina.Fahel@hamilton.ca	905-546-2489 ext. 4887	July 8, 2026	NUES has been passed on to appropriate staff member from Engineering services division.	N/A	N/A
3	Municipal Staff on Contact List	Stantec	Email	N/A	N/A	August 4, 2026	NESC circulated via email.	N/A	N/A
4	Brian Morris-City of Hamilton	Enbridge Gas	Email	brian.morris@hamilton.ca	N/A	August 6, 2026	An Enbridge Gas representative sent Brian Morris a copy of the Kirkwall to Hamilton NESC as well as the Guelph Tie-Over NESC.	N/A	N/A

Comment Number	Stakeholder Group	Name	Method of Communication	Email	Phone Number	Date of Correspondence	Summary of Comment	Date Response Provided	Summary of Response
5	Municipal Staff on Contact List	Stantec	Email	N/A	N/A	August 7, 2026	Update provided noting that NESC circulated on August 4, 2026 had incorrect Virtual Information Session (VIS) web address. An updated NESC with correct VIS address was circulated via email.	N/A	N/A
6	City of Hamilton	Charlie Lauricella	Email	Charlie.Lauricella@hamilton.ca	905-546-2424 ext. 2440	August 13, 2026	Confirmation that division has logged the proposal for review. Request to include Jason Peele and Rich Shebib in future correspondence. Request to provide updated project timelines and let this division know if outreach with the Mayor's office or other departments have been initiated.	N/A	N/A

Indigenous Communities

Comment Number	Stakeholder Group	Name	Method of Communication	Email	Phone Number	Date of Correspondence	Summary of Comment	Date Response Provided	Summary of Response
1	Indigenous Communities	Enbridge Gas	Email	N/A	N/A	July 6, 2026	NUES and PSM circulated via email.	N/A	N/A
2	Indigenous Communities	Enbridge Gas	Email	N/A	N/A	August 6, 2026	NESC circulated via email.	N/A	N/A

Landowners and Stakeholders

Comment Number	Stakeholder Group	Name	Method of Communication	Email	Phone Number	Date of Correspondence	Summary of Comment	Date Response Provided	Summary of Response
1	Landowners and Stakeholders on Contact List	Stantec	Mail	N/A	N/A	July 6, 2026	NUES circulated via letter to Landowners. NUES circulated via email to Stakeholders.	N/A	N/A
2	Conservation Ontario	Robyn Rumney	Email	rrumney@conservationontario.ca	289-338-8725	July 6, 2026	Robyn thanked Stantec for sending the NUES and said that they would send to the Conservation Authorities within the Project Area.	July 6, 2026	A Stantec representative confirmed that the NUES was also sent to Grand River Conservation Authority, Hamilton Conservation Authority and Conservation Halton.
3	Ontario Woodlot Association	Glen Prevost	Email	glen.prevost@ontariowoodlot.com	705-358-7913	July 13, 2026	Thanked Stantec, acknowledgement of NUES.	N/A	N/A
4	Hydro One	Secondary Land Use Dep.	Email	N/A	N/A	July 29, 2026	Summary of attached document: Confirmation of existing high voltage Transmission facilities in study area. Request to stay informed on informed on project so they can provide alternative solutions if there are conflicts with their assets. If Kirkwall-Hamilton project results in Hydro One station expansionor transmission line relocation/ replacement an Environmental Assessment is required (minimum 6 months for the process, up to 18 months). Hydro One must be consulted.	N/A	N/A

Comment Number	Stakeholder Group	Name	Method of Communication	Email	Phone Number	Date of Correspondence	Summary of Comment	Date Response Provided	Summary of Response
							If possible, at current stage, confirm that Hydro One infrastructure and rights-of-way will be avoided. If not, allocate lead-time in the project schedule to work through conflicts with Hydro One. Proponent is responsible for costs associated with modifications/ relocations to Hydro One infrastructure and added costs from increased efforts to maintenance. The map attached to this email shows the Enbridge Valve Site located at 1374 Valens Road in relation to the nearby Hydro One corridor as well as other transmission lines. *Note: project may require submission of a Compatibility Review for Hydro One to fully assess the impact to our assets. *Note: Just response is not approval, Hydro One must be consulted on project.		

Comment Number	Stakeholder Group	Name	Method of Communication	Email	Phone Number	Date of Correspondence	Summary of Comment	Date Response Provided	Summary of Response
5	Hydro One	Tiffany Fung	Email	Tiffany.Fung@HydroOne.com	416-436-9669	July 29, 2026	Confirmation of impact on Hydro One's transmission lines. HONI technical review is required. Non-refundable engineering review fee with a minimum of 10–12-week review period. Re-submission results in longer review period. Document provided by HONI to explain level of detail required.	N/A	N/A
6	Landowners and Stakeholders on Contact List	Stantec	Mail and Email	N/A	N/A	August 4, 2026	NESC circulated via letter to Landowners. NESC circulated via email to Stakeholders.	N/A	N/A
7	Landowners and Stakeholders on Contact List	Stantec	Mail	N/A	N/A	August 6, 2026	NESC admail was circulated to Study Area via Canada Post.	N/A	N/A
8	Stakeholders on Contact List	Stantec	Email	N/A	N/A	August 7, 2026	Update provided noting that NESC circulated on August 4, 2026 had incorrect Virtual Information Session (VIS) web address. An updated NESC with correct VIS address was circulated via email.	N/A	N/A
9	Landowners and Stakeholders on Contact List	Stantec	Mail	N/A	N/A	August 10, 2026	NESC with corrected VIS web address) circulated via letter to Landowners.	N/A	N/A

Comment Number	Stakeholder Group	Name	Method of Communication	Email	Phone Number	Date of Correspondence	Summary of Comment	Date Response Provided	Summary of Response
10	Landowner	Larry Dee	Email	LJD-CLM@outlook.com	N/A	August 17, 2026	Landowner is upset that they received two notices and is located outside of the Study Area. Note: Likely Canada Post circulation, which distributes more broadly.	N/A	N/A
11	Media-Hamilton Spectator	Andrew Baulcomb	Email	ven-abaulcomb@thespec.com	N/A	August 19, 2026	Andrew requested a phone call with the Stantec Project Manager to discuss the Project.	August 21, 2026	The Stantec Project Manager provided available times to discuss the project with The Hamilton Spectator. The Hamilton Spectator did not respond.
12	Fothergill Planning & Development Inc.	Ed Fothergill	Email	ed@fothergillplanning.ca	905-577-1077	August 20, 2026	Mr. Fothergill's firm represents the interests of the Ponderosa Nature Park and has had previously discussions with Enbridge and the owner of the Ponderosa. Mr. Fothergill requested to be added to contact list and be provided with info regarding the EA process.	N/A	N/A
13	Hydro One	Hongxia Sun	Email	Susan.SUN@HydroOne.com on behalf of Department.SecondaryLandUse@hydroone.com	N/A	August 26, 2026	Hydro One advised that existing transmission and distribution infrastructure is present within the study area and requested continued consultation as project details are refined. Hydro One could not determine whether project alternatives would conflict with its assets. Noted that any required relocation or modification of	N/A	N/A

Comment Number	Stakeholder Group	Name	Method of Communication	Email	Phone Number	Date of Correspondence	Summary of Comment	Date Response Provided	Summary of Response
							its infrastructure could trigger additional EA requirements, schedule implications, and costs to the proponent. Hydro One emphasized the need to maintain required electrical clearances, access to infrastructure, and appropriate drainage conditions within transmission corridors, and indicated that a Compatibility Review may be required as the project advances.		
14	Stantec	N/A	Email	N/A	N/A	August 26, 2026	Follow-up: Stantec forwarded VIS link, and copies of boards and questionnaire to Marian Bremer (Cogeco), who attended the Open House.	N/A	N/A
15	Landowner	[redacted]	Email	[redacted]	[redacted]	August 28, 2026	[redacted] expressed support for the project and offered his assistance with security for the Project.	August 31, 2026	Stantec reply provided and [redacted] information to contact list.
16	TransCanada Pipelines Ltd. (TCPL)	Ashley Anderson	Email	tcenergy@mhbcplan.com	705-728-0045 ext. 241	September 16, 2026	A representative from TCPL provided a response letter and requested to be added to the contact list for future notifications. The letter included TCPL general building restrictions, constructionrequirements, crossing TCPL utilities and protocols regarding accessing the TCPL right-of-way.	N/A	N/A

Comment Number	Stakeholder Group	Name	Method of Communication	Email	Phone Number	Date of Correspondence	Summary of Comment	Date Response Provided	Summary of Response
17	New Country Investors- Ponderosa Nature Resort	Bill Pearsall	Letter	N/A	N/A	October 20, 2026	Provided a letter which included questions pertaining to project routing, emergency accessibility, seasonal and hourly work timing, fieldwork scope, property restoration and other past commitments made by Enbridge Gas.	October 26, 2026	Enbridge Gas will continue to consult this landowner as the Project progresses.

Information Session Questionnaire Comments

Comment Number	Stakeholder Group	Name	Method of Communication	Email	Phone Number	Date of Correspondence	Summary of Comment	Date Response Provided	Summary of Response
1	Interested citizen	[redacted]	In-person questionnaire form	[redacted]	N/A	August 25, 2026	Concerns about the project: • How the environment, lands and species at risk, will be impacted. • Construction concerns (traffic, noise) Would like to receive a copy of the ER Addendum.	N/A	N/A
2	Interested citizen + member of interest group	[redacted]	In-person questionnaire form	[redacted]	[redacted]	August 25, 2026	Concerns about the project: • Wetland and wildlife preservation. • Restoration of effected land (erosion). Would like the Project Team to consult with local environmental and climate groups. Would like to receive a copy of the ER Addendum.	N/A	N/A

Comment Number	Stakeholder Group	Name	Method of Communication	Email	Phone Number	Date of Correspondence	Summary of Comment	Date Response Provided	Summary of Response
3	Interested citizen + member of interest group	[redacted]	In-person questionnaire form	[redacted]	[redacted]	August 25, 2026	Not in support of the project. Has concerns about the following: • Endangered Blanding Turtles in area. • Reliance on fossil fuels • The use of the pipeline in relation to domestic use. • Support for the route B option (reduced tree removals) • Woud like the Project Team to consult local organizations (wildlife specialists, the Hamilton Naturalists club and HCA. • Asks: what percentage of Canadian domestic gas will be going through the proposed pipeline? Would like to receive a copy of the ER Addendum.	N/A	N/A
4	Interested citizen + member of interest group	[redacted]	In-person questionnaire form	[redacted]	[redacted]	August 25, 2026	Has concerns about environmental impacts, and species at risk preservation. • Would like to receive updates on reviews and approvals. Would like to receive a copy of the ER Addendum.	N/A	N/A

B.8 Preliminary Desktop Environmental and Cultural Heritage Summary Memo

DRAFT

Dawn Parkway System Renewal Project – Kirkwall to Hamilton Section: Preliminary Desktop Environmental and Cultural Heritage Summary Memo

Final Memo

June 30, 2026

Prepared for:
Enbridge Gas Inc.
50 Keil Drive
Chatham, Ontario N7M 5J5

Prepared by:
Stantec Consulting Ltd.
300 Hagey Boulevard, Suite 100
Waterloo, Ontario N2L 0A4

Project/File:
160901401

Stantec

Limitations and Sign-off

The conclusions in the Memo titled Dawn Parkway System Renewal Project – Kirkwall to Hamilton Section: Preliminary Desktop Environmental and Cultural Heritage Summary Memo are Stantec's professional opinion, as of the time of the Memo, and concerning the scope described in the Memo. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. The Memo relates solely to the specific project for which Stantec was retained and the stated purpose for which the Memo was prepared. The Memo is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

Stantec has assumed all information received from Enbridge Gas Inc. (the "Client") and third parties in the preparation of the Memo to be correct. While Stantec has exercised a customary level of judgment or due diligence in the use of such information, Stantec assumes no responsibility for the consequences of any error or omission contained therein.

This Memo is intended solely for use by the Client in accordance with Stantec's contract with the Client. While the Memo may be provided by the Client to applicable authorities having jurisdiction and to other third parties in connection with the project, Stantec disclaims any legal duty based upon warranty, reliance or any other theory to any third party, and will not be liable to such third party for any damages or losses of any kind that may result.

Prepared by  Kelly, Dominique 2026.06.30 13:57:59 -04'00'

(signature)

Dominique Kelly, B.A.
Environmental Planner

Reviewed by Candido, Mike  Digitally signed by Candido, Mike Date: 2026.06.30 13:44:38 -04'00'

(signature)

Mike Candido, B.Sc. (Env.), CAN-CISEC
Project Manager

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Appendix A Stage 1 Archaeological Assessment – Kirkwall to Hamilton
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1 Preliminary Desktop Environmental and Cultural Heritage Summary Memo

1.1 Content and Purpose

This Preliminary Desktop Environmental and Cultural Heritage Summary Memo (PSM) provides a description of the Project, summarizes the regulatory process, outlines environmental surveys and the construction process, and lists potential impacts and mitigation measures.

It should be noted that more details are known about the Project than would typically be expected at this very early planning stage due to previous environmental studies completed in the Study Area. As the Project evolves, these details will be subject to change as design progresses, and as Enbridge Gas Inc. (Enbridge Gas) obtains access to the private property upon which the project will be constructed.

The purpose of the PSM is to both provide Indigenous communities with project details in advance of the public consultation period, and to seek Indigenous input and knowledge to enhance the Project Team's understanding of the Study Area. Enbridge Gas and Stantec respectfully acknowledge the value of traditional knowledge and oral history that is shared among Indigenous peoples. We recognize that Indigenous peoples have strong ties to their lands and that the use of these lands, from a development, ecosystems, and sustainability perspective, is of vital importance to communities. We also recognize that the worldviews shared by Indigenous peoples contain a rich knowledge of rare plants and animals. An Indigenous worldview is one that is developed through a mutually beneficial relationship, where one see's themselves as deeply connected to the natural world. This PSM is the product of Western knowledge and a Western worldview. In this vein, we acknowledge that the discussions in this Memo on Provincially and Federally protected species, for instance, do not capture the full breadth of the value these species have to Indigenous peoples.

We welcome the opportunity for Indigenous peoples to share context and background so that we may gain a broader understanding of the Study Area. We request your review of this PSM, and your feedback on the Study Area and items of importance that should be considered as the Project unfolds.

2 Project Overview

Through Enbridge Gas's Integrity Management Program (IMP), which involves regular inspection and condition monitoring on assets, certain integrity-related features were identified on the NPS 26 Dawn Parkway natural gas pipeline. To support continued safe operation, Enbridge Gas reduced the operating pressure of the pipeline, resulting in a significant reduction in throughput across the Dawn Parkway Transmission System. This capacity reduction is not sustainable in the long term because it limits the system's ability to meet firm design day commitments and will create future gas supply and system capacity risks.

Enbridge Gas is proposing to construct the Dawn Parkway System Renewal Project – Kirkwall to Hamilton Section (the Project). The purpose of the Project, along with the proposed work on the Dawn to Enniskillen Section, is to recover a portion of the lost capacity within the Dawn Parkway Transmission System, while supporting the continued safe, reliable, economic, and secure delivery of natural gas to serve existing demand.

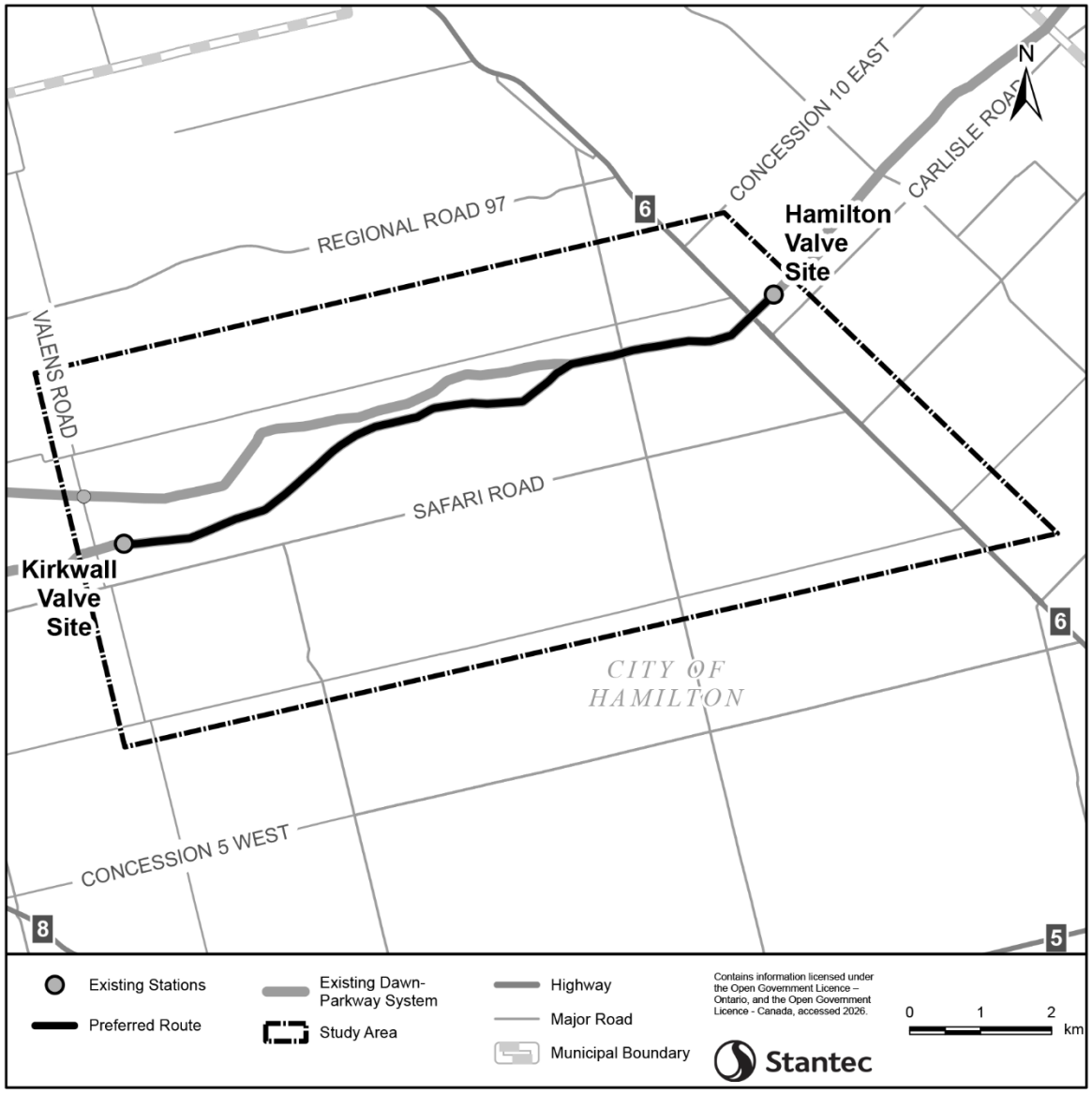
This PSM focuses on the Kirkwall to Hamilton section. The Dawn Parkway Transmission System was built in the 1950s and is the backbone of the natural gas system supporting energy security and economic competitiveness in Ontario and across Canada. It is part of a broader integrated supply network that serves homes and businesses across 500 municipalities in Ontario, Quebec, the Maritimes, and the Northeastern United States.

For this Project, Enbridge Gas is considering improvements to install new 48- inch diameter natural gas pipeline between its existing Kirkwall Valve Site, located northeast of the intersection of Safari Road and Valens Road and the existing Hamilton Valve Site, located east of Highway 6 and north of Carlisle Road. The Preferred Route was determined through a route selection process conducted in 2019 and is generally parallel to the three existing Enbridge Gas pipelines, measuring 10.2 km in length. New

permanent easements and temporary working space during construction will be required.

The Preferred Route is shown on Figure 1.

Figure 1 Preferred Pipeline Route



3 Regulator Process

3.1 Ontario Energy Board Application

The Project involves the construction of a hydrocarbon pipeline in Ontario, which requires Leave to Construct approval under section 90(1) of the *Ontario Energy Board Act*, 1998. As such, Enbridge Gas will submit a Leave to Construct application to the Ontario Energy Board for this Project. The Leave to Construct application will include technical details for the Project, including project need, alternatives, engineering, costs, environmental, lands, and Indigenous consultation.

3.2 Environmental Study Process

3.2.1 Overview

As part of the planning process, Enbridge Gas has retained Stantec Consulting Ltd. (Stantec) to complete an Environmental Study for the Project. The findings of the Environmental Study will be summarized in an Environmental Report which will form part of the Leave to Construct application.

It should be noted that while the term environmental assessment is often used to describe the Environmental Study, the process does not fall under the Ontario *Environmental Assessment Act*. The Environmental Study and resultant Environmental Report will follow the Ontario Energy Board *Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Projects and Facilities in Ontario, 8th Edition (2023)*.

3.2.2 Route Evaluation and Selection

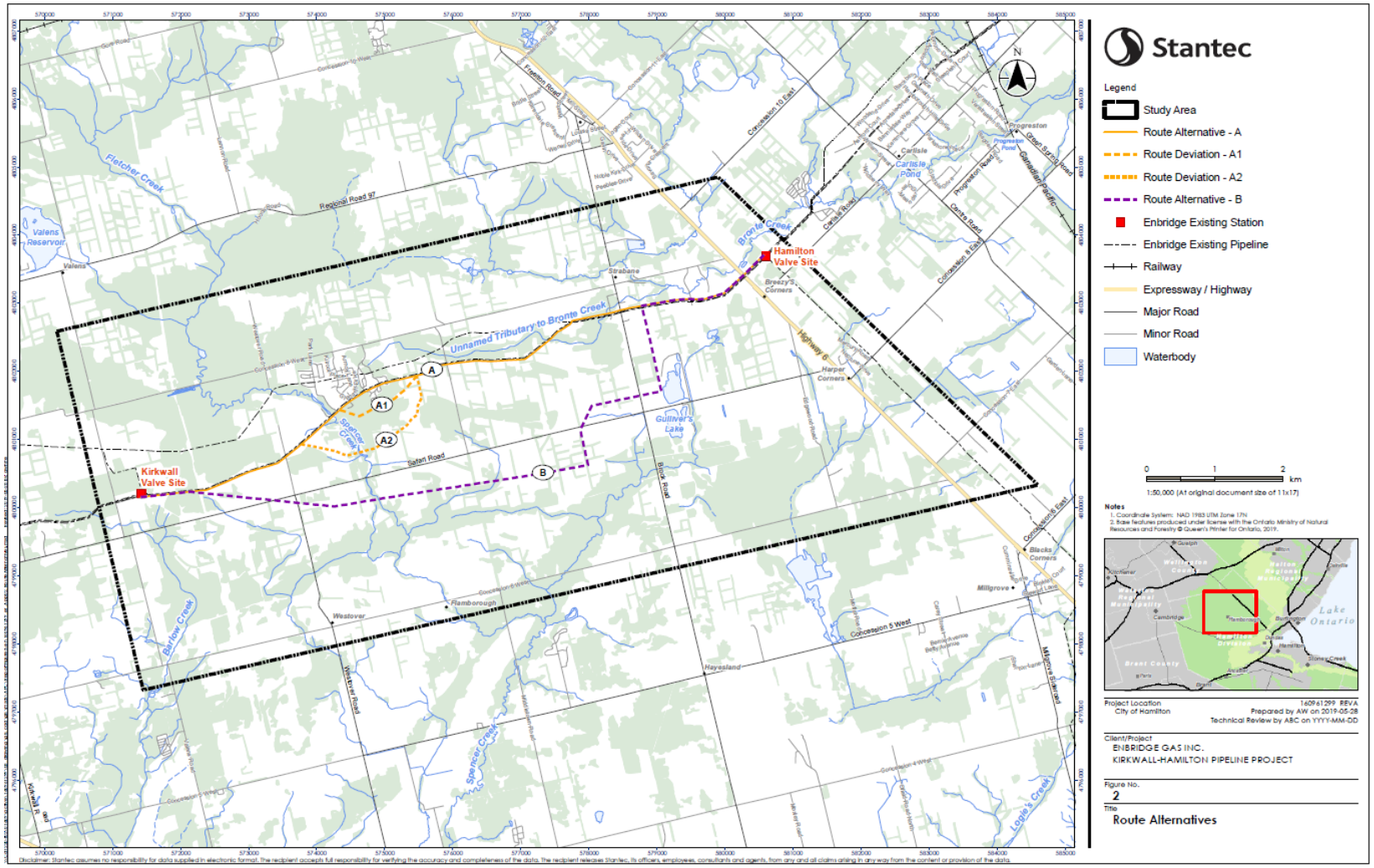
The Environmental Study begins with the route evaluation and selection process. The first step is the development of the routing methodology. The overarching objective is to identify routes with the least potential for adverse environmental and socio-economic impacts; which is supported by the objectives of direct routes, reducing impacts, and

paralleling existing infrastructure. An initial Study Area will then be developed to allow for a reasonable number of alternative routes to be considered. The size of the initial Study Area can vary based on surrounding existing features and infrastructure.

Once alternative routes are identified, they will undergo a comparative evaluation to select the Preliminary Preferred Route. The Route is considered 'Preliminary' until it has been presented to stakeholders and Indigenous Communities for feedback, which will occur through an in-person and virtual information session, and various meetings. Based on feedback the Preliminary Preferred Route will be adjusted as required, and a Preferred Route will be determined.

In the 2019 Environmental Report, three pipeline routing opportunities were identified: two existing Enbridge Gas pipeline easements (referred to as the northern and southern easements) and a hydroelectric corridor operated by Hydro One Networks Inc. (see Figure 2). A field review conducted by Stantec and Enbridge Gas (June 1, 2016) found that the northern existing pipeline easement is not feasible for adding another pipeline due to wetlands, wooded areas, and nearby residential development. As a result, two alternative routes were proposed that generally follow existing corridors while reducing environmental and community impacts – Route A, and Route B. Based on further investigation, there were some revisions to the original proposed route alternatives due to constructability. Environmental and socioeconomic challenges such as watercourse crossings and proximity to existing communities were the main concerns that drove the revisions to the alternative routes.

Figure 2 Route Alternatives from the 2019 Environmental Report



The evaluation found both alternatives to be environmentally acceptable, but Route A was preferred for operational efficiency because it can largely parallel and overlap an existing Enbridge Gas easement. About 40% of the required easement (12 of 28 m) could reuse previously disturbed land, reducing new impacts to 16 m across agricultural, residential, and natural areas. A 2018 field visit confirmed Route A was feasible to construct through Antrim Glen, and the overlap allows the project to benefit from knowledge gained during the 1991 pipeline construction, such as groundwater and archaeological considerations. As such, Route A was confirmed as the Preferred Route.

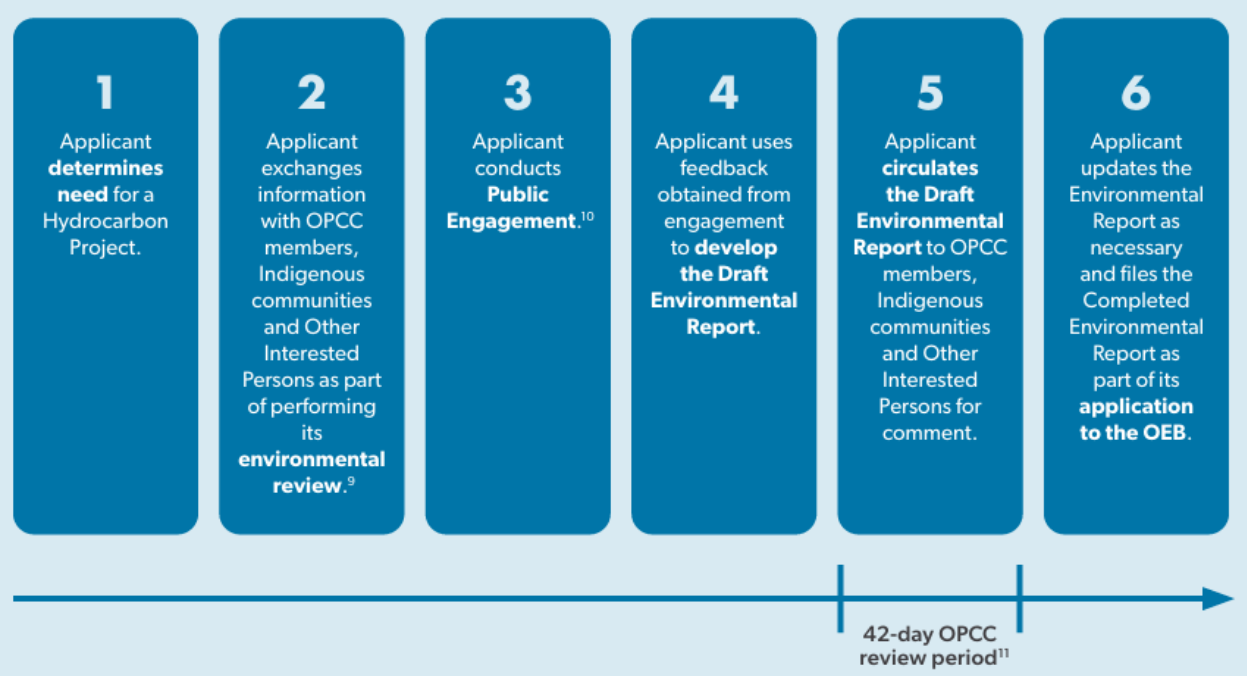
3.2.3 Impact Assessment and Environmental Report

Once a route is determined, a reduced Study Area will be established to cover environmental and socio-economic features with which the Project may interact. Existing features in the Study Area will be summarized, and an assessment will be conducted to determine potential environmental and socio-economic impacts, and cumulative effects, that would result from the Project. Based on the assessment, mitigation and protective measures, supplemental studies, monitoring, and contingency plans will be outlined to reduce or avoid impacts.

The Environmental Study concludes with the preparation of the Environmental Report, as well as Environmental Alignment Sheets to identify site-specific mitigation and protective measures to be implemented during construction.

The process for the preparation and review of the Environmental Report can be found in Figure 3. As noted, a draft version of the Environmental Report will be circulated for a 42-day review and comment period. Comments received outside of the 42-day period will be considered but will not be reflected in the final Environmental Report.

Figure 3 Process for the Preparation and Review of the Environmental Report



In June 2019 Stantec completed the *Dawn-Parkway System Expansion: Kirkwall-Hamilton Pipeline Section: Environmental Report*. This Project will reaffirm the 2019 Environmental Report, as well as completed surveys, and an Addendum will be completed noting any changes to the current scope. This Addendum will fulfill the requirements of the Ontario Energy Board *Environmental Guidelines for the Location, Construction, and Operation of Hydrocarbon Projects and Facilities in Ontario, 8th Edition* (2023).

3.3 Project Schedule

The Project Schedule includes the following main milestones:

- Preferred Route presented for feedback – Summer 2026
- 2019 Environmental Report and Draft Addendum to the 2019 Environmental Report circulated for 42-day review – Fall 2026
- Ontario Energy Board regulatory process – Early 2027
- Environmental and Cultural Heritage Surveys – 2027

- Construction – 2028
- In-Service – End of 2028

4 Environmental Surveys

Environmental surveys will be completed as part of the Project. By necessity, data becomes available at various stages of the Project. The level of data increases as the Project moves from the Environmental Study (which will largely use desktop information), to site-specific surveys which will be completed in advance of construction to confirm the recommendations of the Environmental Report. Environmental surveys will only be undertaken after detailed design is complete and landowner permission is obtained. Environmental surveys will be completed using Study Areas unique to each discipline. For example, ecological surveys typically occur within 120 m of a Project Footprint, where land access allows, to align with Natural Heritage survey guidance. On the other hand, cultural heritage surveys typically occur within 50 m of a Project Footprint to capture Project vibration impacts. And archaeological surveys typically occur only on the Project Footprint to capture areas of ground disturbance. The specific Study Area for each survey will be determined at the time of future surveys.

4.1 Ecology

4.1.1 Methodology

Ecological surveys are completed to document the presence of vegetation communities, wildlife habitat features, and aquatic features in a Study Area. Additional ecological surveys that may need to be completed are species specific surveys, and wetland identification and boundary delineation. The timing of ecological surveys is dictated by species-specific survey windows and seasonal considerations. Surveys are typically conducted during periods when target species are most active or detectable, such as breeding seasons or periods of increased activity (see Table 1, below). Ecological field programs are developed based on existing conditions and habitat present in a Study Area and therefore may not include all the outlined surveys.

All ecological surveys follow regulatory requirements and accepted survey standards.

Table 1 Timing Windows for Ecological Surveys

Category	Months											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Bats						✓						
Birds					✓	✓	✓					
Frogs and Toads				✓	✓	✓						
Insects							✓	✓				
Plants				✓	✓	✓	✓	✓	✓			
Salamanders			✓									
Snakes			✓	✓	✓	✓	✓	✓	✓			
Turtles			✓	✓	✓	✓	✓	✓	✓			
Aquatic Assessments			✓	✓	✓	✓	✓	✓	✓	✓		
Habitat Assessments	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

4.1.2 Existing Conditions and Future Surveys

Based on previous work that has been completed by Stantec in 2019 between the existing Kirkwall Valve Site and the existing Hamilton Valve Site, the area contains woodlands that have pockets of wetlands including provincially significant wetlands (PSWs), significant wildlife habitat (such as seasonal concentration areas, animal movement corridors, rare vegetation communities or specialized habitats, and habitat for 23 species of conservation concern – see Table 2), potential habitat for 26 Species at Risk – see Table 3 and Table 4 watercourse crossings in the Grand River, Spencer Creek, and Bronte Creek watersheds that include a variety of aquatic species (see Table 4).

Table 2 Potential Terrestrial Species of Conservation Concern

Species of Concern	Scientific Name	Provincial Status (COSSARO)	National Status (COSEWIC)
Plants			
Broad Beech Fern	*Phegopteris hexagonoptera*	Special Concern	Special Concern
Downy Yellow False Foxglove	*Aureolaria virginica*	-	-
Eastern Burning Bush	*Euonymus alatus*	-	-
Eastern Few-fruited Sedge	*Carex oligocarpa*	-	-
Fern-leaved Yellow False Foxglove	*Aureolaria pedicularia*	Special Concern	Special Concern
Green Arrow Arum	*Peltandra virginica*	-	-
Perfoliate Bellwort	*Uvularia perfoliata*	-	-
Scarlet Beebalm	*Monarda didyma*	-	-
Slender Mountain-mint	*Pycnanthemum tenuifolium*	Special Concern	Special Concern
Insects			
Gypsy Cuckoo Bumble Bee	*Bombus bohemicus*	-	-
River Bluet	*Enallagma anna*	-	-
Sleepy Duskywing	*Erynnis brizo*	-	-
Reptiles			
Ribbonsnake	*Thamnophis saurita*	Special Concern	Special Concern
Eastern Musk Turtle	*Sternotherus odoratus*	-	-

Species of Concern	Scientific Name	Provincial Status (COSSARO)	National Status (COSEWIC)
Northern Map Turtle	*Sternotherus odoratus*	-	-
Eastern Milksnake	*Lampropeltis triangulum*	-	-
Snapping Turtle	*Chelydra serpentina*	-	-
Birds			
Canada Warbler	*Cardellina canadensis*	Special Concern	Threatened
Caspian Tern	*Hydroprogne caspia*	Special Concern	Special Concern
Eastern Wood-Pewee	*Hydroprogne caspia*	Special Concern	Special Concern
Grasshopper Sparrow	*Ammodramus savannarum*	Special Concern	Threatened
Prairie Warbler	*Setophaga discolor*	Special Concern	Threatened
Wood Thrush	*Hylocichla mustelina*	Special Concern	Threatened

Table 3 Potential Terrestrial Species at Risk

Common Name	Scientific Name	Provincial Status (COSSARO)	National Status (COSEWIC)
Plants			
American Chestnut	*Castanea dentate*	Endangered	Endangered
American Columbo	*Frasera caroliniensis*	Endangered	Endangered
Butternut	*Juglans cinerea*	Endangered	Endangered

Common Name	Scientific Name	Provincial Status (COSSARO)	National Status (COSEWIC)
Few-Flowered Club-rush	*Trichophorum planifolium*	Endangered	Endangered
Eastern Flowering Dogwood	*Cornus Florida*	Endangered	Endangered
Red Mulberry	*Morus rubra*	Endangered	Endangered
Spotted Wintergreen	*Chimaphila maculata*	Endangered	Endangered
Reptiles			
Blandings Turtles	*Emydoidea blandingii*	Threatened	Endangered
Spiny Softshell	*Apalone spinifera*	Threatened	Endangered
Amphibians			
Jefferson Salamander	*Ambystoma jeffersonianum*	Endangered	Endangered
Jefferson X Blue-spotted Salamander, Jefferson genome dominates	*Ambystoma jeffersonianum X Ambystoma laterale*	Endangered	Endangered
Birds			
Bank Swallow	*Riparia riparia*	Threatened	Threatened
Barn Swallow	*Hirundo rustica*	Threatened	Threatened
Bobolink	*Dolichonyx oryzivorus*	Threatened	Threatened
Cerulean Warbler	*Setophaga cerulea*	Threatened	Threatened
Chimney Swift	*Chaetura pelagica*	Threatened	Threatened
Eastern Meadowlark	*Sturnella magna*	Threatened	Threatened

Common Name	Scientific Name	Provincial Status (COSSARO)	National Status (COSEWIC)
Eastern Whip-poor-will	*Antrostomus vociferus*	Threatened	Threatened
Least bittern	*Ixobrychus exilis*	Threatened	Threatened
Loggerhead Shrike	*Lanius ludovicianus*	Threatened	Threatened
Louisiana Waterthrush	*Parkesia motacilla*	Threatened	Threatened
Yellow-breasted Chat	*Icteria virens*	Threatened	Threatened
Mammals			
Eastern Small-footed Myotis	*Myotis leibii*	Endangered	Endangered
Little Brown Myotis	*Myotis lucifugus*	Endangered	Endangered
Northern Myotis	*Myotis septentrionalis*	Endangered	Endangered
Tri-coloured Bat	*Perimyotis subflavus*	Endangered	Endangered

Table 4 Background Review of Fish Species Along the Preferred Route

Fish Species		Grand River Watershed (GRCA 2005)	Spencer Creek Watershed (Bowlby et al. 2009)		Bronte Creek Watershed (CH 2013)
Common Name	**Latin Name**	**Barlow Creek Warmwater Habitat (No Crossings)**	**Small Riverine Warmwater Habitat (SC1)**	**Intermediate Riverine Coldwater Habitat (SC2)**	**SC3 and SC4**
Black Crappie	*Pomoxis nigromaculatus*		✓		
Blacknose Dace	*Rhinichthys atratulus*			✓	✓
Blacknose Shiner	*Notropis heterolepis*		✓	✓	
Blackside Darter	*Percina maculata*				✓
Bluntnose Minnow	*Pimephales notatus*			✓	✓
Brook Stickleback	*Culaea inconstans*	✓			✓
Brown Bullhead	*Ameiurus nebulosus*		✓		✓
Brown Trout	*Salmo trutta*				✓
Central Mudminnow	*Umbra limi*	✓	✓	✓	✓
Common Carp	*Cyprinus carpio*				✓
Common Shiner	*Luxilus cornutus*		✓	✓	✓

Fish Species		**Grand River Watershed (GRCA 2005)**	**Spencer Creek Watershed (Bowlby et al. 2009)**		**Bronte Creek Watershed (CH 2013)**
Common Name	**Latin Name**	**Barlow Creek Warmwater Habitat (No Crossings)**	**Small Riverine Warmwater Habitat (SC1)**	**Intermediate Riverine Coldwater Habitat (SC2)**	**SC3 and SC4**
Creek Chub	*Semotilus atromaculatus*	✓	✓	✓	✓
Fathead Minnow	*Pimephales promelas*			✓	✓
Green Sunfish	*Lepomis cyanellus*				✓
Hornyhead Chub	*Nocomis biguttatus*			✓	
Johnny Darter	*Etheostoma nigrum*			✓	✓
Largemouth Bass	*Micropterus salmoides*		✓		
Mottled Sculpin	*Cottus bairdii*			✓	
Northern Hog Sucker	*Hypentelium nigricans*				✓
Northern Pearl Dace	*Margariscus nachtriebi*				✓
Northern Pike	*Esox lucius*	✓			✓
Pumpkinseed	*Lepomis gibbosus*	✓	✓		✓
Redside Dace	*Clinostomus elongatus*			✓	
River Chub	*Nocomis micropogon*			✓	

Fish Species		**Grand River Watershed (GRCA 2005)**	**Spencer Creek (Bowlby et al.**	**Watershed 2009)**	**Bronte Creek Watershed (CH 2013)**
Common Name	**Latin Name**	**Barlow Creek Warmwater Habitat (No Crossings)**	**Small Riverine Warmwater Habitat (SC1)**	**Intermediate Riverine Coldwater Habitat (SC2)**	**SC3 and SC4**
Rosyface Shiner	*Notropis rubellus*			✓	
White Sucker	*Catostomus commersonii*				✓

Additionally, amphibian call count surveys, turtle surveys, breeding bird surveys and Ecological Land Classification and botanical surveys were completed in 2020. While the above information is a good starting point, given the age of the information it will need to be reviewed and updated. A roadside assessment will be conducted in the summer of 2026 to confirm previous surveys and plan for future surveys. Stantec and Enbridge Gas will provide communication to Indigenous Communities ahead of the roadside assessment to offer participation. Any formal agreements for participation will occur directly with Enbridge Gas.

It is anticipated that on-site fieldwork will occur in 2027 after detailed design is complete (so the Project Footprint can be finalized) and access to private land is obtained. The nature of the surveys will depend on the features present and the anticipated project impacts. Stantec and Enbridge Gas will provide communication to Indigenous Communities ahead of the 2027 fieldwork program to offer participation. Any formal agreements for participation will occur directly with Enbridge Gas.

4.2 Archaeology

4.2.1 Methodology

Archaeological assessments are completed to identify and document potential archaeological resources that may be impacted by a Project. Initial assessments (Stage 1) determine the potential for archaeological sites, followed by field investigations (Stage 2-4) where warranted. These investigations may include pedestrian surveys or test pit surveys, depending on site conditions.

The pedestrian survey involves archaeologists walking across a property looking for artifacts, such as stone tools or pottery, ceramics, bones from wild or domesticated animals, or any other possible evidence of past human activity in the area. A pedestrian survey requires the landowner to plough their fields so that the so that the ground is visible. These surveys can be conducted any time of year and in any weather condition, except when snow cover or excessive rain impedes ground visibility.

A test pitting survey is conducted in areas that cannot be ploughed, such as woodlots, manicured lawns, areas of scrub or brush, and rocky areas. Small pits about 30 centimetres in diameter are dug every five metres across the entire project footprint. The contents of the test pit are filtered through a wire screen until only solid materials are left. Test pit surveys need to be conducted when the soil is soft enough to excavate.

4.2.2 Existing Conditions and Future Surveys

Based on the Stage 1 Archaeological Assessment conducted between the Kirkwall and Hamilton Valve Sites in 2019, it was determined that the entire area has potential for as-yet undiscovered archaeological remains (see Appendix A).

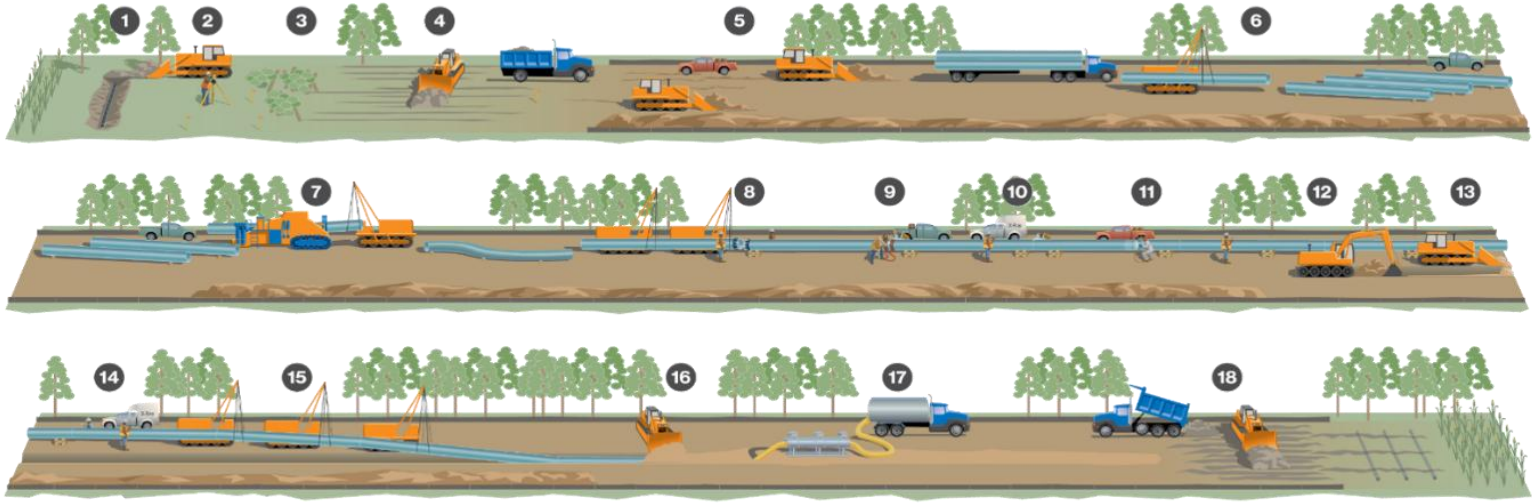
A Stage 2 Archaeological Assessment was conducted between May – November 2020. During the Stage 2 survey, 34 archaeological locations were identified. Of these 34 locations, 27 do not fulfill the criteria for a Stage 3 Archaeological Assessment as the cultural heritage value or interest of these sites has been sufficiently documented and no further archaeological work is recommended. Seven of the locations retain further cultural heritage value or interest and fulfill the criteria for Stage 3 Archaeological Assessment. Therefore, Stage 3 Archaeological Assessment will occur for these seven locations to further evaluate each site’s cultural heritage value or interest.

In addition to the above, a portion of the Study Area (approximately 4.9%) comprises lands that were not surveyed during the Stage 2 assessment and which retains potential for the identification and documentation of archaeological resources. Thus, a Stage 2 archaeological assessment is required for this portion of the Study Area.

It is anticipated that the Stage 2 fieldwork will occur in the spring of 2027 after detailed design is complete (so the Project Footprint can be finalized) and access to private land is obtained. Stantec and Enbridge Gas will provide communication to Indigenous Communities ahead of the Stage 2 fieldwork to offer participation. Any formal agreements for participation will occur directly with Enbridge Gas.

5 Construction Process and Steps

Figure 4 Constructing an Enbridge Gas Pipeline



1. Pre-construction tiling
2. Surveying and staking
3. Clearing
4. Right-of-way topsoil stripping
5. Front-end grading
6. Stringing pipe
7. Field bending pipe
8. Lining-up pipe
9. Welding process
10. X-ray or ultrasonic inspection, weld repair
11. Field coating
12. Digging the trench
13. Padding trench bottom
14. Final inspection and coating repair
15. Lowering pipe
16. Backfilling
17. Hydrostatic testing
18. Site restoration and post-construction tiling

Photo 1 Site Grading and Soil Stripping



Photo 2 Pipeline Installation in a Trench



Photo 3 Damn and Pump Watercourse Crossing



Photo 4 Pipeline Backfill and Regrading to Previous Conditions



The full 18-step pipeline construction process is shown above on Figure 2. In a simplified manner, Project construction will involve 4 main steps. First, the Project footprint is prepared, including staking, clearing, topsoil stripping, and grading (see Photo 1). Next, the new 48-inch natural gas pipeline will be installed (see Photo 2). Any watercourse crossings will be constructed via dam and pump and temporary bridges (see Photo 3, and the specifications provided in Appendix B). Lastly, the trench is backfilled, and the site is regraded to previous conditions (see Photo 4). Following site restoration, there will be little indication that a natural gas pipeline exists.

6 Potential Impacts and Mitigation Measures

The sections below outline typical impacts and mitigation measures for natural gas pipeline projects. A Project-specific assessment of impacts and mitigation will be undertaken following determination of the Preferred Route and will be summarized in the Environmental Report. Impacts and mitigation will be further refined following the completion of the surveys outlined in Sections 4.1.2 and 4.2.2, and through the permitting process with relevant agencies.

The standard process for mitigation, monitoring, and contingency measures is that a third-party consultant, in this case Stantec, will make recommendations in the Environmental Report. Enbridge Gas will commit to the OEB to implement the recommendations. To support implementation, Enbridge Gas will have a full-time Environmental Advisor and on-site Inspector during the design and construction phases of the Project. The Environmental Advisor will be involved throughout the consultation process and will provide input on the Environmental Report including mitigation and monitoring measures. During construction, the on-site Inspector will be present to confirm that construction activities are following the recommendations of the Environmental Report and any conditions of environmental permits.

6.1 Socio-Economic Features

The Project will be primarily constructed through agricultural fields, and near rural homes and businesses.

6.1.1 Potential Impacts

Potential impacts include:

- Temporary increases in noise, dust and air emissions.
- Increased construction traffic volumes.
- Temporary impairment of the use of rural homes and businesses.

- Ornamental vegetation clearing along the pipeline route.

6.1.2 Mitigation Measures

Mitigation measures include:

- Provide access across the construction area.
- Restrict construction to daylight hours and adhere to applicable noise by-laws.
- Develop and implement a Traffic Control Plan.
- Place fencing at appropriate locations for safety.
- Ensure that a designated Enbridge Gas representative is available prior to and throughout construction.
- Implement dust control measures.
- Re-vegetation of cleared ornamental vegetation areas as needed (including seeding/planting).

6.2 Cultural Heritage Resources

Cultural heritage features such as archaeological finds, heritage buildings, fences, and landscapes may be encountered during construction.

6.2.1 Potential Impacts

Potential impacts include:

- Damage or destruction of archaeological or historical resources.

6.2.2 Mitigation Measures

Mitigation measures include:

- Archaeological assessment of the construction footprint.
- Cultural heritage assessment (for built heritage features and cultural heritage landscapes).
- Reporting of any previously unknown archaeological or historical resources uncovered, or suspected to be uncovered, during excavation.

6.3 Aquatic Resources

Aquatic features such as watercourses and aquatic wildlife may be crossed during construction.

6.3.1 Potential Impacts

Potential Impacts include:

- Disruption or alteration to aquatic species and habitat and/or nuisance effects.
- Increased erosion, sedimentation, and turbidity resulting from removal of vegetation.

6.3.2 Mitigation Measures

Mitigation measures include:

- Implement measures consistent with the Fisheries and Oceans Canada's (DFO) Measures to Protect Fish and Fish Habitat.
- Follow the measures outlined in the DFO and Enbridge Gas Inc. Agreement related to Watercourse Crossings for Pipeline Construction and Maintenance in Ontario (2022) – see Appendix B.
- Install erosion and sediment control measures.
- Obtain and abide by all agency permits and approvals.
- Conform to fish timing window guidelines.
- For in-channel construction, protect aquatic species through methods such as flow diversion/dewatering, controlled pumping rates, intake screening, and fish rescue planning.
- Restore and seed disturbed areas to establish habitat and reduce erosion.

6.4 Terrestrial Resources

Natural environment features such as woodlands, wetlands, and wildlife habitat may need to be crossed during construction.

6.4.1 Potential Impacts

Potential impacts include:

- Damage or removal of vegetation and wildlife habitat in the construction area.
- Disturbance and/or mortality to local wildlife.

6.4.2 Mitigation Measures

Mitigation measures include:

- Conduct ecological surveys in advance of construction.
- Complete tree removal outside of migratory bird windows to the extent possible.
- Enbridge Gas commits to a 3:1 Tree Replacement program for the wooded areas to be removed.
- Clearly mark the construction area to avoid accidental damage.
- Restore and seed disturbed areas to establish habitat and reduce erosion, where appropriate.
- Secure all necessary permits and follow conditions of approval.

7 Closing

Enbridge Gas is committed to working collaboratively with Indigenous communities to ensure that treaty rights and interests are respected throughout the planning and development process. We encourage the early sharing of knowledge, including field observations and community perspectives, to help us effectively identify and assess potential impacts. This early engagement is vital to developing appropriate mitigation measures and ensuring that community values and priorities are meaningfully reflected in the project.

Appendices

Appendix A Stage 1 Archaeological Assessment – Kirkwall to Hamilton

Stage 1 Archaeological Assessment: Kirkwall – Hamilton Pipeline Project

Parts of Various Lots and Concessions,
Geographic Townships of Beverly, West Flamborough, and East Flamborough,
former Wentworth County,
now City of Hamilton, Ontario

June 18, 2019

Prepared for:

Enbridge Gas Inc.
50 Keil Drive North
Chatham, Ontario N7M 5M1

Prepared by:

Stantec Consulting Ltd.
600-171 Queens Avenue
London, Ontario N6A 5J7

Licensee: Parker Dickson, MA
License Number: P256
PIF Number: P256-0564-2018
Project Number: 160961299

ORIGINAL REPORT

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Executive Summary

Stantec Consulting Ltd. (Stantec) was retained by Enbridge Gas Inc. (Enbridge Gas) to complete a Stage 1 archaeological assessment for the Kirkwall – Hamilton Pipeline Project (the Project). Note: As of January 1, 2019, Union Gas Ltd. and Enbridge Gas Distribution have amalgamated into one utility with the legal name Enbridge Gas Inc. The Project Area, or study area, for the Stage 1 assessment of the Project comprises approximately 6,400 hectares of various Lots and Concessions, Geographic Townships of Beverly, West Flamborough, and East Flamborough, former Wentworth County, now City of Hamilton, Ontario. The Stage 1 archaeological assessment was conducted during the preliminary planning phase of the Project in accordance with the provisions of the *Ontario Heritage Act* (Government of Ontario 1990a) and the requirements of Section 4.3.4 of the Ontario Energy Board's (OEB) *Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario, 7th Edition* (OEB 2016). The final route and construction easement, including any temporary land use, for the Project will be determined at a later date. Thus, the current study area for the Stage 1 archaeological assessment is large and serves to capture a broad and generalized geographic area associated with the Project.

The Stage 1 archaeological assessment was completed under Project Information Form (PIF) # P256-0564-2019 issued to Parker Dickson, MA, of Stantec, by the Ministry of Tourism, Culture and Sport (MTCS). Permission for Stantec staff to enter the study area for the purposes of the Stage 1 archaeological assessment was not required as a property inspection was not required.

The Stage 1 archaeological assessment determined that the entirety of the study area retains potential for the identification of pre-contact Indigenous, post-contact Indigenous, and Euro-Canadian archaeological resources. Numerous farm complexes, residences, municipal rights-of-way (ROWs), and other existing features (i.e., existing roads, railways, residential and commercial complexes, and buried utilities and infrastructure) are located throughout the study area; however, they were not specifically examined as part of a Stage 1 property inspection and may still retain archaeological potential. As such, these areas have been included as part of the determination that the study area exhibits potential for the identification and recovery of archaeological resources.

In accordance with Section 1.3.1 and Section 7.7.4 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), **Stage 2 archaeological assessment is required for any portion of the Project's anticipated construction activities which impacts an area of archaeological potential**. Further details regarding Stage 2 archaeological assessment recommendations are provided in the body of the report.

The MTCS is asked to review the results presented and to accept this report into the *Ontario Public Register of Archaeological Reports*. Archaeological sites recommended for further archaeological fieldwork remain subject to Section 48(1) of the *Ontario Heritage Act* (Government of Ontario 1990a) and may not be altered, or have artifacts removed, except by a person holding an archaeological license.

The Executive Summary highlights key points from the report only; for complete information and findings, the reader should examine the complete report.

Project Personnel

Project Manager:	Michael Candido, B.Sc. (Env)
Licensed Archaeologist:	Parker Dickson, MA (P256)
GIS Specialist:	Andrew White, M.Sc.; Patrick Worsell, BES, DGIS
Report Writer:	Parker Dickson, MA (P256)
Quality Review:	Peter Popkin, Ph.D., CAHP, MCIfA (P362)
Independent Review:	Tracie Carmichael, BA, B.Ed. (R140)

Acknowledgements

Proponent Contacts:	Doug Schmidt – Supervisor, Environmental Planning Ken McCorkle – Manager, Indigenous Affairs
Ministry of Tourism, Culture and Sport:	Robert von Bitter – Archaeological Sites Database Coordinator
Ministry of Natural Resources and Forestry:	Lisa Casselman – Survey Records Clerk

1.0 PROJECT CONTEXT

1.1 DEVELOPMENT CONTEXT

Stantec Consulting Ltd. (Stantec) was retained by Enbridge Gas Inc. (Enbridge Gas) to complete a Stage 1 archaeological assessment for the Kirkwall – Hamilton Pipeline Project (the Project). Note: As of January 1, 2019, Union Gas Ltd. and Enbridge Gas Distribution have amalgamated into one utility with the legal name Enbridge Gas Inc. The Project Area, or study area, for the Stage 1 assessment of the Project comprises approximately 6,400 hectares of various Lots and Concessions, Geographic Townships of Beverly, West Flamborough, and East Flamborough, former Wentworth County, now City of Hamilton, Ontario (Figure 1). The Stage 1 archaeological assessment was conducted during the preliminary planning phase of the Project in accordance with the provisions of the *Ontario Heritage Act* (Government of Ontario 1990a) and the requirements of Section 4.3.4 of the Ontario Energy Board's (OEB) *Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario, 7th Edition* (OEB 2016).

To increase existing capacity and accommodate additional demand for natural gas, Enbridge is proposing to construct a new 48-inch diameter natural gas pipeline. The proposed Project will be constructed between Enbridge's existing Kirkwall valve site, located northeast of the intersection of Safari Road and Valens Road, and Enbridge's existing Hamilton valve site, located east of Highway 6 and north of Carlisle Road, generally paralleling three existing Enbridge pipelines. The length of the proposed pipeline will be determined by the final route chosen and will be approximately 10 to 14 kilometres in length (Figure 2). Construction activities related to the Project are anticipated to begin as early as Spring/Summer 2021 and be completed by the end of 2021.

As noted above, the final route and construction easement, including any temporary land use, for the Project will be determined at a later date. Thus, the current study area for the Stage 1 archaeological assessment is large and serves to capture a broad and generalized geographic area associated with the Project.

1.1.1 Objectives

The objectives of the Stage 1 archaeological assessment were to compile available information about the known and potential archaeological resources within the study area and to provide specific direction for the protection, management and/or recovery of these resources. In compliance with the provincial standards and guidelines set out in the Ministry of Tourism, Culture and Sport's (MTCS) 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), the objectives of the Stage 1 Archaeological Overview/Background Study are as follows:

- To provide information about the study area's geography, history, previous archaeological fieldwork, and current land conditions;
- To evaluate the study area's archaeological potential which will support recommendations for Stage 2 survey for all or parts of the study area; and
- To recommend appropriate strategies for Stage 2 survey.

To meet these objectives, Stantec archaeologists employed the following research strategies:

- A review of relevant archaeological, historic, and environmental literature pertaining to the study area;
- A review of the land use history, including pertinent historic maps;
- A review of the *City of Hamilton Archaeology Management Plan* to identify predetermined areas of archaeological potential (City of Hamilton 2016); and,
- An examination of the *Ontario Archaeological Sites Database* to determine the presence of registered archaeological sites in and around the study area.

Permission for Stantec staff to enter the study area for the purposes of the Stage 1 archaeological assessment was not required.

1.2 HISTORICAL CONTEXT

1.2.1 Post-contact Indigenous Resources

"Contact" is typically used as a chronological benchmark in discussing Indigenous archaeology in Canada and describes the contact between Indigenous and European cultures. The precise moment of contact is a constant matter of discussion. Contact in what is now the province of Ontario is broadly assigned to the 16th century (Loewen and Chapdelaine 2016).

The post-contact Indigenous occupation of southern Ontario was heavily influenced by the dispersal of various Iroquoian-speaking communities by the New York State Iroquois and the subsequent arrival of Algonkian speaking groups from northern Ontario at the end of the 17th century and the beginning of the 18th century (Konrad 1981; Schmalz 1991). By 1690, Ojibwa speaking people had begun moving south into the lower Great Lakes basin. The Indigenous economy since the turn of the 18th century focused on fishing and the fur trade, supplemented by agriculture and hunting (Konrad 1981; Rogers 1978). Numerous Indigenous groups and communities are associated with the post-contact occupation of southern Ontario and the general area of the Project.

At the turn of the 17th century, the region of the study area was occupied by Iroquoian populations who are historically described as the *Neutre* Nations (by the French) or the *Attiwandaron* (by the Huron-Wendat); their autonym is not conclusively known (Birch 2015). Claude Bernou's 1680 map indicates the then dispersed *Attiragenga* (near modern day Hamilton) and *Antouaronon* (west of the Grand River along the Lake Erie north shore) Nations occupied the region of the study area (White 1978: Figure 2) and settlements dating to the 17th century have been identified in the Fairchild-Big Creeks, Upper Twenty Mile Creek, and Lower Grand River settlement clusters, near to the study area (Lennox and Fitzgerald 1990: Table 13.1). In 1649, the Seneca and the Mohawk led a campaign into southern Ontario and dispersed the Attiwandaron (Neutral) Nations and the Seneca established dominance over the region (Heidenreich 1978; Konrad 1981). By 1690, Ojibwa speaking people had begun moving south into the lower Great Lakes basin (Konrad 1981; Rogers 1978); particularly, the Mississauga Nations gained dominance in the region. The Indigenous economy since the turn of the 18th century focused on fishing and the fur trade, supplemented by agriculture and hunting.

The expansion of the fur trade led to increased interaction between European and Indigenous people, and ultimately intermarriage between European men and Indigenous women. During the 18th century the progeny of these marriages began to no longer identify with either their paternal or maternal cultures, but instead as Métis. The ethnogenesis of the Métis progressed with the establishment of distinct Métis communities along the major

waterways in the Great Lakes of Ontario. Métis communities were primarily focused around the upper Great Lakes and along Georgian Bay, however Métis people have historically lived throughout Ontario (Métis Nation of Ontario 2016; Stone and Chaput 1978:607-608).

The study area falls within the historic and traditional territory of a number of Indigenous communities, including but not limited to the Mississaugas of the Credit First Nation (Mississaugas of the New Credit First Nation n.d.), the Six Nations of the Grand River, and the Haudenosaunee Confederacy. Since contact with European explorers and immigrants, and, later, with the establishment of provincial and federal governments (the Crown), the lands within Ontario and the Geographic Townships of Beverly, West Flamborough, and East Flamborough have been included in various treaties, land claims, and land cessations. Though not an exhaustive list, Morris (1943) provides a general outline of some of the treaties within the Province of Ontario from 1783 to 1923. While it is difficult to exactly delineate treaty boundaries today, an approximate outline of the treaty lands described by Morris is provided in Figure 3 (1943). According to Morris (1943), the study area is situated within the described limits of the 1792 indenture of the 1784 Between the Lakes Purchase between the English government (referred to as “the Crown”) and the Mississaugas). This treaty:

> *...was made with the Mississa[ug]a Indians 7th December, 1792, though purchased as early as 1784. This purchase in 1784 was to procure for that part of the Six Nation Indians coming into Canada a permanent abode.*
>
> *The area included in this Treaty is, Lincoln County excepting Niagara Township; Saltfleet, Binbrook, Barton, Glanford and Ancaster Townships, in Wentworth County; Brantford, Onondaga, Tusc[a]r[o]ra, Oakland and Burford Townships in Brant County; East and West Oxford, North and South Norwich, and Dereham Townships in Oxford County; North Dorchester Township in Middlesex County; South Dorchester, Malahide and Bayham Township in Elgin County; all Norfolk and Haldimand Counties; Pelham, Wainfleet, Thorold, Cumberland and Humberstone Townships in Welland County ... .*
>
> (Morris 1943:17-18)

As demonstrated above, the nature of Indigenous settlement size, population distribution, and material culture shifted as European settlers encroached upon Indigenous territory. However, despite this shift, “written accounts of material life and livelihood, the correlation of historically recorded villages to their archaeological manifestations, and the similarities of those sites to more ancient sites have revealed an antiquity to documented cultural expressions that confirms a deep historical continuity to…systems of ideology and thought” (Ferris 2009:114). As a result, Indigenous peoples of southern Ontario have left behind archaeologically significant resources throughout the region which show continuity with past peoples, even if they have not been explicitly recorded in Euro-Canadian documentation.

1.2.2 Euro-Canadian Resources

At its inception, Upper Canada was only sparsely settled by Europeans and the land had not been officially surveyed to any great extent. Thus, there was an urgency, by the then Lieutenant Governor of Upper Canada John Graves Simcoe, to survey this new province in order to establish military roads and to prevent settlers from clearing and settling land not legally belonging to them. In 1791, the Provinces of Upper Canada and Lower Canada were created from the former Province of Quebec by an act of British Parliament (Craig 1963:17). At this time, Colonel John Graves Simcoe was appointed as the Lieutenant Governor of Upper Canada and was tasked with governing the new

province, directing its settlement and establishing a constitutional government modelled after that of Britain's (Coyne 1895). The change was affected at the behest of United Empire Loyalists who wished to live under the British laws and customs they were familiar with in Great Britain and the former 13 Colonies (Craig 1963:10-11). John Graves Simcoe had ambitious plans to create a model British society in North America, stating a desire to "inculcate British customs, manners, and principles in the most trivial, as well as most serious matters" in Upper Canada (Craig 1963:21). In 1792, Simcoe divided Upper Canada into 19 counties consisting of previously-settled lands, new lands opened for settlement, and lands not yet acquired by Crown. These new counties stretched from Essex in the west to Glengarry in the east.

1.2.2.1 Wentworth County

In 1792, at Simcoe's behest, the Eighth Act of the Upper Canada Parliament divided the province into four districts: Eastern, Midland, Home, and Western (Kernighan 1875:iii). The four districts were subdivided into 19 counties. The future location of Wentworth County was in the Home District, and was in parts of Haldimand, Lincoln, and York Counties. In 1816, the Gore District was created from lands in the Home and Niagara Districts, and the County of Wentworth was formed (Archives of Ontario 2015). Wentworth County was named in honour of John Wentworth, Royal Governor of New Hampshire from 1766-1775, and later a Lieutenant Governor of Nova Scotia (Johnston 1967:3-4). In 1849, the District System was abolished (Archives of Ontario 2015), and the Counties of Halton and Wentworth formed a single municipality. In 1853, the two counties were separated. Wentworth County totaled 272,000 acres (110,074.5 hectares) and comprised the City of Hamilton, Town of Dundas, and the Townships of Beverly, Binbrook, Barton, Ancaster, Saltfleet, East and West Flamborough (alternatively spelled Flamboro), and the Township of Glanford, where the study area is located (Kernighan 1875:iii-iv).

Early 19th century communities in Wentworth County included Dundas, Ancaster, and Hamilton. The completion of the Burlington Bay Canal in 1832 (Craig 1963:158) and the opening of the Great Western Railway in 1853, led to Hamilton's ascent as the dominant settlement and place of trade in the county (Kernighan 1875:v). Hamilton developed into a major manufacturing centre of Ontario, while the rest of the county was primarily agricultural. Wentworth County was especially known for its orchards and vineyards and was an important part of the Niagara Fruit Belt (Johnston 1967:209). Other crops grown in Wentworth County included wheat, barley, and tobacco (Johnston 1967:205-206).

At the turn of the 20th century, Hamilton had a population of 50,000 (Johnston 1967:247). The widespread adoption of the automobile opened rural portions of Wentworth County to suburban development. As a result, the population of Wentworth's townships began to increase and the City of Hamilton annexed portions of Barton, Ancaster, and Saltfleet Townships. By the 1950s, the population of Wentworth not within the city of Hamilton was about 60,000 (Johnston 1967:288-289). The population of Hamilton had grown to nearly 300,000 by 1966 (Dominion Bureau of Statistics 1967:10-12). In 1973, Wentworth County was amalgamated into the new Regional Municipality of Hamilton-Wentworth, which was restructured into the single-tier City of Hamilton in 2001 (Archives of Ontario 2015).

The Stage 1 study area for the Project comprises numerous lots and concessions in the Geographic Townships of Beverly, West Flamborough, and East Flamborough. Table 1 provides a summary of various lots and concessions within the Stage 1 study area.

Table 1: Summary of Lots and Concessions with the Study Area

Lot	Concession	Geographic Township
23 to 36	5	Beverly
24 to 36	6	
24 to 36	7	
24 to 36	8	
1 to 17	5	West Flamborough
1 to 17	6	
1 to 14	7	
1 to 10	8	
12 and 13	6	East Flamborough
12 and 13	7	
12 and 13	8	
12 and 13	9	
12 and 13	10	

1.2.2.2 Township of Beverly

Established in 1792, Beverly Township (alternatively spelled Beverley) took its name from the Town of Beverly, located in East Yorkshire, England. The first survey of the Township of Beverly was undertaken by Augustus Jones in 1794 and included Concessions 1 through 5. Large portions of the township were swampy and known as “Beverly Swamp”. The remaining concessions, i.e., 6 through 10, were initially surveyed in 1797 by John Stegman, but due to the challenging landscape and Beverly swamp, the survey was completed again in 1832 by James Kirkpatrick (Collins 2001:7). The township was laid out in relation to the survey of the Governor’s Road (Dundas Street), also completed by Jones from 1793 to 1795.

The majority of European settlement occurred after James Kirkpatrick’s survey in 1832. The first settlers in the Township of Beverly were Jacob Cope and George Jones, who arrived following the survey (Page & Smith 1875:x). The majority of early landowners in the township were absentee owners, which included merchants and officeholders in York (now Toronto), Niagara, and Montreal (Collins 2001:7).

Settlement in the Township of Beverly occurred primarily at road intersections and was influenced by the establishment of mills and railway development. In the 1820s, Governor’s Road, south of the study area, was planked through the township, influencing the location of the settlements of Lynden and Copetown. The Dundas and Waterloo Road was opened in the township in the early 19th century and planked in 1837 between the Desjardins Canal to the Village of Waterloo to the northeast. The roadway, west of the study area, allowed for the settlement of Rockton, Romulus, and Sheffield (Collins 2001:8). By 1859, the Dumfries and Beverly Road was planked and connected to the Dundas and Waterloo Road from the adjacent Township of North Dumfries, in the County of Brant.

Settlement in the township was slow due to the challenging terrain composed of rock, swamps, and forests. The township remained an unbroken forest until 1810, when a portion of land was cleared near Sheffield (Cornell 1967:8). By 1820, the township had only a population of 81, with 1,883 acres of cultivated land, out of a total 70,200 acres (Page & Smith 1875:x). In the 1830s, settlers from the British Isles began to arrive in the township and impact the population growth. The first settlements in the northern portion of the township in relation to the study area occurred in 1832 with the first settlers of John and William McKnight. They were followed soon after by John Valens, the Pentland, and the Macdonald families (Irwin & Co. 1883:37).

In the first few decades of the 19th century, the population grew steadily from 617 in 1824, to 2,382 in 1839. In 1837, the community of Kirkwall commenced to settle, with the majority of settlers being of Scottish decent. After 1840, the settlement of the township grew quickly and by 1850 there was very little unclaimed land (Page & Smith 1875:X). In 1846, the township had 52,159 acres taken up, with 16,332 under cultivation. William Henry Smith described the township that year as well settled, with fine farms, and two or three excellent mill streams (Smith 1846:15).

In relation to the study area, the closest early settlement in the township is Kirkwall, which was established to the west at the present-day intersection of Kirkwall Road and Concession Road 8. Kirkwall, also known as “Little Scotland,” was settled by six families from Scotland in 1832 (Collins 2001:35). A year later the settlers were joined by 12 additional families from Scotland, as well as an English family and four families from Northern Ireland (Collins 2001:35). Within three years of the arrival of the first European settlers, a log church was constructed to accommodate the growing congregation. In 1848, the log structure was replaced with a stone church (Collins 2001:35). In 1866, Kirkwall was a small post office village with a population of about 60. At the time the village had two stores, a church, a hotel, a blacksmith shop, and a boot and shoe shop (Mitchell 1866:343). Kirkwall remained a small village throughout the late 19th century, with a population of only 60 in 1886 (Irwin & Co. 1886:103).

The Great Western Railway (GWR) was constructed through the southern portion of the Township of Beverly from 1851 to 1853 (Page & Smith 1875:iv). The line opened in January 1854 operating between Windsor and Niagara Falls (Houghton 2008:88). Stations in the township were located in the hamlets of Lynden and Copetown. In 1883, the Township of Beverly reached a population of 4,890 (Irwin & Co. 1883:38). A portion of the 1859 map of Wentworth County featuring Beverly Township is illustrated in Figure 4 (Surtees 1859). A portion of the 1875 map of Beverly Township is illustrated in Figure 5 (Page & Smith 1875). The mid-to-late 19th century development of the study area within the Township of Beverly is illustrated on both maps with numerous landowners and structures depicted.

During the 20th century, the study area in the Township of Beverly continued to be part of a rural landscape, surrounded, primarily, by agricultural lands. The hamlets and villages in the township witnessed a decline in the early 20th century, influenced by the nearby larger markets and industries in Hamilton and Toronto. In 1974, with the creation of the Regional Municipality of Hamilton-Wentworth, the Township of Beverly was amalgamated with the Townships of West and East Flamborough, to form the Town of Flamborough. Later, in 2001, the Town of Flamborough was amalgamated into the new City of Hamilton (Hamilton Public Library 2017b).

1.2.2.3 Township of West Flamborough

The Township of West Flamborough was surveyed by Augustus Jones in 1793 using a single-front system. The township survey, similarly, to the Township of Beverly was also laid out in relation to the survey of the Governor's Road. The township was named after a small east coast village in Yorkshire, England. It was surveyed into west and east portions that remained administratively joined until 1854 (Hamilton Public Library 2017b). The west portion was laid out in the shape of a triangle with the Governor's Road serving as the base. It has 11 concessions running west to east that were numbered north from Governor's Road (Burkholder 1950). Laid out using the single-front system, each concession was composed of long and narrow lots that were approximately 200 acres in size. However, some lot sizes in the township are irregular, due to its triangular shape and Cootes Paradise along the southeast portion (Green *et al*. 2003:2).

As part of the survey of the township, Simcoe ordered that a 60-acre plot be set aside for the creation of a town plot. The town was surveyed in 1801 by Deputy Surveyor John Stegman and named Cootes Paradise (now Dundas) after Captain Thomas Cootes, a British Naval Officer who hunted waterfowl in the area in the 1780s (Royal Botanical Gardens n.d.). The town plot was laid out on a portion of Lot 17, Concession 1, in the Township of West Flamborough and a portion of Lot 53, Concession 1, in the Township of Ancaster (Page & Smith 1875:ix).

The first European settlers in the township were Ann Morden and her family, who were United Empire Loyalists that came to the township in 1787. When Jones surveyed the township, he noted the Morden family as squatters in the Dundas Valley (Woodhouse 1965:10). Other early European settlers prior to 1800 included: Andrew Vanevery, John Purbus, Isaac Durham, William Chrysler, David Vanevery, Frederick Schram, John Rosebrough, Peter Vanevery, Isaac Smith, John Showers, Michael Showers, William Frances, Harcar Lyons, and James Durand (Woodhouse 1965:12).

One of West Flamborough Township's main features is Spencer Creek. In the early 19th century, the water flow of the creek was sufficiently strong to power a number of mills; particularly in the Greensville area, where Honourable James Crooks established several mills of various types. The industrial and residential community came to be known as Crook's Hollow and included saw mills, grist mills, flour mills, and one of the first large-scale paper mills in Upper Canada at the time. Spencer Creek, as it flows through West Flamborough Township, provides the water for two of the region's most scenic waterfalls, Webster's Falls and Tew's Falls. Both waterfalls are located along the edge of the Niagara Escarpment, just downstream from the historic village of Bullock's Corners, location of the West Flamborough Township Hall.

Settlement in the Township of West Flamborough developed primarily along the waterways and road intersections. South of the study area, Edward Peer purchased 30 acres on Spencer Creek in 1801 and built the first mill in Dundas, known as Dundas Mills (Woodhouse 1965:14). Other mills developed along watercourses in the township and by 1823 the township had 11 grist mills and eight saw mills in operation (Page & Smith 1875:iii). The community of Dundas flourished in the 19th century as it was located at the junction of large roadways and on the shoreline of Coote's Paradise Marsh. The town developed into a trading and transportation centre in the township (Freeman 2001:21). The town received the first post office in the township in 1814 and was given the name Dundas after the main thoroughfare in the settlement, Dundas Street (Conservation Hamilton n.d.).

Growth within the township accelerated with the construction of the Desjardins Canal between 1826 and 1837. The canal was constructed along the mouth of Spencer Creek to connect Dundas with Burlington Bay. Dundas served as the location for company headquarters and offices, as well as a community for workers (Page & Smith 1875:ix). Following the construction of the Desjardins Canal, Dundas became a busy port on Lake Ontario (Freeman 2001:37). In the northern portion of the township, the opening of the Guelph to Dundas Road began in 1827, following the founding of the Town of Guelph by John Galt, north of the study area. Galt instigated the development of a roadway through the Township of Puslinch towards the Township of West Flamborough. The Guelph to Dundas Road, also known as Aboukir Road, was laid out following an Indigenous trail. Although it was an open route, the Guelph to Dundas Road remained a trail until the mid-19th century. In 1846, the Guelph and Dundas Road Company was established by a group of Guelph businessmen to further open the roadway. By 1850, the roadway was nearly completed running through the eastern portion of the study area (Clark 2016). The roadway is depicted as an open road on the 1859 map of Wentworth County forming the boundary between the townships of West and East Flamborough before heading south through the villages of Freelton and Strabane (see Figure 4).

Dundas was incorporated as a town on July 28, 1847 (Page & Smith 1875:ix). With the construction of the GWR in 1854, Dundas witnessed a shift from canal shipments to utilization of the railway for the shipment of goods. By the end of the 19th century, the Town of Dundas had become one of the major manufacturing towns in the province with industries producing such goods as flour, cotton, clothing, agricultural implements, and furniture (Page & Smith 1875:ix).

In relation to the study area, the closest early settlement in the township was Strabane, which developed at the intersection of Brock Road and Concession Road 8 West. It was first settled by Matthew Peebles in 1842 (Mitchell 1866:352). A post office was established at the intersection in 1851 with Peebles as the first postmaster (Library and Archives Canada 2014). By 1866, the village had a population of about 100, and included a hotel, two saw mills, a school, a church, and a boot and shoemaker (Mitchell 1866:352-353). Strabane remained a small community throughout the late 19th century, with a population in 1898 of only about 50 (Vernon 1898:149). A portion of the 1859 map of Wentworth County featuring West Flamborough Township is illustrated in Figure 4 (Surtees 1859). A portion of the 1875 map of West Flamborough Township is illustrated in Figure 5 (Page & Smith 1875). The mid-to-late 19th century development of the study area within the Township of West Flamborough is illustrated on both maps with numerous landowners and structures depicted.

At the turn of the 20th century, the Town of Dundas witnessed a change in settlement patterns as retired farmers began to move into the town from the surrounding township. The proximity of Dundas to the City of Hamilton also created the possibility for many town residents to work in Hamilton while maintaining their home in Dundas (Meyers 1954:42). Traffic between Dundas and Hamilton increased with the development of better roads and highways beginning in the 1920s. In 1920, the Department of Public Highways Ontario assumed roads from Hamilton to Owen Sound and established King's Highway 6 (Bevers 2019). The highway, situated within the study area, is now a busy commuter route in the City of Hamilton, with connections to Highways 401 and 403. In January 2001, the Towns of Flamborough and Dundas amalgamated with the City of Hamilton (Hamilton Public Library 2017a). Dundas remains a small suburban community within the City with a population of 24,710 in 2006 (Social Planning & Research Council of Hamilton 2008).

1.2.2.4 Township of East Flamborough

The Township of East Flamborough was surveyed in 1793 by Augustus Jones using a single-front system. Similar to the Township of West Flamborough, the Township of East Flamborough was laid out in relation to the Governor's Road. The Township of East Flamborough has fourteen concessions running south to north, with a broken front along Burlington Bay. Lots in the township are numbered east to west. Laid out using the single-front system, each concession comprises long and narrow lots that are approximately 200 acres in size.

The Township of East Flamborough was named after the Town of Flamborough in East Yorkshire, England. The first European settler to the Township of East Flamborough was David Fonger who arrived in 1783; he was followed by William Applegarth in 1791 (Green *et al*. 1997:5). Land grants were given beginning in 1796 in the lower portions of the township. One of the first grants was given to Alexander McDonnelll in 1796, which included 800 acres along Grindstone Creek (WEFCC 1967:12).

Settlement in the Township of East Flamborough developed primarily at road intersections and along the waterways, which acted as a source of power for mills. The first mill in the township was constructed on Grindstone Creek by William and John Applegarth (Green *et al*. 1997:5), followed in the early 1800s by a saw mill on the creek near the Great Falls. The settlement of Waterdown developed around Brown's mill, at the crossroads of Dundas Street and Mill Street (Green *et al*. 1997:18) and became the largest village in the township throughout the 19th century.

The southern portion of the township was first settled in the early 19th century, while the remaining portions of the township remained heavily wooded until the 1820s and 1830s. By 1846, 25,537 acres in the township had been taken up with 8,750 acres under cultivation. By this time, the township had two grist mills and nine saw mills (Smith 1846:59). In 1854, the Township of East Flamborough was incorporated as a separate township from West Flamborough (Hamilton Public Library 2017b).

In relation to the study area, the closest early settlement in the township is Carlisle, which was established to the east in 1828 by John Eaton. Eaton and his wife Catherine settled on 400 acres of land in Lots 8 and 9, Concession 8, in the Township of East Flamborough in 1828 (Lake and Reynolds Genealogy 2017). A small village plot, originally known as Eaton, was laid out on Eaton's property by his son Anson Eaton, along with Andrew Patton and George Abery (Mitchell 1866:335). Early European settlers to this hamlet included the Fords, Pattons, Kievels, Hamiltons, McColls, Crookers, Gunbys, Mordens, Adamsons, Binkleys, Hunts, Greens, Mills, and Bennetts (WEFCC 1967:35). A post office was established in the hamlet in 1851, with G.R. Lister as the first postmaster (Library and Archives Canada 2014). In 1853, the hamlet was renamed to Carlisle (WEFCC 1967:35). Also, in 1853, the Hamilton, Waterdown, and Carlisle Road was constructed from Hamilton to Carlisle. In 1866, Carlisle had a population of 150, with two general stores, several saw mills, two schools, and two churches (Mitchell 1866:335).

By 1867, all the lots in the township were taken up by residents or land speculators (Green *et al*. 1997:3). In 1883, the township reached a population of 2,377 with the villages of Aldershot, Carlisle, Clappison, Flamboro Centre, Mountsberg, and Waterdown (Irwin & Co. 1883:54). The largest village was Waterdown with a population of about 700, while Carlie had a population of 150 (Irwin & Co. 1883). A portion of the 1859 map of Wentworth County featuring East Flamborough Township is illustrated in Figure 4 (Surtees 1859). A portion of the 1875 map of East Flamborough Township is illustrated in Figure 5 (Page & Smith 1875). The mid-to-late 19th century development of the study area within the Township of East Flamborough is illustrated on both maps with numerous landowners and structures depicted.

At the beginning of the 20th century, the study area remained within a rural portion of the Township of East Flamborough, just west of the hamlet of Carlisle, and was surrounded by agricultural lands. Carlisle received a small period of growth with the construction in 1911 of the Canadian Pacific Railway (C.P.R.) between Hamilton and Guelph. Traffic surrounding the study area increased with the development of better roads and highways beginning in the 1920s. The Township of East Flamborough was similarly influenced by the development of Highway 6, which influenced the development of subdivisions in Carlisle following the Second World War (WEFCC 1967:37). In January 1974, the Township of East Flamborough became part of the Regional Municipality of Hamilton-Wentworth. In January 2001, the township was amalgamated into the new City of Hamilton (Hamilton Public Library 2017b). Carlisle remains a small community within the City, with a population in 2016 of 1,869 (Statistics Canada 2016).

1.2.2.5 Summary

As illustrated above, the historical context of the Stage 1 study area for the Project includes numerous examples of Indigenous and early Euro-Canadian resources. In discussing the late 19th century historical mapping it must be remembered that historical county atlases were produced primarily to identify factories, offices, residences and landholdings of subscribers and were funded by subscription fees. Landowners who did not subscribe were not always listed on the maps (Caston 1997:100). As such, all structures were not necessarily depicted or placed accurately (Gentilcore and Head 1984). Further, review of historic mapping, including treaty maps, also has inherent accuracy difficulties due to potential error in geo-referencing. Geo-referencing is conducted by assigning spatial coordinates to fixed locations and using these points to spatially reference the remainder of the map. Due to changes in “fixed” locations over time (e.g., road intersections), errors/difficulties of scale and the relative idealism of the historic cartography, historic maps may not translate accurately into real space points. This may provide obvious inconsistencies during the historic map review. Nonetheless, the majority of the study area has been subject to European-style agricultural practices for over 100 years, having been densely populated by Euro-Canadian farmers by the late 19th century. Portions of the study area have been cleared of woodlot and have had extensive drainage systems installed to reclaim swamp and marshland as agricultural field.

1.3 ARCHAEOLOGICAL CONTEXT

1.3.1 The Natural Environment

The Stage 1 study area for the Project includes portions of two broad physiographic regions: the Flamborough Plain and the Norfolk Sand Plain. The Flamborough Plain physiographic region consists of:

> *An isolated tract of shallow drift on the Niagara cuesta…It is an area of about 150 square miles, bounded on the northwest by the Galt Moraine, and on the south by the silts and sands of glacial Lake Warren. A few drumlins are found scattered over this limestone plain and swamps are plentiful. The limestone has been swept bare in places…what little overburden there is on the bedrock, apart from the drumlins, is either bouldery glacial till or sand and gravel…Good soil is not plentiful in the little region: the soil is either wet or stony and shallow.*
>
> (Chapman and Putnam 1984:129-130)

Generally, two streams, i.e., Spencer Creek and small tributaries of Bronte Creek, serve to drain the Flamborough Plains physiographic region. Portions of these two streams traverse the study area. Additional secondary and tertiary creeks and streams from these primary sources (i.e., Barlow Creek) are noted throughout the study area. Moreover, additional ancient and/or relic tributaries of water sources may have existed but are not identifiable today and are not indicated on historic mapping. As noted previously, much of the Geographic Township of Beverly comprises swampy soils. These swamps "serve as water reservoirs and produce cedar posts and other wood" (Chapman and Putnam 1984:130). Soils within the region are generally of poor quality as they are often wet or stony and shallow (Chapman and Putnam 1984:130). However, these soils would be suitable for Indigenous agricultural practices and, with 19th century tiling, would become suitable for large-scale agriculture.

The Norfolk Sand Plain physiographic region includes a large area of fine textured, water deposited sands laid down as part of the delta of the glacial Grand River (Chapman and Putnam 1984). Moreover:

> *The sands and silts of this region were deposited as a delta in glacial Lakes Whittlesy and Warren. A great discharge of meltwater from the Grand River area entered the lakes between the ice front and the moraines to the northwest, building the delta from west to east as the glacier withdrew.*
>
> (Chapman and Putnam 1984:154)

Much of the Norfolk Sand Plain physiographic region is located to the south of the study area, along the north shore of Lake Erie. Thus, much of the region's drainage occurs through small rivers and streams flowing directly to Lake Erie. However, a small portion of the northern part of the region drains through the Grand River via Otter Creek and Big Creek. The northern part of the region also drains to Lake Ontario via Grindstone Creek, which traverses the study area. Additional secondary and tertiary creeks and streams from these primary sources are noted throughout the study area. Moreover, additional ancient and/or relic tributaries of water sources may have existed but are not identifiable today and are not indicated on historic mapping. Generally, the soils within the region are suitable for Indigenous and non-Indigenous agricultural practices, with tobacco farming being the dominant practice in much of the region.

1.3.1.1 Recent Heritage Reports

A Cultural Heritage Assessment Report (CHAR) is being prepared by Stantec (*in press*) to identify the presence of heritage resources within the study area; understand the potential impacts of the Project on these resources; and, prepare mitigation strategies to minimize these impacts. The preliminary information from the CHAR suggests there are 26 cultural heritage resources situated within the study area for the Project. Once the preferred route for the proposed pipeline is determined, appropriate mitigation measures will be evaluated. Further information regarding heritage resources will be detailed in the CHAR once completed.

1.3.2 Pre-contact Indigenous Resources

It has been demonstrated that Indigenous people began occupying southern Ontario as the Laurentide glacier receded, as early as 9000 BCE (Ellis and Ferris 1990:13). Much of what is understood about the lifeways of these Indigenous peoples is derived from archaeological evidence and ethnographic analogy. In Ontario, Indigenous culture prior to the period of contact with European peoples has been distinguished into cultural periods based on observed changes in material culture. These cultural periods are largely based on observed changes to formal lithic tools, and

separated into the Early Paleo-Indian, Late Paleo-Indian, Early Archaic, Middle Archaic, Late Archaic and Terminal Archaic periods. Following the advent of ceramic technology in the Indigenous archaeological record, cultural periods are separated into the Early Woodland, Middle Woodland, and Late Woodland periods, based primarily on observed changes in formal ceramic decoration. It should be noted that these cultural periods do not necessarily represent specific cultural identities but are a useful paradigm for understanding changes in Indigenous culture through time. The current understanding of Indigenous archaeological culture is summarized in Table 2, based on Ellis and Ferris (1990). The provided time periods are based on the "Common Era" calendar notation system, i.e., Before Common Era (BCE) and Common Era (CE).

Table 2: Generalized Cultural Chronology of the Study Area

Period	Characteristics	Time Period	Comments
Early Paleo-Indian	Fluted Projectiles	9000 – 8400 BCE	spruce parkland/caribou hunters
Late Paleo-Indian	Hi-Lo Projectiles	8400 – 8000 BCE	smaller but more numerous sites
Early Archaic	Kirk and Bifurcate Base Points	8000 – 6000 BCE	slow population growth
Middle Archaic	Brewerton-like points	6000 – 2500 BCE	environment similar to present
Late Archaic	Narrow Points	2500 – 1800 BCE	increasing site size
	Broad Points	1800 – 1500 BCE	large chipped lithic tools
	Small Points	1500 – 1100 BCE	introduction of bow hunting
Terminal Archaic	Hind Points	1100 - 950 BCE	emergence of true cemeteries
Early Woodland	Meadowood Points	950 - 400 BCE	introduction of pottery
Middle Woodland	Dentate/Pseudo-Scallop Pottery	400 BCE – 500 CE	increased sedentism
	Princess Point	550 – 900 CE	introduction of corn
Late Woodland	Early Ontario Iroquoian	900 – 1300 CE	emergence of agricultural villages
	Middle Ontario Iroquoian	1300 – 1400 CE	long longhouses (100m +)
	Late Ontario Iroquoian	1400 – 1650 CE	tribal warfare and displacement
Contact Indigenous	Various Algonkian Groups	1650 – 1875 CE	early written records and treaties
Late Historic	Euro-Canadian	1796 CE – present	European settlement

Between 9000 and 8000 BCE, Indigenous populations were sustained by hunting, fishing, and foraging and lived a relatively mobile existence across an extensive geographic territory. Despite these wide territories, social ties were maintained between groups. One method of maintaining social ties was through gift exchange, evident through exotic lithic material documented on many sites (Ellis 2013:35-40).

By approximately 8000 BCE, evidence exists and becomes more common for the production of ground-stone tools such as axes, chisels, and adzes. These tools themselves are believed to be indicative specifically of woodworking. This evidence can be extended to indicate an increase in craft production and arguably craft specialization. This latter statement is also supported by evidence, dating to approximately 7000 BCE of ornately carved stone objects which would be laborious to produce and have explicit aesthetic qualities (Ellis 2013:41). This is indirectly indicative of changes in social organization which permitted individuals to devote time and effort to craft specialization. Since 8000 BCE, the Great Lakes basin experienced a low-water phase, with shorelines significantly below modern lake levels



(Stewart 2013: Figure1.1.C). It is presumed that the majority of human settlements would have been focused along these former shorelines. At approximately 6500 BCE the climate had warmed considerably since the recession of the glaciers and the environment had grown more similar to the present day. By approximately 4500 BCE, evidence exists from southern Ontario for the utilization of native copper (naturally occurring pure copper metal) (Ellis 2013:42). The known origin of this material along the north shore of Lake Superior indicates the existence of extensive exchange networks across the Great Lakes basin.

At approximately 3500 BCE, the isostatic rebound of the North American plate following the melt of the Laurentide glacier had reached a point which significantly affected the watershed of the Great Lakes basin. Prior to this, the Upper Great Lakes had drained down the Ottawa Valley via the French-Mattawa river valleys. Following this shift in the watershed, the drainage course of the Great Lakes basin had changed to its present course. This also prompted a significant increase in water-level to approximately modern levels (with a brief high-water period); this change in water levels is believed to have occurred catastrophically (Stewart 2013:28-30). This change in geography coincides with the earliest evidence for cemeteries (Ellis 2013:46). By 2500 BCE, the earliest evidence exists for the construction of fishing weirs (Ellis *et al.* 1990: Figure 4.1). Construction of these weirs would have required a large amount of communal labour and are indicative of the continued development of social organization and communal identity. The large-scale procurement of food at a single location also has significant implications for permanence of settlement within the landscape. This period is also marked by further population increase and by 1500 BCE evidence exists for substantial permanent structures (Ellis 2013:45-46).

By approximately 950 BCE, the earliest evidence exists for populations using ceramics. Populations are understood to have continued to seasonally exploit natural resources. This advent of ceramic technology correlated, however, with the intensive exploitation of seed foods such as goosefoot and knotweed as well as mast such as nuts (Williamson 2013:48). The use of ceramics implies changes in the social organization of food storage as well as in the cooking of food and changes in diet. Fish also continued to be an important facet of the economy at this time. Evidence continues to exist for the expansion of social organization (including hierarchy), group identity, ceremonialism (particularly in burial), interregional exchange throughout the Great Lakes basin and beyond, and craft production (Williamson 2013:48-54).

By approximately 550 CE, evidence emergences for the introduction of maize into southern Ontario. This crop would have initially only supplemented Indigenous people's diet and economy (Birch and Williamson 2013:13-14). Maize-based agriculture gradually became more important to societies and by approximately 900 CE permanent communities emerge which are primarily focused on agriculture and the storage of crops, with satellite locations oriented toward the procurement of other resources such as hunting, fishing, and foraging. By approximately 1250 CE, evidence exists for the common cultivation of historic Indigenous cultigens, including maize, beans, squash, sunflower and tobacco. The cultural affiliation of populations within the region of the study area at this time period is debated, whether they may have spoken a form of Iroquoian language or Algonquian (Murphy and Ferris 1990). The extant archaeological record demonstrates many cultural traits similar to historic Indigenous nations (Williamson 2013:55).

1.3.3 Known Archaeological Sites and Surveys

In Canada, archaeological sites are registered within the Borden system, a national grid system designed by Charles Borden in 1952 (Borden 1952). The grid covers the entire surface area of Canada and is divided into major units containing an area that is two degrees in latitude by four degrees in longitude. Major units are designated by upper case letters. Each major unit is subdivided into 288 basic unit areas, each containing an area of 10 minutes in latitude by 10 minutes in longitude. The width of basic units reduces as one moves north due to the curvature of the earth. In southern Ontario, each basic unit measures approximately 13.5 kilometres east-west by 18.5 kilometres north-south. In northern Ontario, adjacent to Hudson Bay, each basic unit measures approximately 10.2 kilometres east-west by 18.5 kilometres north-south. Basic units are designated by lower case letters. Individual sites are assigned a unique, sequential number as they are registered. These sequential numbers are issued by the MTCS who maintain the *Ontario Archaeological Sites Database*. The study area is located within Borden blocks AiHa and AiGx, with Borden block AhHa situated immediately to the south.

Information concerning specific site locations is protected by provincial policy and is not fully subject to the *Freedom of Information and Protection of Privacy Act* (Government of Ontario 1990b). The release of such information in the past has led to looting or various forms of illegally conducted site destruction. Confidentiality extends to all media capable of conveying location, including maps, drawings, or textual descriptions of a site location. The MTCS will provide information concerning site location to the party or an agent of the party holding title to a property, or to a licensed archaeologist with relevant cultural resource management interests.

An examination of the *Ontario Archaeological Sites Database* has shown that there are 14 registered archaeological sites within the broad Stage 1 study area (Government of Ontario 2019a); none are within 50 metres of the Preliminary Preferred or Alternate Route options. A further five registered archaeological sites are within one kilometre of the study area; however, none of these sites are located within 50 metres of the study area (Government of Ontario 2019a). Table 3 provides a summary of the previously registered archaeological sites. The locations of the registered archaeological sites related to the study area are illustrated in Tile 1 in the Supplementary Documentation for this report.

Table 3: Registered Archaeological Sites

Borden #	Site Name	Site Type	Cultural Affiliation
AiHa-1	**Shaver Hill Ossuary**	**Ossuary**	**Indigenous**
AiHa-2	**Christianson**	**Village**	**Indigenous**
AiHa-3	**Dwyer Ossuary**	**Ossuary**	**Indigenous**
AiHa-5	**Hamilton / Hunter-Beaton**	**Village**	**Indigenous**
AiHa-7	Hood	Village / Burial	Indigenous
AiHa-8	**Mills**	**Village**	**Indigenous**
AiHa-9	MacDonald	Village	Indigenous
AiHa-10	**Bogle I**	**Hamlet**	**Indigenous**
AiHa-11	**Bogle II**	**Hamlet**	**Indigenous**
AiHa-12	**Robertson**	**Village**	**Indigenous**

Borden #	Site Name	Site Type	Cultural Affiliation
AiHa-14	**Freelton / Kynast**	**Village**	**Indigenous**
AiHa-18	**Kralt**	**Hamlet**	**Indigenous**
AiHa-23	**UG Kirkwall 1**	**Lithic scatter**	**Indigenous**
AiHa-29	**Groen**	**Camp**	**Indigenous**
AiHa-36	**Rutherford**	**Homestead**	**19th century Euro-Canadian**
AiGx-70	**Gamble**	**Indeterminate**	**Indigenous**
AiGx-232	MillGrove North	Homestead	19th century Euro-Canadian
AiGx-235	Abrey Zimmerman	Homestead	19th century Euro-Canadian
AhHa-322	Tract 1036, Location 1	Camp	Indigenous

Note: sites in **bold** are located within the Stage 1 study area

As noted, 14 registered archaeological sites are located within the broad Stage 1 study area (Government of Ontario 2019a). However, none of the registered sites are within 50 metres of the Preliminary Preferred or Alternate Route options for the Project. The potential for Project related construction activity to impact any of the registered archaeological sites within the study area will be re-evaluated as part of the Stage 2 archaeological assessment for the Project following confirmation of the selected route and delineation of any temporary construction easement.

Many of the registered archaeological sites within the study area are known only by their corresponding Site Record Form in the *Ontario Archaeological Sites Database* (Government of Ontario 2019a). As a result, detailed information regarding past archaeological activities and current status are not available for AiHa-5, AiHa-8, AiHa-10, AiHa-11, AiHa-12, AiHa-14, AiHa-18, AiHa-36, and AiGx-70. A summary of the information available from their respective Site Record Form is provided below.

AiHa-5 was registered in 1977 as the Hamilton site. The site was identified as an Indigenous village and was partially excavated by William Noble in 1972. Based on the artifacts recovered, the Hamilton site (AiHa-5) is affiliated with the historic Neutral. Later, in 1986, the same site was registered as the Hunter-Beaton site by William Finlayson and assigned Borden number AiHa-21. However, upon review of the site's locational data, it was determined that the two sites are the same and Borden number AiHa-21 was removed.

AiHa-8 was registered in 1977 as the Mills site. The site was identified as an Indigenous village located in a ploughed field. A small sample of artifacts was collected through excavation in 1971 by Ian Kenyon. The collected artifacts suggest the site is affiliated with the historic Neutral.

AiHa-10 was registered in 1977 as the Bogle I site. The site was identified as an Indigenous hamlet located in a ploughed field. A small sample of artifacts from the site was analyzed by Ian Kenyon. The sample of artifacts from the site suggest an affiliation with the historic Neutral.

AiHa-11 was registered in 1977 as the Bogle II site. The site was identified as an Indigenous hamlet located in a ploughed field. A small sample of artifacts from the site was analyzed by Ian Kenyon. The sample of artifacts from the site suggest an affiliation with the historic Neutral. The Bogle I (AiHa-10) and Bogle II (AiHa-11) sites are situated near each other.

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AiHa-12 was registered in 1977 as the Robertson site. A small sample of artifacts from the site was analyzed by Ian Kenyon. The sample of artifacts from the site suggest an affiliation with the historic Neutral. The site was identified as an Indigenous village near Spencer Creek. The Robertson site (AiHa-12) is located near the Dwyer Ossuary (AiHa-3).

AiHa-14 was registered in 1983 as the Freelton site and was also referred to as the Kynast site. Located within a hardwood forest, the site was identified as an Indigenous village. Test excavations were conducted at the site by William Fox in 1983. The test excavations suggest the site may retain a series of longhouses, possibly surround by a palisade. The artifacts recovered suggest a historic Neutral affiliation, with recovered trade goods indicating a period of use *circa* 1630 CE.

AiHa-18 was registered in 1983 as the Kralt site. The site was identified as an Indigenous hamlet located in a low land area near a swamp. A small sample of artifacts was collected from the surface of the site area. The sample of artifacts from the site suggest an affiliation with the historic Neutral, with recovered trade goods indicate a period of use in the early 1600s CE.

AiHa-36 was registered in 1992 as the Rutherford site. The site was identified as a Euro-Canadian homestead dating to *circa* 1840-1860 CE. A surface collection of artifacts, dominated by refined ceramics and glass, was retained. No further archaeological activities were planned for the site as it was to be protected with a 10 metre buffer around it.

The Shaver Hill Ossuary (Aiha-1) is associated with the Indigenous Christianson village (AiHa-2). Smith (1897:33) describes a large Indigenous settlement near Westover with numerous burial features. Though not named, the description of the site likely corresponds to the Christianson village (AiHa-2) and Shaver Hill Ossuary (AiHa-1). The period of use at the Christianson site (AiHa-2) and Shaver Hill Ossuary is between *circa* 1615 and 1632 CE (Fitzgerald 1982a). The Christianson site (AiHa-2) and Shaver Hill Ossuary have been the subject of numerous archaeological investigations (e.g., Fitzgerald 1981; Fitzgerald 1982b; Lennox and Fitzgerald 1990; Noble 1984; Stothers 1968; Stothers 1972).

The Dwyer Ossuary (AiHa-3) is associated with the Indigenous Robertson village (AiHa-12). The earliest recorded investigations at the Dwyer Ossuary occurred in 1938-1938 by Rutherford Smith. The Robertson site was surveyed by Ian Kenyon in 1971 (Sustainable Archaeology McMaster 2019). The period of use at the Robertson village (AiHa-12) and Dwyer Ossuary (AiHa-3) is between *circa* 1632 and 1651 CE (Fitzgerald 1982a; Fitzgerald 1982b). Few archaeological reports are available for the Robertson village (AiHa-12), while the Dwyer Ossuary (AiHa-3) has been the subject of previous archaeological investigations (e.g., Fitzgerald 1982b; Ridley 1961; Smith and Murphy 1939).

AiHa-23 was registered in 1988 as the UG Kirkwall 1 site. It was identified as a sparse surface scatter comprising four lithic artifacts: an end scraper, a wedge, a utilized flake, and an abrader. The site was identified by Mayer, Pihl, Poulton and Associates Incorporated (MPP) during the archaeological assessment for Union Gas' Kirkwall Ancaster Line (MPP 1988). The site would not be impacted by the preferred pipeline route and a Stage 3 archaeological assessment was not conducted.

AiHa-29 was registered in 1990 as the Groen site by Archaeological Research Associates Ltd. (ARA) during a property assessment for the Kirkwall Valve Site to Hamilton Take-off NPS 42 Pipeline Loop (ARA 1990a). The site was identified as an Indigenous camp and, later, a portion of the site was fully excavated, including mechanical topsoil removal (ARA 1990b). The partial excavation recovered lithic tools and flakes, as well as Indigenous pottery



and faunal remains. Several features and post moulds were also identified. The archaeological work was completed by Archaeological Research Associates Ltd. (ARA) in advance of proposed project impacts (ARA 1990b). The site is associated with the Neutral and dates to between 1620 and 1650 CE.

AiGx-70 was registered as the Gamble Site by Stew Leslie in the early 1970s. The site is identified as an Indigenous archaeological site, with Archaic and Woodland components. No information regarding site type or function is available.

Located outside of the study area, the MacDonald site (AiHa-9) was identified as an Indigenous village in 1838 (Smith 1897:31). The site was described as being between five and six acres in size and was protected by palisades (Smith 1897:31-32). The original identification of the MacDonald site (AiHa-9) confirmed the presence of "pipes, beads, wampum, totems and other mementos…[and] upwards of 300 iron tomahawks…" (Smith 1897:32). Similarly, the Hood site (AiHa-7) was identified outside of the study area in the early 1800s. The site was originally described as large and retained remnants of a palisade (Smith 1897:32). Burial pits had been identified and, from them, various items had been collected including "French axes, iron tomahawks, brass kettles, [and] brass arrow tips…" (Smith 1897:32). The Hood site (AiHa-7) was further described in Lennox (1978) and Fitzgerald (1979).

A query of the *Ontario Public Register of Archaeological Reports* identified several archaeological assessments which may document work within the broad Stage 1 study area or within 50 metres of it (Government of Ontario 2019b). Based on an examination of the queried reports, none document registered archaeological sites within 50 metres of the study area. Many of these reports represent archaeological assessments from the 1970s and 1980s when mapping and artifact recording standards were less precise than today's standards. As it relates to the current and broad Stage 1 study area for the Project, a detailed review of all possible early assessments and reports is not relevant. Rather, a summary of recent archaeological assessment work related to the study area is provided below. Despite some previous archaeological assessments overlapping with the current Stage 1 study area, Stantec has determined that illustrating all previously surveyed areas is not practical given the size and scale of the current study area. Following confirmation of the preferred route and delineation of any temporary construction easement required for the Project, the proximity of previous archaeological assessments and previously surveyed lands can be re-evaluated. Table 4 provides a summary of some of the relevant reports pertaining to previous archaeological work within the study area.

Table 4: Previous Archaeological Assessments

Year	Report	Author	PIF #
1984	*An Archaeological Resource Assessment of the Proposed Union Gas Loop of the NPS 34 Trafalgar Line, Brantford Take-Off to Kirkwall Valve Site, Waterloo and Hamilton-Wentworth Regional Municipalities*	MPP	Not applicable (Licence No. 1984-34)
1987	*Preliminary Report on the Archaeological Survey of Union Gas Pipeline, Kirkwell Valve to Hamilton Valves*	ARA	Not applicable
1988	*An Archaeological Resources Assessment of the Union Gas Pipeline from Kirkwall Valve Sites to the Hamilton Gate Station No. 3, Regional Municipality of Hamilton-Wentworth, Ontario*	MPP	Not applicable (Licence No. 86-92)

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Year	Report	Author	PIF #
1990a	*Archaeological Assessment. Groen Property – Phase II, NPS 42 Trafalgar Gasline, Kirkwell Valve to Hamilton Valve, Wentworth County, Ontario*	ARA	Not applicable (Licence No. 90-045)
1990b	*Archaeological Mitigation Groen Site (AiHa-29) NPS 42 Trafalgar Gasline Kirkwell Valve to Hamilton Valve*	ARA	Not applicable (Licence No. 90-045)
1999	*Stage 1 to 3 Archaeological Assessment of Highway 6, From Highway 5 to South of Concession Road 6W, Flamborough Township, Regional Municipality of Hamilton-Wentworth (W.P. 163-80-01)*	New Directions Archaeology	Not applicable (Licence No. 99-025)
2008	*Stage 1 Archaeological Assessment of the Proposed NPS 48 Brantford Take-Off to Kirkwall Valve Site Pipeline, Township of North Dumfries & City of Hamilton, Ontario*	D.R. Poulton & Associates Inc. (DPA)	P053-179-2018
2014a	*The 2013 Stage 1 Archaeological Assessment of the Proposed Enbridge Pipelines Inc. Line 11 Westover Segment Replacement Project, City of Hamilton, Regional Municipality of Hamilton-Wentworth, Ontario*	DPA	P316-198-2013
2014b	*The 2014 Stage 2 Archaeological Assessment of the Enbridge Pipelines Inc. Line 11 Westover Segment Replacement Project, City of Hamilton, Regional Municipality of Hamilton-Wentworth, Ontario*	DPA	P316-0278-2013
2014c	*The 2013-2014 Stage 2 Archaeological Assessment of Infrastructure Ontario Lands on the Proposed NPS 48 Brantford Take-Off to Kirkwall Valve Site Pipeline, Township of North Dumfries & City of Hamilton, Ontario*	DPA	P316-196-2013
2015a	*The 2013-2014 Stage 2 Archaeological Assessment of the Proposed NPS 48 Brantford Take-Off to Kirkwall Valve Site Pipeline, Township of North Dumfries & City of Hamilton, Ontario*	DPA	P316-0304-2014
2015b	*The 2015 Stage 1 Archaeological Assessment of the Proposed Enbridge Pipelines Inc. Line 10 Westover Segment Replacement Project, City of Hamilton, Ontario*	DPA	P316-0306-2015
2015	*Stage 2 Archaeological Assessment, Enbridge Pipelines Inc., Line 10 Westover Segment Replacement Project, Geotechnical Borehole Work Area and Access Routes, City of Hamilton, Ontario*	Timmins Martelle Heritage Consultants Inc. (TMHC)	P1075-0017-2015
2016	*Stage 2 Archaeological Assessment, Enbridge Pipelines Inc., Line 10 Westover Segment Replacement Project, 2015 Fieldwork, City of Hamilton, Ontario*	TMHC	P1075-0018-2016
2017	*Stage 2 Archaeological Assessment Enbridge Pipelines Inc. Line 10 Westover Segment Replacement Project Spring, Summer and Early Fall 2016 Fieldwork City of Hamilton, Ontario*	TMHC	P324-0098-2016
2018	*Stage 1 Archaeological Assessment Municipal Class EA Hydro One B5C/B6C Line Refurb Hydro One Refurb between the Burlington TS & Enbrg Westover SCTS Part of, Lots 28 & 29, Con 5-Lots 28 to 36, Con 6-Lots 28 to 30, Con 7, G.Twp. of Beverly Part of Lots 1 to 16, Con 6, G.Twp. of West Flamborough Part of, Lot 1, Con 1-Lots 1 to 3, Con 2-Lots 3 to 6, Con 3-Lots 5 to 8, Con 4-Lots 8 to 11, Con 5-*	TMHC	P1075-0039-2017

Year	Report	Author	PIF #
	Lots 11 to 13, Con 6-Lot 13, Con 7, G.Twp. of East Flamborough Former Wentworth County, Now City of Hamilton, ON Part of Brant's Block, G.Twp. of Nelson Former Halton County, Now City of Burlington, ON		

MPP completed an archaeological assessment for Union Gas' NPS 34 Trafalgar Line Brantford Take-Off to Kirkwall Valve Site (MPP 1984). This early assessment examined most of the pipeline corridor by pedestrian survey and test pit survey, however no specific ploughing of lands had occurred prior to pedestrian survey and the test pit survey interval was 10 metres. A small eastern portion of the study area corridor overlaps with the current study area for the Project. No archaeological resources were identified in the area of overlap by MPP (1984). Much of the study area corridor for the NPS 34 Trafalgar Line Brantford Take-Off to Kirkwall Valve Site was re-examined as part of a later assessment (see DPA 2008; DPA 2014c; DPA 2015).

In 1987, ARA completed an archaeological assessment for Union Gas' Kirkwell [*sic*] Valves to Hamilton Valves (ARA 1987). Much of the pipeline corridor for ARA (1987) is believed to follow Preliminary Preferred Route A of the current Project, however, a copy of the report could not be obtained for review (see Supplementary Documentation). A partial summary of the ARA (1987) is provided in Ecological Services for Planning Ltd.'s (ESP) *Kirkwall Valve Site to Hamilton Take-off NPS 42 Pipeline Loop Route Selection and Environmental Impact Assessment* (ESP 1987). The ESP (1987:59) report notes that archaeological staff "walked, surface inspected and test pitted areas of high potential." No mapping of the survey areas was provided in the ESP (1987) report and no detailed description of the archaeological survey methods was provided. Two archaeological sites, the Robertson Village (AiHa-12) and Dwyer Ossuary (AiHa-11), are located within the study corridor for the Kirkwall Valve Site to Hamilton Take-off NPS 42 Pipeline Loop (ESP 1987). However, no archaeological resources were identified during ARA's survey work between the Kirkwall Valve Site and Brock Road.

In association with the Kirkwall Valve Site to Hamilton Take-off NPS 42 Pipeline Loop, ARA completed an archaeological assessment of the Groen Property (ARA 1990a). One archaeological site, the Groen site (AiHa-29), was identified within the study corridor east of Brock Road. The site was identified as an Indigenous camp and, later, a portion of the site was fully excavated, including mechanical topsoil removal (ARA 1990b). The partial excavation recovered lithic tools and flakes, as well as Indigenous pottery and faunal remains. Several features and post moulds were also identified. The archaeological work was completed by ARA in advance of proposed project impacts (ARA 1990b). The site is associated with the Neutral and dates to between 1620 and 1650 CE.

In 1999, New Directions Archaeology (NDA) completed a Stage 1 to 3 archaeological assessment for approximately six kilometres of road improvements for Highway 6, from Highway 5 to 100 metres south of Concession Road 6 West (NDA 1999). The northern end of the NDA (1999) study area is located adjacent to the southern end of the current study area for the Project. NDA (1999) identified two archaeological sites, one of which, the Millgrove North site (AiGx-232), is located within one kilometre of the current study area. Neither site identified by NDA (1999), i.e., Red Tulip Site (AiGx-231) and Millgrove North Site (AiGx-232), are located within 50 metres of the current study area.

In 2008, DPA completed a Stage 1 archaeological assessment for Union Gas Limited's Proposed NPS 48 Brantford Take-Off to Kirkwall Valve Site Pipeline (DPA 2008). A Stage 2 for the project followed in 2013 and 2014 (DPA 2014c; DPA 2015). The easternmost portion of the Stage 2 study area (see BK31 and BK32) overlaps the current study area for the Project. During the Stage 2 survey, DPA (2015a) identified 17 archaeological locations. None of the

archaeological locations are located within the segment which overlaps the current study area. As part of the specific Stage 2 survey for Infrastructure Ontario Lands associated with the Proposed NPS 48 Brantford Take-Off to Kirkwall Valve Site Pipeline (DPA 2014c) an isolated findspot of Indigenous nature was identified and was not registered as an archaeological site. Similar archaeological assessments for proposed pipeline routes had been completed in the 1980s and early 1990s (e.g., MPP 1984; MPP 1989; DPA 1995).

In 2013, DPA completed a Stage 1 archaeological assessment for Enbridge Pipeline Inc.'s proposed Line 11 Westover Segment Replacement project (DPA 2014a). The northernmost portion of the Line 11 Westover Segment Replacement project, i.e., an approximate 280 metre gravel access road, overlaps with the southern end of the current study area. Stage 2 archaeological assessment was recommended in advance of proposed construction impacts and was completed by DPA (2014b). No archaeological resources within the current study area or within 50 metres of the current study area were identified during DPA's Stage 2 assessment (DPA 2014b).

Also, in 2013, DPA completed a Stage 1 archaeological assessment for Enbridge Pipeline Inc.'s proposed Line 10 Westover Segment Replacement project (DPA 2015b). Portions of Line 10 and 11 parallel each other in the same existing easement. The Stage 1 assessment determined that Stage 2 assessment is required in advance of proposed construction activities. The northernmost portion of the Line 10 Westover Segment Replacement projects, i.e., an approximate 280 metre gravel access road, overlaps with the southern end of the current study area. Stage 2 archaeological assessment was recommended in advance of proposed construction impacts. Various Stage 2 archaeological assessments for the Line 10 Westover Segment Replacement project have been completed by TMHC. In addition, numerous Stage 3 assessments and Stage 4 mitigations were completed by TMHC and other archaeological consultants in support of the Line 10 Westover Segment Replacement. However, no archaeological resources within the current study area or within 50 metres of the current study area were identified during the various Stage 2 assessments for the Line 10 Westover Segment Replacement project (e.g., TMHC 2015; TMHC 2016; TMHC 2017).

In 2017, TMHC completed a Stage 1 archaeological assessment for the 114-kiloVolt circuit B5C and B5C/B6C lines located between the Enbridge Westover Southern Consumer Transmission Station (SCTS), City of Hamilton and Burlington Transmission Station (TS), City of Burlington (TMHC 2018). The study area for TMHC (2018) follows the existing transmission line running through the current study area for the Project, specifically a portion of Alternate Route B. Stage 2 archaeological assessment was recommended for all lands retaining archaeological potential (TMHC 2018). Stantec understands that a Stage 2 archaeological assessment has not been completed for this project.

1.3.4 City of Hamilton's Archaeological Management Plan

The City of Hamilton's municipal archaeological management plan, entitled *The City of Hamilton Archaeology Management Plan* (AMP) was consulted and illustrates the study area as a locale of archaeological potential for Indigenous and Euro-Canadian archaeological resources (City of Hamilton 2016). To identify archaeological potential, an archaeological potential model was created using cultural and physiographic information, such as the presence of identified/registered sites or proximity to water. Generally, the AMP uses the following criteria to aid in the determination of archaeological potential of a property:

- 250 metre catchment area for registered archaeological sites;
- 250 metre catchment area for unregistered but known or reported archaeological sites;



- 300 metre catchment area for primary watercourses;
- 100 metre catchment area for historic activities;
- 100 metre catchment area for historic transportation corridors;
- 100 metre catchment area for unusual landforms;
- Areas within the historic urban boundary that have not been substantially disturbed;
- Rural historic settlements;
- Properties designated under the *Ontario Heritage Act*; and
- Modern and historic aerial photography.

Based on the criteria identified above, the AMP identifies the study area for the Project with general archaeological potential (City of Hamilton 2016).

1.3.5 Existing Conditions

The Stage 1 archaeological assessment was completed under PIF # P256-0564-2019 issued to Parker Dickson, MA, of Stantec, by the MTCS. The study area for the Stage 1 archaeological assessment of the Project comprises approximately 6,400 hectares of various Lots and Concessions, Geographic Townships of Beverly, West Flamborough, and East Flamborough, former Wentworth County, now City of Hamilton, Ontario (Figure 1 and Figure 2). The proposed Project will be constructed between Enbridge's existing Kirkwall valve site, located northeast of the intersection of Safari Road and Valens Road, and Enbridge's existing Hamilton valve site, located east of Highway 6 and north of Carlisle Road, generally paralleling three existing Enbridge pipelines. The length of the proposed pipeline will be determined by the final route and will be approximately 10 to 14 kilometres in length (Figure 2).

Broadly, much of the study area consists of active agricultural field with smaller pockets of sparse woodlot. The study area is also inundated with numerous water sources, municipal road ROWs, and municipally constructed drains, as well as the small communities of Westover, Flamborough, Harper Corners, Breezy's Corners, and Strabane. Existing Enbridge infrastructure, such as metering stations, pumping stations, and storage facilities, are located within the study area. For example, much of the Preliminary Preferred Route A parallels the existing Kirkwall Valve Site to Hamilton Take-off NPS 42 Pipeline, which, itself, parallels an existing line constructed in the early 1950s. The final route and construction easement, including any temporary land use, for the Project will be determined at a later date. Thus, the current study area for the Stage 1 archaeological assessment is large and serves to capture a broad and generalized geographic area associated with the Project. A property inspection was not completed in association with the Stage 1 archaeological assessment.

2.0 ANALYSIS AND CONCLUSIONS

Archaeological potential is established by determining the likelihood that archaeological resources may be present on a subject property. Stantec applied archaeological potential criteria commonly used by the MTCS (Government of Ontario 2011) to determine areas of archaeological potential within the region under study. These variables include proximity to previously identified archaeological sites, distance to various types of water sources, soil texture and drainage, glacial geomorphology, elevated topography, and the general topographic variability of the area. However, it is worth noting that extensive land disturbance can eradicate archaeological potential (Government of Ontario 2011).

Potable water is the single most important resource for any extended human occupation or settlement and since water sources in Ontario have remained relatively stable over time, proximity to drinkable water is regarded as a useful index for the evaluation of archaeological site potential. In fact, distance to water is one of the most commonly used variables for predictive modeling of archaeological site locations. Distance to modern or ancient water sources is generally accepted as the most important determinant of past human settlement patterns and, considered alone, may result in a determination of archaeological potential. However, any combination of two or more other criteria, such as well-drained soils or topographic variability, may also indicate archaeological potential.

When evaluating distance to water it is important to distinguish between water and shoreline, as well as natural and artificial water sources, as these features affect site location and type to varying degrees. The MTCS categorizes water sources in the following manner:

- Primary water sources: lakes, rivers, streams, creeks;
- Secondary water sources: intermittent streams and creeks, springs, marshes and swamps;
- Past water sources: glacial lake shorelines, relic river or stream channels, cobble beaches, shorelines of drained lakes or marshes; and
- Accessible or inaccessible shorelines: high bluffs, swamp or marshy lake edges, sandbars stretching into marsh.

Primary water sources are abundant within the Stage 1 study area. Transecting the study area are primary sources such as Spencer Creek, Fairchild Creek, Barlow Creek, Grindstone Creek, and Bronte Creek. Much of the Geographic Township of Beverly comprises swampy soils. These swamps “serve as water reservoirs and produce cedar posts and other wood” (Chapman and Putnam 1984:130). The swamps in the study area would have also provided faunal and floral resources for use. Additional ancient and/or relic tributaries of water sources may have existed but are not identifiable today and are not indicated on historic mapping.

Further examination of the study area’s natural environment identified soil conditions suitable for Indigenous and Euro-Canadian agriculture, especially in the 19th and 20th centuries following the implementation of municipal drainage systems and agricultural field tiling. The study area is situated within portions of two broad physiographic regions: the Flamborough Plain and the Norfolk Sand Plain. Both physiographic regions contain drumlins, eskers, and other landforms comprising elevated topography. Storck (1982) notes that archaeological sites, particularly Paleo-Indian sites, tend to be in situated in areas of elevated topography as these areas would possess better drainage and would provide a broad view of the surrounding terrain for game watching.

An examination of the *Ontario Archaeological Sites Database* has shown that there are 14 registered archaeological sites within the broad Stage 1 study area; of which, 13 are Indigenous. While no registered site is located within 50 metres of a Preliminary Preferred or Alternate Route option, it is important to recognize that several significant archaeological sites, such as Indigenous villages and ossuaries (i.e., Christianson Village [AiHa-2], Shaver Hill Ossuary [AiHa-1], Robertson Village [AiHa-12], and Dwyer Ossuary [AiHa-3]), are located within the study area and are of special significance to extant Indigenous communities in the region. A further three registered Indigenous archaeological sites are within one kilometre of the study area, including the Hood Village (AiHa-7) and MacDonald Village (AiHa-9).

For Euro-Canadian sites, archaeological potential can be extended to areas of early Euro-Canadian settlement, including places of military or pioneer settlements; early transportation routes; and properties listed on the municipal register or designated under the *Ontario Heritage Act* (Government of Ontario 1990a) or property that local histories or informants have identified with possible historical events, activities, or occupations. Historical mapping demonstrates that the study area includes early concession roads with structures illustrated as fronting these roads; particularly along major arterial roads, i.e., Dundas Street (Highway 5), Safari Road, Brock Road, and Highway 6. It is also worth noting that preliminary information from the CHAR for the Project suggests there are 26 cultural heritage / built heritage resources situated within the study area. Much of the established road and rail networks and agricultural settlement from the 19th century is still visible today.

The City of Hamilton's municipal archaeological management plan, entitled *The City of Hamilton Archaeology Management Plan* (AMP) was consulted and illustrates the study area as a locale of archaeological potential for Indigenous and Euro-Canadian archaeological resources (City of Hamilton 2016).

As noted above, extensive and deep land alteration can eradicate archaeological potential. Based on aerial imagery of the broad Stage 1 study area, there are likely to be pockets of modern disturbance from municipal road ROWs, and municipally constructed drains, buildings and structures associated with the communities of Westover, Flamborough, Harper Corners, Breezy's Corners, and Strabane, as well as rural properties. However, while a visual examination of the road surface, gravel shoulder, and adjacent ditching of municipal roads may be sufficient to confirm extensive disturbance and removal of archaeological potential, it may not be possible to confirm extensive disturbance of other portions of the municipal road ROWs, particularly those portions immediately adjacent to agricultural fields, through visual examination alone. Thus, these areas are judged to retain archaeological potential and require confirmation of disturbance through additional archaeological assessment.

Further to the above, existing Enbridge infrastructure (as well as other buried utility infrastructure), such as metering stations, pumping stations, and storage facilities, are located within the study area. For example, much of the Preliminary Preferred Route A parallels the existing Kirkwall Valve Site to Hamilton Take-off NPS 42 Pipeline, which, itself, parallels an existing line constructed in the early 1950s. However, a Stage 1 property inspection was not completed for the study area and these areas were not specifically examined for evidence of modern disturbance.

A cursory review of available previous archaeological assessments is provided in Section 1.3.3. Few recent surveys have been completed within the study area and those that have been completed did not identify any archaeological sites. Much of the Preliminary Preferred Route A parallels the existing Kirkwall Valve Site to Hamilton Take-off NPS 42 Pipeline and Brantford Take-Off to Kirkwall Valve Site Pipeline, which have been subject, to varying degrees, to archaeological survey (e.g., ARA 1987; ARA 1990a; DPA 2008; DPA 2014c; DPA 2015a; ESP 1987; MPP 1984; and MPP 1988). However, the survey work during the early assessments, e.g., those completed in the 1980s and 1990s,

may have only sampled “high potential” areas and used survey methods not consistent with the MTCS’ 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). As such and given the difficulties in geo-referencing older survey maps, as well as the relatively close proximity of known Indigenous village and ossuaries, existing easements are judged to retain archaeological potential. Further, TMHC (2018) recently completed a Stage 1 archaeological assessment for a project which parallels the existing transmission line running through the current study area for the Project, specifically a portion of Alternate Route B. TMHC (2018) determined that their study area retained further archaeological potential and recommended a Stage 2 archaeological assessment.

In summary, it has been determined that the entirety of the study area retains potential for the identification of pre-contact Indigenous, post-contact Indigenous, and Euro-Canadian archaeological resources. As noted above, numerous farm complexes, residences, municipal ROWs, and other existing features of potential disturbance (i.e., existing roads, railways, residential and commercial complexes, and buried utilities and infrastructure) are located throughout the study area; however, they were not specifically examined as part of a Stage 1 property inspection and may still retain archaeological potential. Further, low and permanently wet areas and areas of steep slope may exist within the study area but were not specifically examined as part of a Stage 1 property inspection. As such, these areas have been included as part of the determination that the study area exhibits potential for the identification and recovery of archaeological resources. The final route and construction easement, including any temporary land use, for the Project will be determined at a later date. A refinement of archaeological potential specific to the Project’s anticipated impacts will be included as part of the Stage 2 archaeological assessment for the Project.

3.0 RECOMMENDATIONS

The Stage 1 archaeological assessment determined that the entirety of the study area for the Project retains potential for the identification and documentation of archaeological resources. In accordance with Section 1.3.1 and Section 7.7.4 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), **Stage 2 archaeological assessment is required for any portion of the Project's anticipated construction activities which impacts an area of archaeological potential (Figure 6).**

The objective of the Stage 2 archaeological assessment will be to document any archaeological resources within the study area and to determine whether these archaeological resources require further assessment. The Stage 2 archaeological assessment will include the systematic walking of open ploughed fields as outlined in Section 2.1.1 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The MTCS standards further require that all agricultural land, both active and inactive, be recently ploughed and sufficiently weathered to improve the visibility of archaeological resources. Ploughing must be deep enough to provide total topsoil exposure, but not deeper than previous ploughing, and must provide at least 80% ground surface visibility.

Moreover, for areas inaccessible for ploughing, the Stage 2 archaeological assessment will include a test pit survey as outlined in Section 2.1.2 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The MTCS standards require that each test pit be approximately 30 centimetres in diameter, excavated to at least five centimetres in to subsoil, and have all soil screened through six millimetre hardware cloth to facilitate the recovery of any cultural material that may be present. Prior to backfilling, each test pit will be examined for stratigraphy, cultural features, or evidence of fill.

In addition to the above, the specific roadways and ROWs will require further archaeological assessment in accordance with Section 2.1.8 of Standard 2 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). Any portion of the ROW within agricultural or accessible land may require ploughing and pedestrian survey in accordance with Section 2.1.1 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), depending on the specific Project impact. Confirmation of disturbance will also be required for any anticipated Project impact to other existing features (i.e., existing roads, railways, farm complexes, residences, buried utilities and other infrastructure).

If the archaeological field team determines any lands to be low and wet, steeply sloped, or disturbed during the Stage 2 field work, those areas will not require survey, but will be photographically documented in accordance with Section 2.1 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

The MTCS is asked to review the results presented and to accept this report into the *Ontario Public Register of Archaeological Reports*. Archaeological sites recommended for further archaeological fieldwork remain subject to Section 48(1) of the *Ontario Heritage Act* (Government of Ontario 1990a) and may not be altered, or have artifacts removed, except by a person holding an archaeological license.

4.0 ADVICE ON COMPLIANCE WITH LEGISLATION

This report is submitted to the Minister of Tourism, Culture and Sport as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c O.18 (Government of Ontario 1990a). The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the study area of a development proposal have been addressed to the satisfaction of the MTCS, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* (Government of Ontario 1990a) for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the *Ontario Public Register of Archaeological Reports* referred to in Section 65.1 of the *Ontario Heritage Act* (Government of Ontario 1990a)

Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the *Ontario Heritage Act* (Government of Ontario 1990a) The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48(1) of the *Ontario Heritage Act* (Government of Ontario 1990a)

The *Funeral, Burial and Cremation Services Act,* 2002, S.O. 2002, c.33 (Government of Ontario 2002), requires that any person discovering or having knowledge of a burial site shall immediately notify the police or coroner. It is recommended that the Registrar of Cemeteries at the Ministry of Government and Consumer Services is also immediately notified.

Archaeological sites recommended for further archaeological fieldwork remain subject to Section 48(1) of the *Ontario Heritage Act* (Government of Ontario 1990a) and may not be altered, or have artifacts removed, except by a person holding an archaeological license.

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Lots 28 & 29, Con 5-Lots 28 to 36, Con 6-Lots 28 to 30, Con 7, G.Twp. of Beverly Part of Lots 1 to 16, Con 6, G.Twp. of West Flamborough Part of, Lot 1, Con 1-Lots 1 to 3, Con 2-Lots 3 to 6, Con 3-Lots 5 to 8, Con 4-Lots 8 to 11, Con 5-Lots 11 to 13, Con 6-Lot 13, Con 7, G.Twp. of East Flamborough Former Wentworth County, Now City of Hamilton, ON Part of Brant's Block, G.Twp. of Nelson Former Halton County, Now City of Burlington, ON. Report on file, Toronto: Ministry of Tourism, Culture and Sport. PIF P1075-0039-2017.

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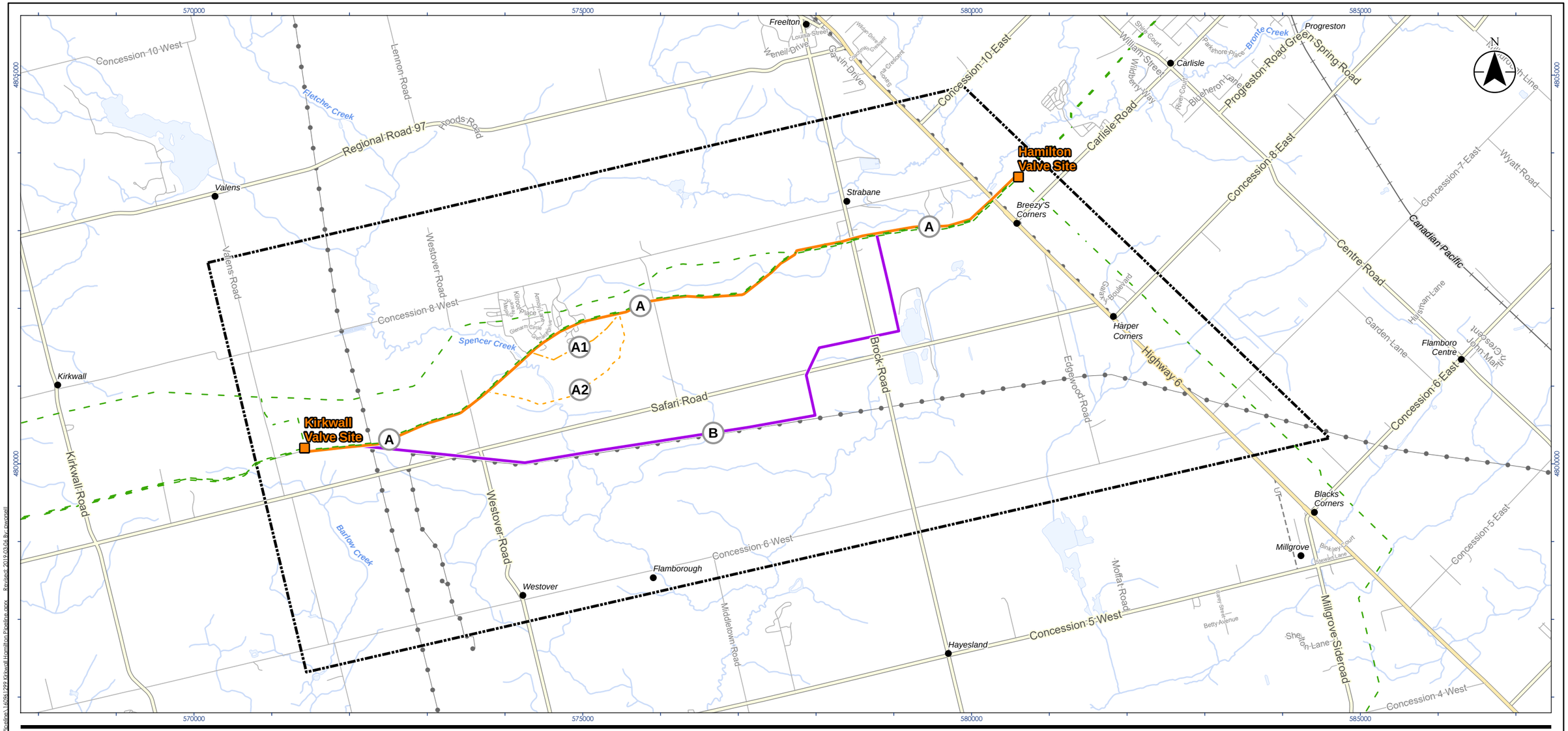
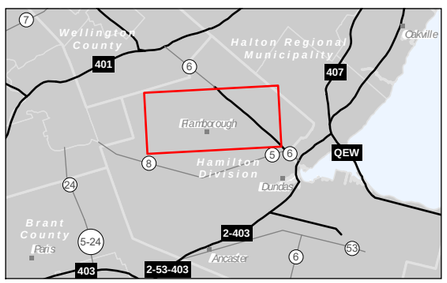
6.0 MAPS

General maps of the broad Stage 1 study area are provided on the following pages. Maps identifying exact archaeological site locations do not form part of this public report; they may be found in the Supplementary Documentation.





Legend

- Existing Enbridge Station
- A - Preliminary Preferred Route
- A1 - Route Deviation
- A2 - Route Deviation
- B - Alternate Route
- Existing Pipeline
- General Study Area
- Highway
- Major Road
- Minor Road
- Minor Road
- Railway
- Hydro Line
- UT Unknown Transmission Line
- Watercourse
- Waterbody

0 1 2 km

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Stantec

Project Location
City of Hamilton

160961299
Prepared by PW on 2019-03-06

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENT

Figure No.
1

Title
Location of the Project

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, 2019.

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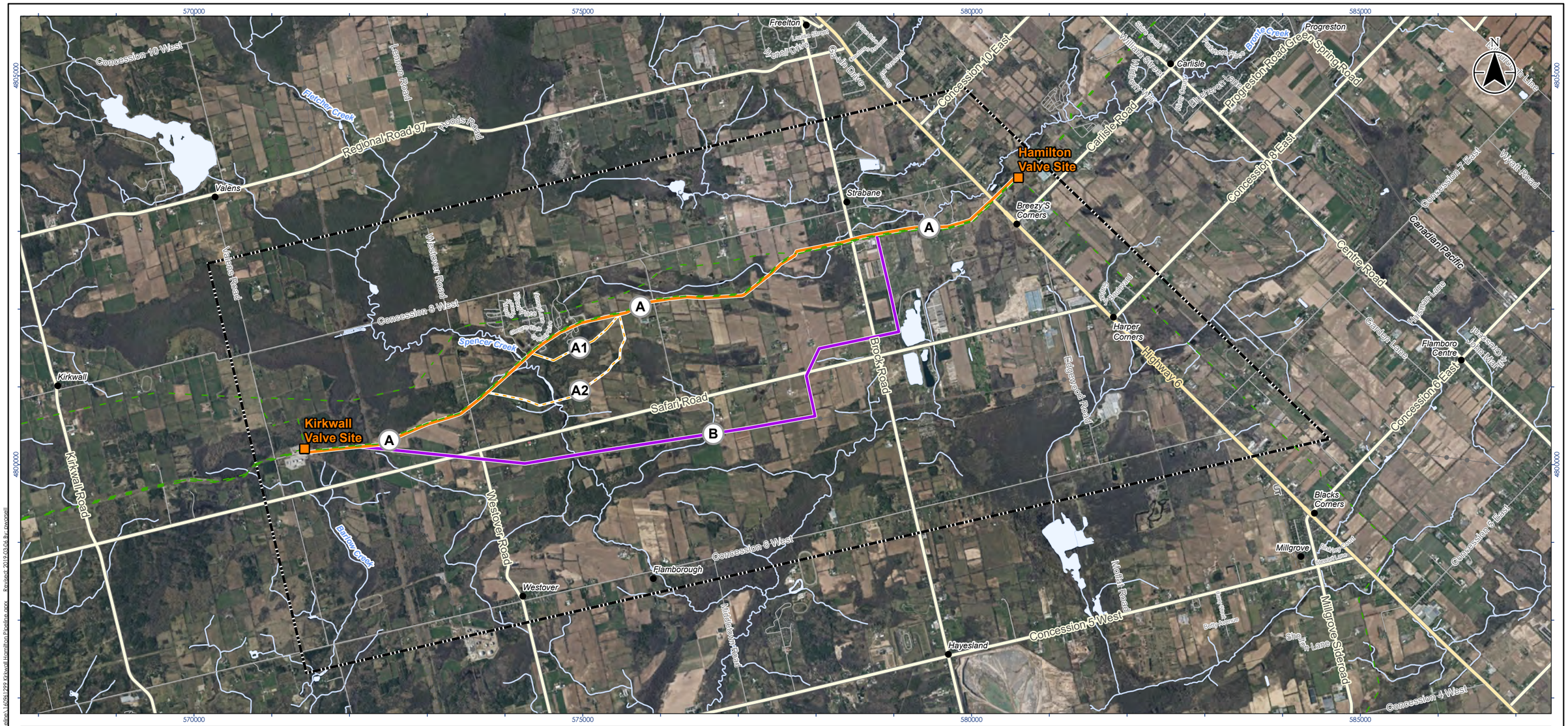

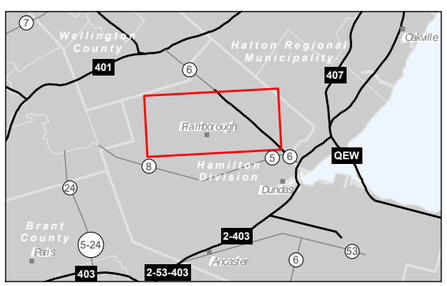

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0 1 2 km

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Notes

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3. Orthoimagery © First Base Solutions, 2019. Imagery date 2017.

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Project Location
City of Hamilton

160961299
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Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENT

Figure No.
2

Title
Location of the Study Area

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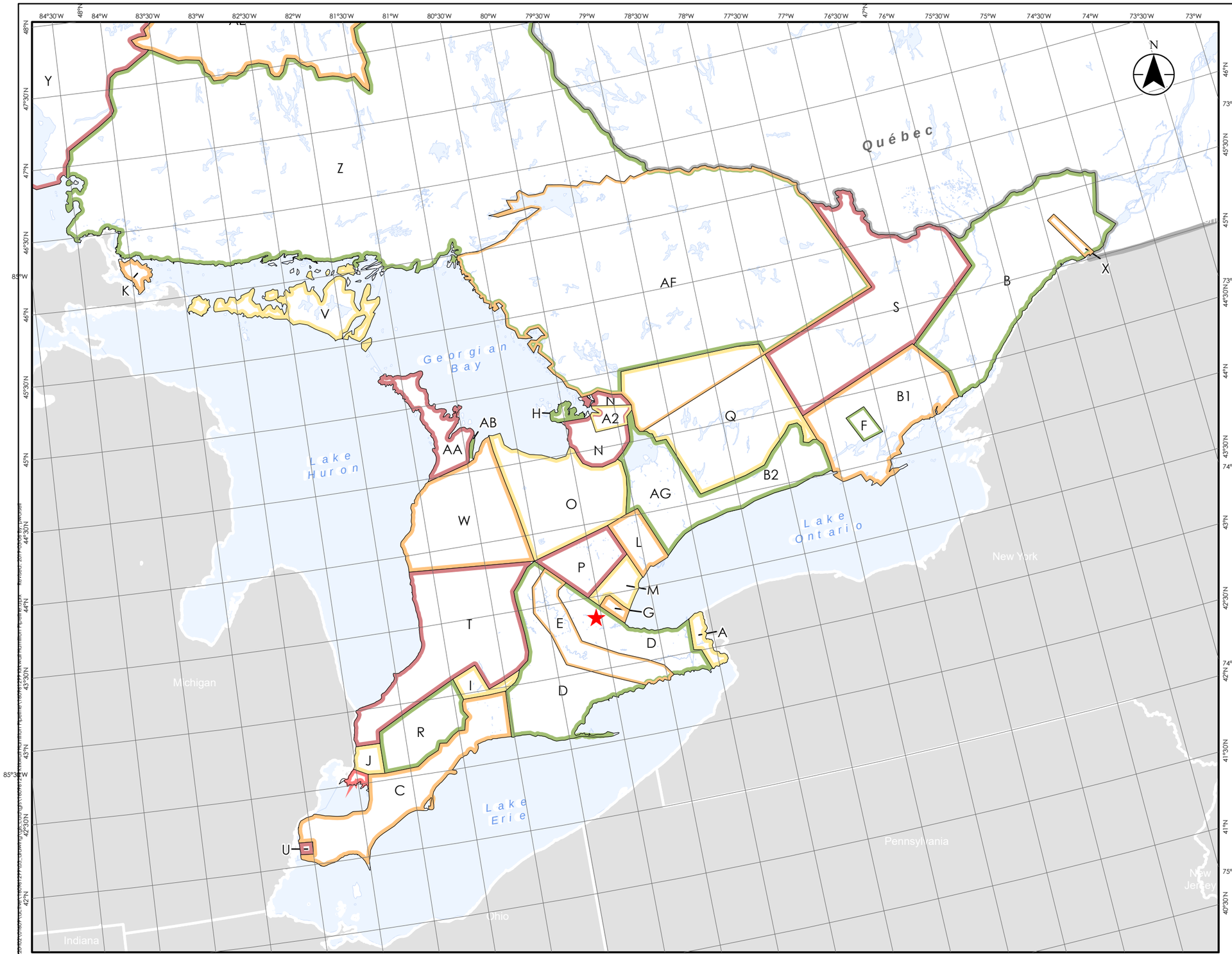

Stantec

Legend

★ Project Location

A Treaty No. 381, May 9th, 1781 (Mississauga and Chippewa)
AA Treaty No. 72, October 30th, 1854 (Chippewa)
AB Treaty No. 82, February 9th, 1857 (Chippewa)
AE Treaty No. 9, James Bay 1905, 1906 (Ojibway and Cree)
AG Williams Treaty, October 31st, 1923 (Chippewa)
A2 John Collins' Purchase, 1785 (Chippewa)
B Crawford's Purchase, October 9th, 1783 (Algonquin and Iroquois)
B1 Crawford's Purchase, October 9th, 1783 (Mississauga)
B2 Crawford's Purchase, 1783, 1787, 1788 (Mississauga)
C Treaty No. 2, May 19th, 1790 (Odawa, Chippewa, Pottawatomi, and Huron)
D Treaty No. 3, December 2nd, 1792 (Mississauga)
E Haldimand Tract: from the Crown to the Mohawk, 1793
F Tyendinaga: from the Crown to the Mohawk, 1793
G Treaty No. 3 3/4: from the Crown to Joseph Brant, October 24th, 1795
H Treaty No. 5, May 22nd, 1798 (Chippewa)
I Treaty No. 6, September 7th, 1796 (Chippewa)
J Treaty No. 7, September 7th, 1796 (Chippewa)
K Treaty No. 11, June 30th, 1798 (Chippewa)
L Treaty No. 13, August 1st, 1805 (Mississauga)
M Treaty No. 13A, August 2nd, 1805 (Mississauga)
N Treaty No. 16, November 18th, 1815 (Chippewa)
O Treaty No. 18, October 17th, 1818 (Chippewa)
P Treaty No. 19, October 28th 1818 (Chippewa)
Q Treaty No. 20, November 5th, 1818 (Chippewa)
R Treaty No. 21, March 9th, 1819 (Chippewa)
S Treaty No. 27, May 31st, 1819 (Mississauga)
T Treaty No. 27½, April 25th, 1825 (Ojibwa and Chippewa)
U Treaty No. 35, August 13th, 1833 (Wyandot or Huron)
W Treaty No. 45½, August 9th, 1836 (Saugeen)
X Treaty No. 57, June 1st, 1847 (Iroquois of St. Regis)
Y Treaty No. 60, Robinson, Superior, September 7th, 1850 (Ojibwa)
Z Treaty No. 61, Robinson, Huron, September 9th, 1850 (Ojibwa)

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Notes
1. Coordinate System: NAD 1983 Statistics Canada Lambert
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2019.
3. Treaty boundaries adapted from Morris 1943 (1964 reprint). For cartographic representation only.

Project Location
City of Hamilton

160961299
Prepared by PW on 2019-03-06

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENT

Figure No.
3

Title
Treaties and Purchases (Adapted from Morris 1943)

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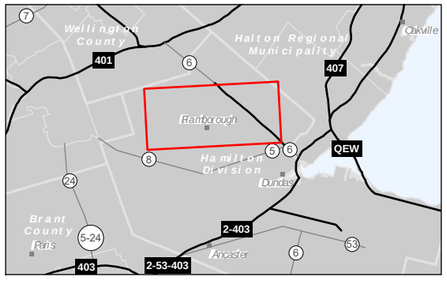

Legend

General Study Area (Approximate)

Notes

1. Map is not to scale.
2. Historic map source:

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Project Location
City of Hamilton

160961299
Prepared by PW on 2019-03-06

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENT

Figure No.
4

Title
1859 County of Wentworth Map

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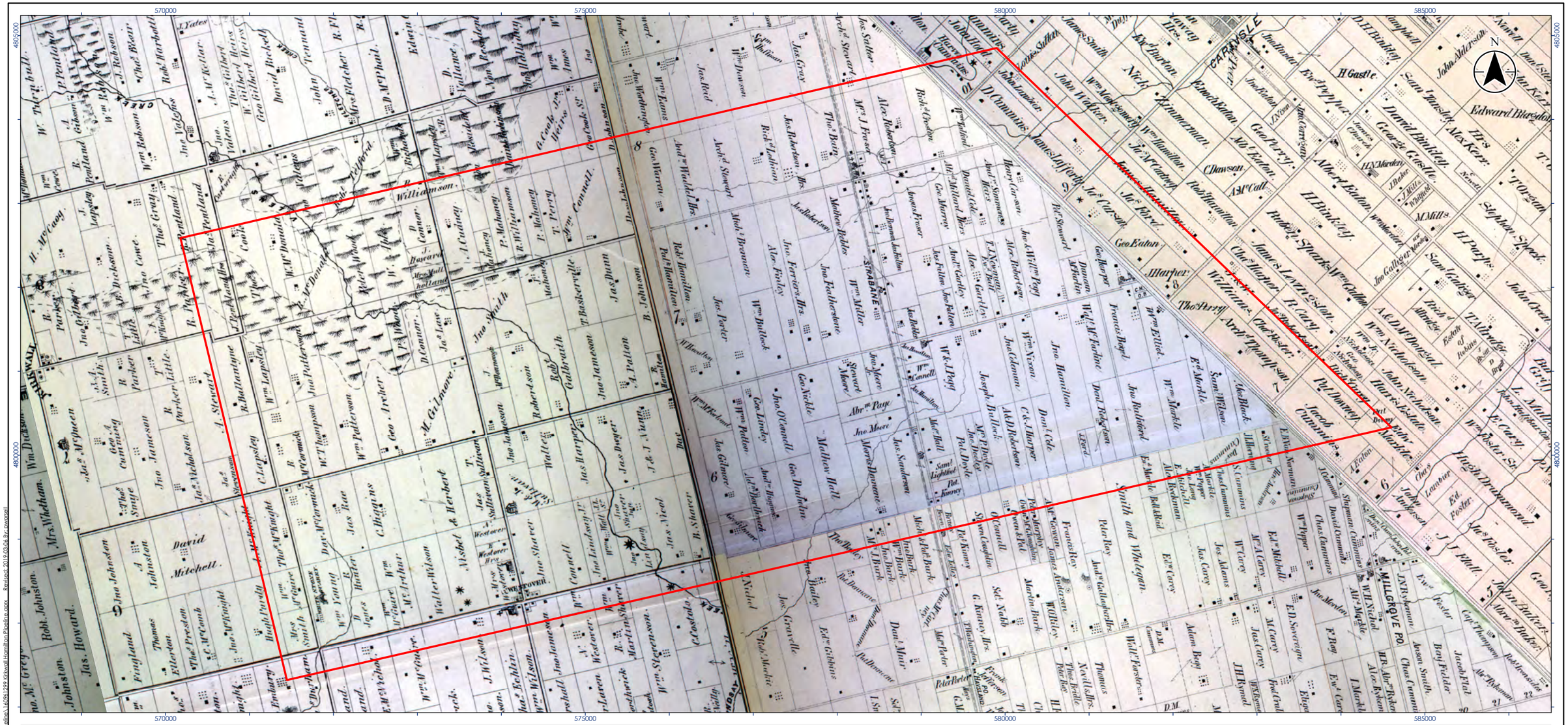

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General Study Area (Approximate)

Notes

1. Map is not to scale.
2. Historic map source:

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City of Hamilton

160961299
Prepared by PW on 2019-03-06

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENT

Figure No.
5

Title
1875 County of Wentworth Map

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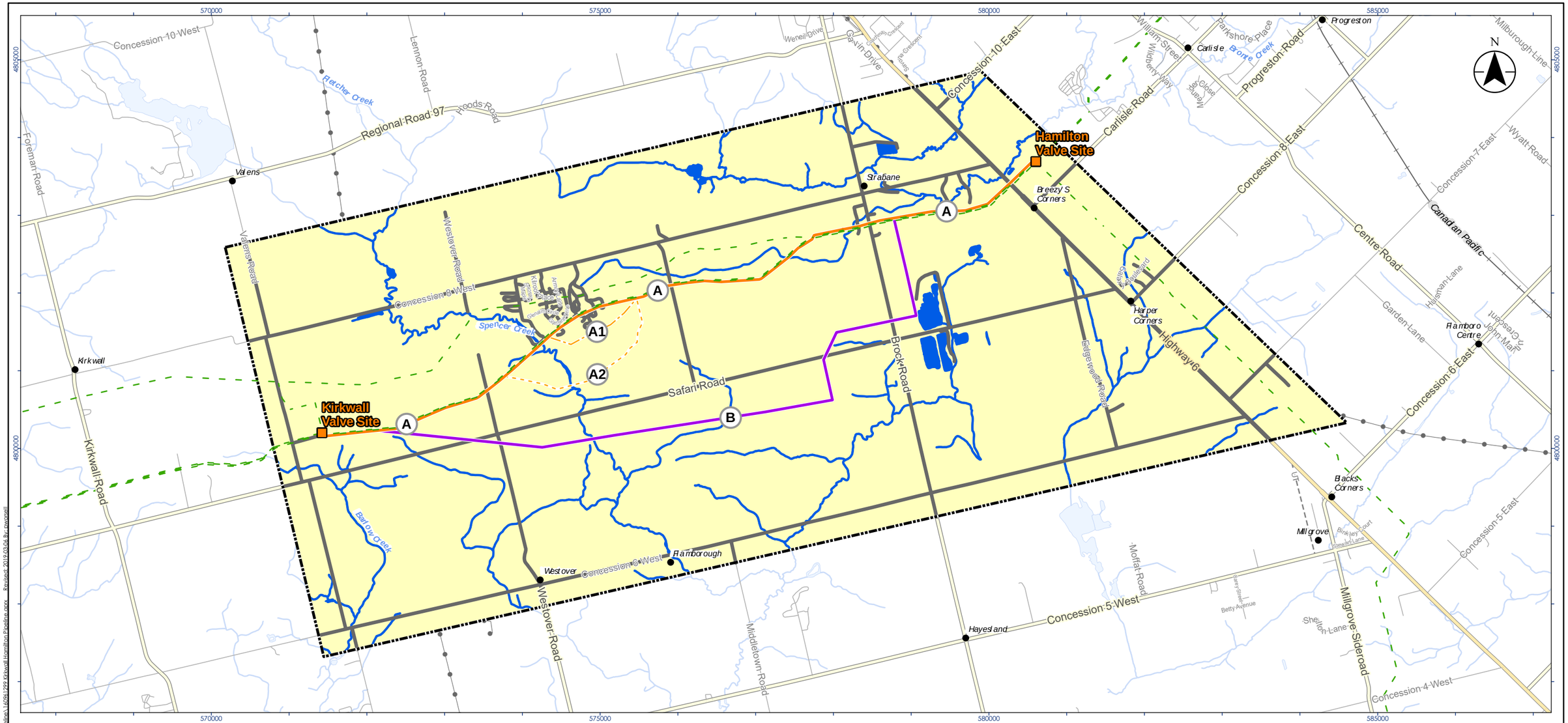

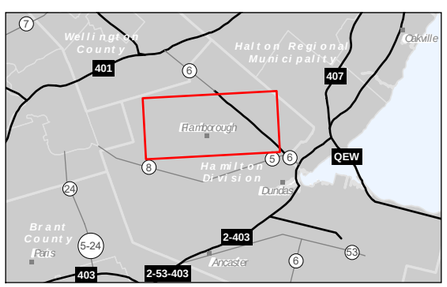

Legend

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- Hydro Line
- UT Unknown Transmission Line
- Watercourse
- Waterbody

Stage 1 Archaeological Potential

- Retains Archaeological Potential; Stage 2 Assessment Required
- Municipal/Provincial Road ROW, May Retain Archaeological Potential; Stage 2 Assessment Required to Confirm Disturbance
- Low and Permanently Wet Areas, Low to No Archaeological Potential; Stage 2 Assessment Required to Confirm Presence

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Notes

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City of Hamilton

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Prepared by PW on 2019-03-06

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENT

Figure No.
6

Title
Archaeological Potential of the Study Area

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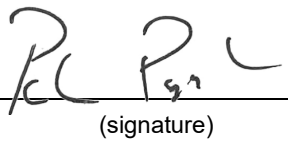
7.0 CLOSURE

This report documents work that was performed in accordance with generally accepted professional standards at the time and location in which the services were provided. No other representations, warranties or guarantees are made concerning the accuracy or completeness of the data or conclusions contained within this report, including no assurance that this work has uncovered all potential archaeological resources associated with the identified property.

All information received from the client or third parties in the preparation of this report has been assumed by Stantec to be correct. Stantec assumes no responsibility for any deficiency or inaccuracy in information received from others.

Conclusions made within this report consist of Stantec's professional opinion as of the time of the writing of this report and are based solely on the scope of work described in the report, the limited data available and the results of the work. The conclusions are based on the conditions encountered by Stantec at the time the work was performed. Due to the nature of archaeological assessment, which consists of systematic sampling, Stantec does not warrant against undiscovered environmental liabilities nor that the sampling results are indicative of the condition of the entire property.

This report has been prepared for the exclusive use of the client identified herein and any use by any third party is prohibited. Stantec assumes no responsibility for losses, damages, liabilities, or claims, howsoever arising, from third party use of this report. We trust this report meets your current requirements. Please do not hesitate to contact us should you require further information or have additional questions about any facet of this report.

Quality Review 
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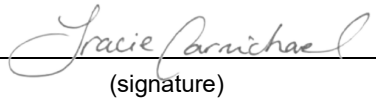
Peter Popkin, Associate, Senior Archaeologist

Independent Review 
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Tracie Carmichael, Managing Principal, Environmental Services

Appendix B DFO Enbridge Gas Inc. Drawings

Disclaimer: The following Appendix falls under the category of exceptions as the information came from another organization, not Stantec. Therefore, this appendix is not accessible as per Accessibility for Ontarians with Disabilities Act, 2005 (AODA).

Generic Sediment Control Plan – Horizontal Directional Drill

This Plan is applicable to Enbridge Gas Inc. (EGI) workers and Contractors involved in HDD activities. It establishes best management practices to prevent and/or mitigate an unauthorized death of fish or harmful alteration, disruption or destruction (HADD) of fish and fish habitat or the impairment of water quality from an inadvertent release of drilling fluid or sedimentation in the vicinity of, or beneath, watercourses. **NOTE:** There is a Duty to Notify and Duty to Take Corrective Measures to report death of fish or a HADD of fish habitat to DFO.

Drilling fluid is typically composed of bentonite clay-water mixture, which is considered non-toxic/hazardous, however, if it is released to a watercourse, there is the potential for the drilling fluid to adversely impact fish and invertebrates. EGI recognizes the need to protect downstream water users, as well as aquatic species and their habitat, from sedimentation. As such, extensive planning prior to, and constant vigilance during, construction operations are essential.

Conditions for use

- Work is taking place outside of Critical Habitat including any identified riparian areas
- Work is taking place at least 30m from any watercourse that has aquatic species at risk
- Work is taking place at least 15m from any watercourse

Planning and Pre-Construction

The following precautionary measures should be implemented to minimize the risk of an inadvertent release or sedimentation during HDD activities:

- Select a pipeline route to minimize the number of watercourse crossings;
- If possible, schedule HDD activities during low flow times;
- Ensure watercourse crossing permits and approvals are obtained, reviewed and remain on-site throughout the duration of the project;
- Where necessary, EGI will notify the required regulatory authorities (i.e. Conservation Authority) prior to the watercourse crossing;
- Ensure that all construction personnel are aware of this contingency plan prior to the commencement of drilling activity;
- Conduct a feasibility assessment (i.e. geotechnical assessment) to assess the suitability of subsurface conditions (if required);
- Maximize distance of HDD entry and exit points from the watercourse and ensure they are at least 10 m from a watercourse if aquatic species at risk are not present in 30 m if present; and
- Maximize depth of the drill path beneath the watercourse.

Construction Mitigation Measures

The steps and precautions that follow should be completed when conducting HDD activities beneath, or in the vicinity of, a watercourse:

- Clearly flag the expected drill path prior to commencing any drilling operations, to facilitate monitoring for potential drilling fluid releases.
- Assign personnel to monitor the drill path for inadvertent returns of drilling fluid or sedimentation.
- Fluid volumes, annular pressure and cutting returns will be continuously monitored to ensure potential drilling fluid losses are detected and addressed immediately. Dedicated personnel should be assigned to continuously monitor drilling pressure and fluid volumes.
- Ensure an approved spill kit is on site and readily available, as per the Spill Response Procedure.
- Sediment control measures (i.e. silt fencing, SiltSoxx™, etc.) should be set-up prior to initiating HDD operations to contain potential releases of drilling fluid, sediment-laden groundwater or run-off along the proposed drill path. Sediment control measures shall be installed:
- Around entry and exit pits;
- Around drilling fluid containment pits;
- Surrounding spoil piles;
- Between all HDD operations and watercourse as identified on this drawing;
- Over-excavate the entry and exit pits to create drilling fluid sump pits;
- Drilling fluid must be contained in entry and exit pits (sump pits) and as they are filled, drilling fluids should be promptly removed and/or removed at the completion of HDD operations at an approved location;
- All vehicles, machinery and other equipment shall not enter the water. There must be no fording of any watercourse;
- If possible, refueling of equipment should not occur within a minimum of 30 m from a watercourse, however, if required, secondary containment must be used around the refuelling area to prevent entry into the watercourse; and
- If necessary, ensure dewatering occurs through a 'sediment-bag' and utilizes other erosion and sediment control (ESC) measures, as required, and is released greater than 30 m from the top-of-bank into a vegetated area.

During HDD operations, workers should keep enough spill response material on-site and readily available to contain any inadvertent releases of drilling fluid or release of sediment-laden groundwater, including (but not limited to):

- Sandbags
- Filter cloth (i.e. silt fence)
- T-Posts
- Corrugated culverts
- Numerous 5-gallon pails
- Vacuum trucks
- Straw bales
- Snow fencing
- Sediment control lots (i.e. SiltSoxx™) or equivalent
- Polyethylene sheets
- Shovels

In addition to the above, for larger watercourse crossings, the following materials should also be kept on-site:

- Turbidity curtains
- Floating sediment boom
- Trash pumps complete with sufficient lengths of leak-free hose, suction heads, and fish screens

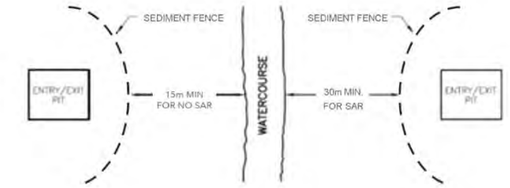
Contingency Plan for Inadvertent Release (see Horizontal Directional Drilling Contingency Plan Guide, 2022)

Bank and Riparian Zone Areas

The steps that follow should be completed when pipeline installation by HDD is occurring adjacent to a watercourse bank or riparian zone and drilling fluid is identified along the drill path.

- HDD operations should stop immediately and spill containment be established using EGI's approved methods including, but not limited to:
- Straw bales and sediment control fencing;
- Sandbags and polyethylene sheets;
- Containment pits, rings and/or absorbent booms;
- Vacuum trucks; and,
- Site re-grading (berms).
- The EGI Supervisor and Environmental Inspector (if applicable) must be notified of the inadvertent release of drilling fluid or sedimentation.
- The EGI Supervisor must follow the reporting requirements outlined in the Spill Response Procedure and at a minimum, contact, the Environmental Advisor at **1-855-336-2056** to ensure regulatory reporting requirements are met and to ensure clean-up operations are completed.
- If in doubt, report the spill. At a minimum, the following information will be required when reporting to the Environmental Advisor:
  1. Date and time of spill
  2. How the spill occurred
  3. Location of spill
  4. Type of material spilled
  5. Volume of material spilled
  6. Any impacts from the spill
  7. Immediate spill response actions
  8. Photographs
- Contact an approved environmental consultant to support spill cleanup and restoration, if deemed necessary based on the extent and impacts of the release.
- Workers including the EGI Inspector, Environmental Advisor and Contractor and Environmental Inspector (if used) should check for the root cause of release and identify potential solutions including (but not limited to):
- Reducing the pressure of slurry flow (i.e. excavate pressure relief pits);
- Reducing the speed of drill rotation;
- Reducing the speed of drill rod advancement;
- Moving the drill location (laterally, depth, etc.); and,
- Utilizing water to replace the bentonite drilling fluid, if site conditions allow.
- Any substantial deviation (i.e. installation method, crossing location/depth) from approved pipeline construction drawings must be resubmitted to the respective regulatory agencies (i.e. Conservation Authority) prior to resuming work.
- Residual drilling fluid must be removed by shovel or vacuum truck. Clean-up activities must minimize further disruption to the bank and riparian zone area.
- Any damage must be repaired, such as settlement and/or heaving.
- HDD activities may resume when preventative actions have been implemented and all parties are satisfied with the approach (i.e. EGI Supervisor, Environmental Advisor, Environmental Inspector and regulatory authorities [if involved]).

Minimum Horizontal Directional Drill Setback and Depth



PLAN

NOTES

- SEDIMENT FENCE TO BE SET UP A MINIMUM OF 15m FROM A NO SPECIES AT RISK WATERCOURSE AND 30m FOR A SPECIES AT RISK WATERCOURSE.
- HORIZONTAL DIRECTIONAL DRILL TO BE SET UP BEHIND SEDIMENT FENCE.
- MINIMUM OF 1.5m COVER FROM TOP OF PIPE TO BED OF WATERCOURSE.
- ALL DISTURBED AREAS TO BE RESTORED TO PRE-CONSTRUCTION CONDITIONS OR AS CLOSE AS POSSIBLE.



PROFILE

Watercourses

In addition to the above steps and precautions for bank and riparian zone areas, the following should be completed when pipeline installation by HDD is occurring beneath a watercourse and drilling fluid is identified or suspected in the watercourse itself:

- Where leakage of drilling fluids is suspected in a watercourse (i.e. sediment plume) operations should stop immediately and a visual inspection be conducted to verify the presence and extent. All necessary steps should be taken to minimize the impacts.
- Containment and clean-up activities must be initiated as soon as possible, where appropriate.
- Where the release is small with no visible sediment plume it should be allowed to dissipate naturally. Clean-up efforts within the watercourse may potentially be disruptive and cause further suspension of sediment in the water column than if the release were left to dissipate.
- Where the release is large with a visible sediment plume extending beyond the drilling site, the Environmental Advisor must be contacted to retain an environmental consultant to monitor the turbidity levels of the plume and associated potential impacts. In addition, the location of the inadvertent release should be isolated from the watercourse by installing a cofferdam or other containment system by utilizing the following materials:
  - Sandbags and polyethylene sheets;
  - Siltsoxx™, filter cloth (silt fence), straw bales;
  - Corrugated culverts; and/or,
  - Turbidity curtains.
  - The following materials can be used to control and clean up the release:
  - Shovels and 5-gallon pails (if conditions are dry)
  - Trash pumps with hose, suction head and fish screens; and/or
  - Vacuum trucks.
- If subsequent drilling attempts result in additional inadvertent returns of drilling fluid, the crossing should be halted, the Supervisor contact the Environment Department at **1-855-336-2056** and refer to the Contingency Plan for Installation Alternatives below.

Contingency Plan for Installation Alternatives

If EGI is unable to use HDD methodology to install the pipeline even with the mitigation implemented above, construction activities must be suspended, and the Environmental and/or Permit Advisor must be contacted to discuss alternate crossing methods. Any changes to the permitted crossing method may require permit amendments or government agency approval.

EGI should consider the following (from most to least preferred):

- Further geotechnical investigations to revise the pipeline alignment or depth
- Implement another crossing method as outlined in the Enbridge Gas Inc. and Department of Fisheries and Oceans Agreement Related to Watercourse Crossings for Pipeline Construction and Maintenance in Ontario (EGI DFO Agreement)
- Implement another crossing method such as a Non-Isolated Trench/Wet Open Cut method (work area is not isolated from flowing water)

Once the crossing method is reviewed by all internal parties and has been revised, the revised crossing method must be resubmitted for review and approval to the respective regulatory agencies (i.e. Conservation Authority, DFO [if required]) prior to resuming work.

Death of Fish or Harmful Alteration, Disruption or Destruction of Fish Habitat (HADD)

- If death of fish or HADD has occurred due to failure of this plan, a restoration plan should be developed and implemented by the company in consultation with and upon receipt of approval from the respected Conservation Authority and the DFO.

If a HADD occurs, notification are required as per the Contingency Plan for Inadvertent Release section above. **NOTE:** There is a Duty to Notify and Duty to Take Corrective Measures to report death of fish or a HADD to DFO.

Restoration

The following conditions should be considered when restoring any areas impacted by an inadvertent release of drilling fluid:

- Ensure the drilling exit and entry pits are cleaned of drilling fluid and the fluids are disposed of at an approved location.
- Any disturbed areas adjacent to the watercourse should be seeded, covered with erosion control matting (or equivalent) and restored as close as possible to pre-construction condition.
- All seeding and vegetation replacement will be with native species and as directed by the landowner or regulator (as required).
- If post-construction monitoring reveals erosion, remedial work will be taken as quickly as possible.
- If there is insufficient time in the growing season, the site should be stabilized (i.e. cover exposed soils with erosion control matting) and seeded the following spring.
- Maintain effective erosion and sediment controls until revegetation of disturbed areas is achieved, then remove the control measures.
- All debris and garbage shall be removed from the construction site to an approved location.

NOTES

ENBRIDGE

LOCATION

ALL HORIZONTAL DIRECTIONAL DRILL CROSSINGS IN ONTARIO

DRAWING TITLE

GENERIC SEDIMENT CONTROL PLAN HORIZONTAL DIRECTIONAL DRILL

SCALE	DATE
NTS	DECEMBER 2021
FILE No.	PROJECT No.

DRAWN	CHECKED	DRAWING	REV
GTH			0

APPROVED

Generic Sediment Control Plan - Temporary Vehicle Crossings

This plan sets out the measures that will be taken by Enbridge Gas Inc. (EGI) and its contractors to control downstream sediment to the lowest level practically achievable during the construction, use and removal of temporary vehicle water crossing at any watercourse (e.g., streams, rivers and ponds). The conditions and techniques set out on this plan are to be followed unless approved otherwise by the Department of Fisheries and Oceans (DFO).

General Measures

EGI must use materials, construction practices, mitigation techniques and monitoring of operations at every water crossing in order to prevent the unauthorized harmful alteration, disruption or destruction of fish habitat or the impairment of water quality. General measures are available at https://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures-eng.html. Vehicle crossings typically include temporary bridges (e.g., Bailey bridges, log stringer bridges) and winter crossings such as ice bridges and snow fills. The following requirements apply to any watercourse and areas adjacent to it:

- Temporary vehicle crossings to be in place no longer than a single restricted activity timing window.
- Use existing vehicle access across watercourses wherever possible.
- Prior to removal of the low vegetative cover, effective mitigation techniques for erosion and sediment control must be in place to protect water quality. Limit the areal extent of disturbance to the minimum needed for construction and delay grubbing to immediately prior to grading operations.
- Prior to commencing the installation of temporary vehicle crossings, local weather stations will be monitored to determine whether any precipitation is forecasted. If practical work will be delayed until weather conditions are favourable. If necessary, to proceed with work under unfavourable conditions, EGI will exercise due diligent.
- Vehicle crossing structures capable of handling anticipated high water flows during the construction period will be used. See guidelines below on sizing of water opening.
- Coarse cobbles, sandbags, geotextile liners and/or curb stringers will be used to protect culvert and ramp approach fills from erosion and to prevent sediment from entering a watercourse.
- On the approaches to vehicle crossing structures, road ditches constructed for drainage control will incorporate the necessary erosion and sedimentation control measures (e.g., silt fence, check dams) to prevent sediment from entering a watercourse.
- Except during construction of the crossing, EGI will not obstruct any watercourse so as to impede the free movement of water and fish.
- All exposed mineral soil must be graded to a stable slope and treated as quickly as possible to prevent erosion and sediment from entering a watercourse.
- All temporary vehicle crossing structures will be removed upon completion of construction. Banks and approaches will be restored and stabilized immediately upon removal of a vehicle crossing structure.
- The area around water crossings is to be regularly monitored and if erosion problems develop, immediate action is to be taken with appropriate treatments and completed as quickly as possible. Accumulated sediment is to be removed regularly from sediment control mitigations.
- Equipment fording will only be allowed if the Code of Practice can be met. It is available at https://www.dfo-mpo.gc.ca/pnw-ppe/codes/temporary-crossings-traversees-temporaires-eng.html.
- The Company will be held responsible for implementation of this plan. Any questions regarding the implementation of this plan should be directed towards the Environmental Advisor assigned to the project.

Sizing of Water Opening

It is important that the size of the water opening be selected so the structure can safely pass flood flows that can reasonably be expected to occur during the life of the crossing. **These structures must also allow for fish passage at all times except during the pipeline installation.** Any one of the following methods can be followed:

- Install a bridge that clear spans the watercourse from top of bank to top of bank where banks are defined (i.e. ordinary high water mark), and ensure adequate freeboard to allow for anticipated increase in stream discharge and passage of debris. In cases where banks are undefined: use cribbing or other footing material to hold the bridge and ensure adequate freeboard to allow for anticipated increase in steam discharge and passage of debris.
- Maximum culvert length will be 12.2 m (40 ft).
- Conduct a hydrology and hydraulics analysis to determine theoretical opening size. The design flow will be the two year flood (Q2), unless the culvert is to be left in place through the spring freshet, in which case the theoretical opening size will be based on the five year flood (Q5).
- Culvert sizes may also be selected to be the same as nearby culverts that have been in place for many years and have performed satisfactorily.
- If culverts are used, the approved size or equivalent multiple culverts must be installed. If multiple culverts are used a low-flow channel through one culvert must be established.

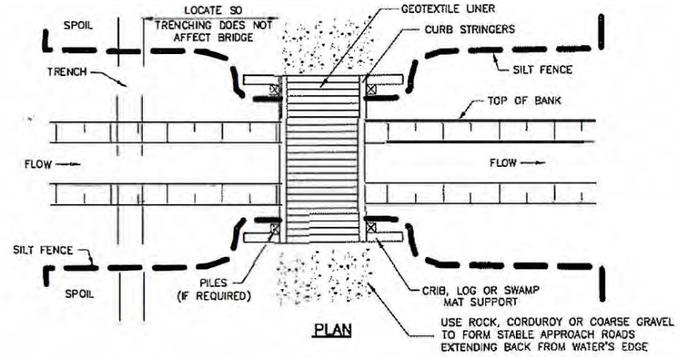
Detailed Construction Sequence - Temporary Bridges

In general terms, the following sequence of construction and mitigation measures will be followed at all temporary bridges.

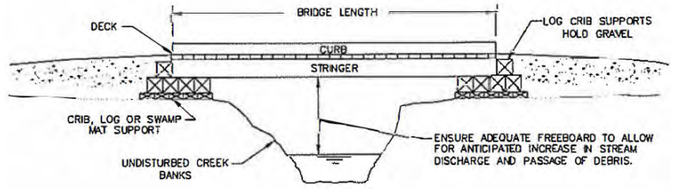
Conditions for use

- The temporary bridge is no greater than one lane wide.
- The crib, log or swamp mat support is above the ordinary high water mark.

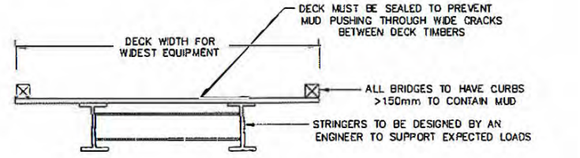
1. Generally, there are no restrictions on timing for the construction of clear-span structures as they do not involve in-water work. However, if there are any activities with the potential to disrupt fish or fish habitat (e.g., in-water crossing of watercourse by machinery), these should be undertaken outside of the restricted activity timing windows.
2. Install the bridge in a manner that will minimize sediment entering the watercourse. Stringers must be engineered to support the loads expected on the bridge. Curbs at least 150 mm high must be installed along the edge of the deck and if necessary, the deck lined with geotextile to contain mud on the bridge. Fasteners connecting components must be strong enough to hold them in position during the life of the bridge.
3. Road approaches leading to the bridges must be raised and stable, so equipment loads are supported a sufficient distance back from the watercourse to reduce sediment entering the watercourse from equipment. This may require using materials such as gravel, rock or corduroy. If cuts are needed to obtain a satisfactory grade, they are to be dug with side ditches and stable slopes. Erosion and sediment control measures are to be installed to keep sediment from entering the watercourse (e.g., check dams, filler cloth, rip rap, seed and mulch, sediment traps, etc.)
4. While the bridge is in use, any buildup of sediment on the bridge deck or approaches that has the potential to enter the watercourse is to be scraped off and disposed of in an approved location.
5. Temporary crossings will be removed as quickly as possible when no longer required. Surplus gravel and bridge materials are to be removed from the crossing area and stabilized above the floodplain in an approved location. The watercourse bed and banks are to be restored to a stable angle and protected with erosion resistant material compatible with flow velocity (e.g., coarse gravel or rip rap). Measures such as berms or logs may be needed to prevent sediment laden water from entering the watercourse.
6. Vegetate any disturbed areas by planting and seeding native trees, shrubs or grasses and cover such areas with mulch or erosion control matting to prevent soil erosion and to help seeds germinate.



PLAN



BRIDGE PROFILE



TYPICAL STEEL BRIDGE SECTION

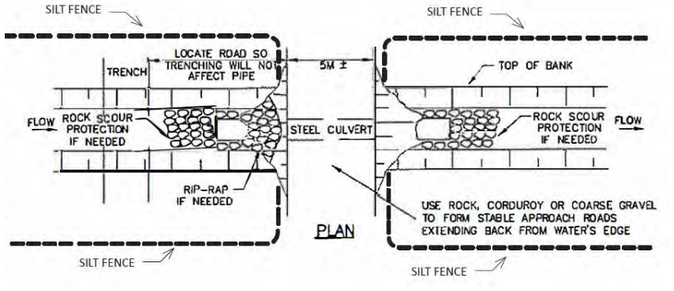
Detailed Construction Sequence - Temporary Culverts

Conditions for use

- The use of explosives is not required to complete the works, undertakings and activities
- Fish passage is maintained during the works, undertakings and activities
- No sensitive habitat exists at the crossing location
- The temporary culvert does not result in the draining of upland ponded or wetland features
- The culverts have a maximum length of no longer than 12.2m (40ft)
- The installation and removal of culverts must occur within a single allowable activity timing window

In general terms, the following sequence of construction and mitigation measures will be followed at all temporary culverts. Pre-, during-, and post-construction photographs showing the culvert location will be taken.

1. Install culvert pipe of diameter and length as per the Sizing of Water Opening requirements to ensure for stable fill slopes and safe vehicle/equipment passage. Culvert invert is to be set to allow a minimum of 10cm water depth for fish passage. Culvert installation can be done in flowing water as long as the installation occurs outside the restricted activity timing window. Culvert backfill and fill for the road is to be course granular or rock fill material. Erosion protection may be needed on the upstream road fill slope and if scour is possible, rip rap is to be placed in the watercourse upstream and downstream of the culvert outlet.
2. Road approaches leading to the culvert crossing must be raised and stable, so equipment loads are supported a sufficient distance back from the watercourse to reduce sediment entering the watercourse from equipment. This may require using materials such as gravel, rock, or corduroy. If cuts are needed to obtain a satisfactory grade, they are to be dug with side ditches and stable slopes. Erosion and sediment control measures are to be installed to keep sediment from entering the watercourse (e.g., check dams, filter cloth, rip rap, seed and mulch, sediment traps, etc.).
3. While the culvert is in use, any build-up of sediment on the road surface or approaches that has the potential to enter the watercourse is to be scraped off and disposed of in an approved location.
4. Temporary crossings will be removed as quickly as possible when no longer required. Removal must occur outside the restricted activity timing window. Surplus gravel and culvert materials are to be removed from the crossing area and stabilized above the floodplain in an approved location. The watercourse bed and banks are to be restored to a stable angle and protected with erosion resistant material compatible with flow velocity (e.g., coarse gravel or rip rap). Measures such as berms or logs may be needed to prevent sediment laden water from entering the watercourse.
5. Vegetate any disturbed areas by planting and seeding native trees, shrubs or grasses and cover such areas with mulch or erosion control matting to prevent soil erosion and to help seeds germinate.



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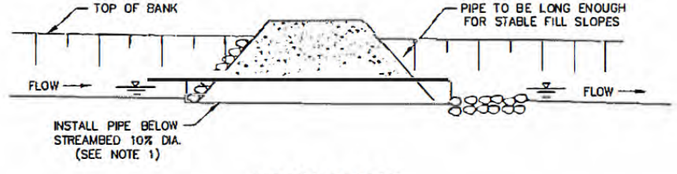


STREAM PROFILE

NOTES

ENBRIDGE

LOCATION

ALL TEMPORARY VEHICLE CROSSINGS (BRIDGES & CULVERTS) IN ONTARIO

DRAWING TITLE

GENERIC SEDIMENT CONTROL PLAN TEMPORARY VEHICLE CROSSINGS

SCALE		DATE
NTS		DECEMBER 2021
FILE No.		PROJECT No.
DRAWN GTH	CHECKED	DRAWING / REV 0

APPROVED

Generic Sediment Control Plan - Dry Flume Water Crossings

This plan sets out the measures that will be taken by Enbridge Gas Inc. (EGI) and its contractors to control downstream sediment to the lowest level practically achievable during the construction, use and removal of dry flume type crossings. The conditions and techniques set out on this plan are to be followed unless approved otherwise by the Department of Fisheries and Oceans (DFO).

Conditions for using the Standard

- The crossing can be completed in 7 calendar days or less avoiding the restricted activity timing window
- The watercourse is 15 m or less wide (current water level) AND flow conditions are 1.5m^3/sec or less
- The in-water work site disturbs a maximum of 50 linear m or less of the watercourse

Note: fish passage in a dry flume is not required

General Measures

EGI must use materials, construction practices, mitigation techniques and monitoring of operations at every water crossing in order to prevent the death of fish, unauthorized harmful alteration, disruption or destruction of fish habitat or the impairment of water quality. General measures are available at https://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures-eng.html. The following requirements apply to any permanent or intermittent watercourse (stream, river, pond) and areas adjacent to it.

- EGI will adhere to all permits and approvals of federal and provincial agencies related to watercourse crossings.
- EGI will notify the appropriate federal or provincial agencies prior to commencement of a watercourse crossing in accordance with regulatory permit conditions.
- In-stream work will occur outside of the restricted activity timing windows for the geographic region and for the fish species present unless otherwise permitted by the appropriate agencies.
- Prior to removal of the low vegetative cover, effective mitigation techniques for erosion and sediment control must be in place to protect water quality. Limit the areal extent of disturbance to the minimum needed for construction and delay grubbing to immediately prior to grading operations.
- All watercourses will require a minimal disturbance zone (MDZ) to be clearly marked with flagging prior to the commencement of clearing activities or any construction activity near the watercourse. This flagging will be set back a minimum of 5m from the watercourse and will be based on site specific conditions. Extra work area required at watercourse crossings will be situated away from the watercourse outside of the MDZ.
- Materials removed or stockpiled during construction (e.g., excavated soil, backfill material) must be deposited in a manner to ensure sediment does not enter a watercourse. Appropriate erosion and sediment controls (e.g. revegetation, vegetated buffer strips, drainage control, sediment settling devices, and sediment fence or other appropriate mitigation measures) will be installed around spoil or stockpiles to prevent sediment from stockpile runoff from entering a watercourse.
- All vehicles, machinery and other construction equipment should not enter the water. There should be no fording of any stream.
- Except during construction of the crossing, EGI will not obstruct any watercourse so as to impede the free movement of fish.
- Flow will be maintained at all times downstream of the water crossing.
- All exposed soil must be stabilized (e.g. graded to a stable slope and erosion control measures implemented) as quickly as possible to prevent erosion.
- EGI is to adhere to the Generic Sediment Control Plan For Temporary Vehicle Crossings.
- All required materials (e.g., silt fencing, filter cloth, polyethylene liners, granular material, rip rap, dam materials) and installation equipment (e.g., pipe, flumes, pumps, pump hoses, generators, spores, energy dissipaters) will be on-site and in good working order prior to construction.
- Prior to commencing watercourse crossings, local weather stations will be monitored to determine whether any precipitation is forecasted. In-stream activity will be delayed if flows are in flood stage and until weather conditions are favourable. If practical work will be delayed until weather conditions are favourable. If necessary, to proceed with work under unfavourable conditions, EGI will exercise due diligence
- Water intakes used in fish bearing waters will be screened in accordance with current DFO Code of Practice for end-of-pipe fish protection screens for small water intakes in freshwater https://www.dfo-mpo.gc.ca/pnw-ppe/codes/screen-ecran-eng.html.
- Fish recovery and transfer will be conducted prior to and during the isolation of flow and in accordance with permit regulations. See detailed construction sequence for timing of fish recovery operations.
- In-stream activities in all watercourses (e.g., trenching, pipe installation, backfilling) will be completed in as short a time as possible to minimize disturbance to water quality, fish and fish habitat.
- In situations where the crossing can be completed in one day, in-stream excavation will begin in the early morning to allow for same day installation.
- Refueling and lubrication of equipment will be conducted in areas that will allow any accidental spill of deleterious substance to be disposed of in an approved location before it reaches any watercourse. Appropriate spill prevention kits will be readily available on site.
- The area around water crossings is to be regularly monitored and if erosion problems develop, immediate action is to be token with appropriate treatments and completed as quickly as possible. Accumulated sediment is to be removed regularly.
- Revegetation must be completed as quickly as possible. Revegetate any disturbed areas by planting and seeding native trees, shrubs or grasses and cover such areas with mulch or erosion control matting to prevent soil erosion and to help seeds germinate.
- All use of silt fence, rock check dams and dewatering traps shall be constructed/installed in accordance to the most up to date Company specifications and drawings. Where these mitigation measures are not sufficient to prevent sediment from entering the watercourse, additional mitigation measures will be implemented to prevent sediment from entering the watercourse.
- EGI will be held responsible for implementation of this plan. Any questions regarding the implementation of this plan should be directed towards the Environmental Advisor assigned to the project.

Contingency Plan

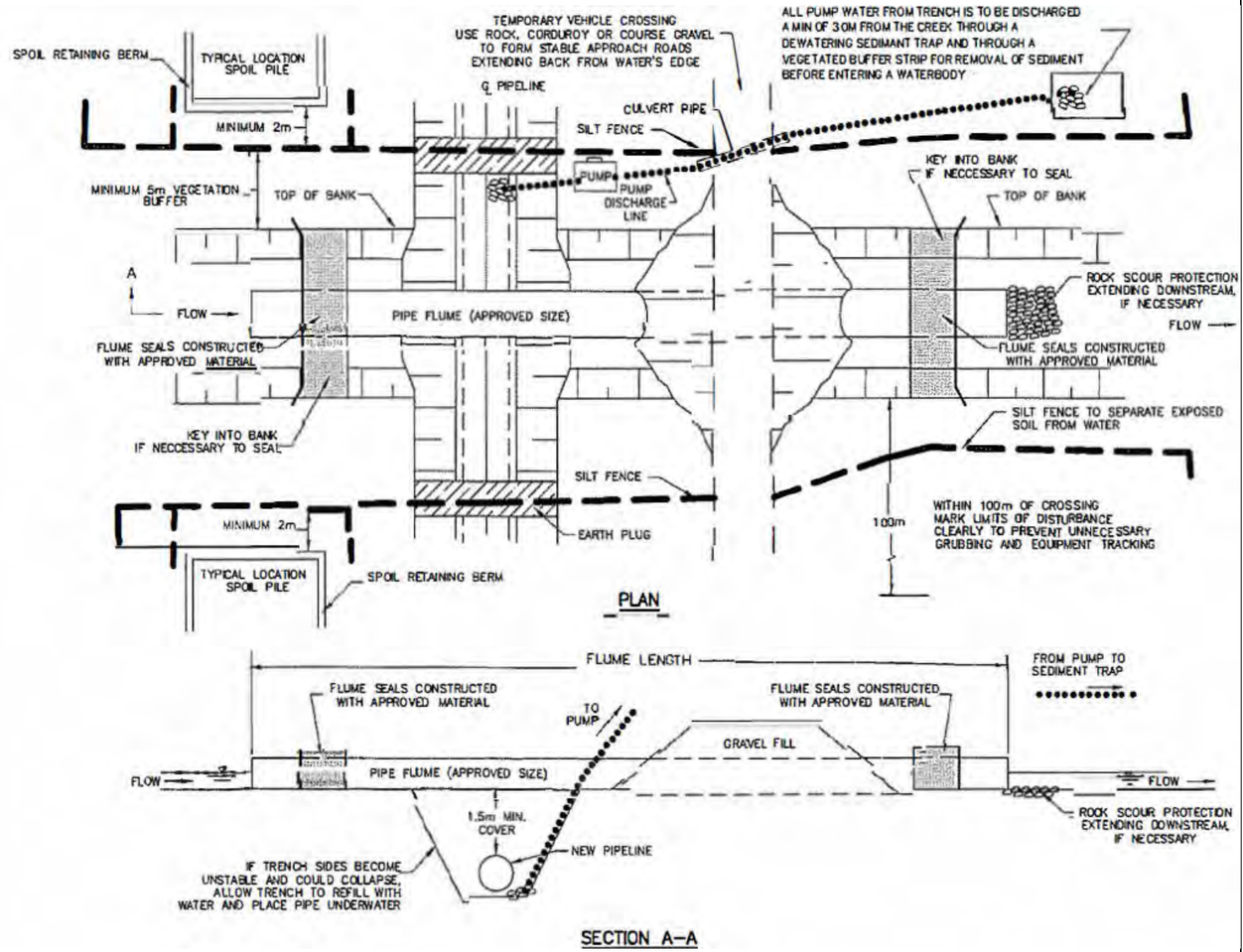
If unforeseen events (e.g. bedrock in trench, flume washout) cause the strategies set out in this pion to be insufficient or inappropriate to meet the objective, EGI is expected to respond in a timely manner with all reasonable measures consistent with safety, to prevent, counteract or remedy any effects on fish or fish habitat that may result. DFO is to be notified as soon as practical. **NOTE:** There is a Duty to Notify and Duty to Take Corrective Measures to report death of fish or a HADD of fish habitat to DFO.

Spill reporting procedures established by EGI will be used to report any unexpected discharge of silt or sediment or other deleterious substance of the water crossing. At a minimum contact the Environmental Advisor at **1-855-336-2056.**

If DFO determines that tong term damage to fish habitat has occurred due to failure of this plan to control sediment, a restoration plan will be developed by EGI, in consultation with and approval from DFO for implementation by EGI.

Flume Sizing

- Flumes will be sized initially based on hydrology and hydraulic analysis to determine theoretical opening size. The capacity of the flumes will be sized to handle 150% of the anticipated flow.
- The approved size or equivalent multiple flumes must be installed.
- Flume sizes may also be selected to be the same as existing nearby culverts that have been in place for many years and have performed satisfactorily.



Detailed Construction Sequence - Dry Flume Crossings

In general terms, the following sequence of construction and mitigation measures will be followed at all "dry flume" type water crossings.

1. Mark out and maintain limits of authorized work areas with fencing or flagging tape to avoid unnecessary disturbance of vegetation. Ensure equipment operators working on the crossing have been briefed about this plan and the measures needed to protect water quality. Install pre-work sediment control measures, including silt fences and measures to contain excavated spoil and backfill. All necessary equipment and materials to build the flume must be on site or readily available prior to commencing in-water construction. Pipe shall be strung, welded and coated ready for installation prior to watercourse trenching.
2. Install flumes equal to or larger than the diameter determined by the methods described above. Place impervious dams at each end of the flume, upstream first then downstream. Alternative dam materials include coarse gravel with rip rap protection, pea stone bags, steel plate and metre bags. During placement, install an impervious membrane, if necessary, to prevent leakage. Dams may need keying into the bank and streambed. Once the area is isolated, conduct fish recovery and transfer operations and dewater the area between the dams. All pump water is to be discharged well away (minimum 30 m) from the watercourse and through a sediment trap to prevent reentry of sediment into the watercourse. Pump discharge lines will be installed to keep pumped water from coming into contact with soil on the construction site.
3. Excavate trench through plugs and under flume, then dewater. Work area dewatering will be filtered to remove suspended solids. Lower in pipe by passing under flume and backfill immediately. The top 300 mm of trench backfill is to be clean rock, cobble material or native streambed material. EGI is to use granular backfill if the native material is not suitable. Any excess material is to be disposed of in an approved location and stabilized to prevent reentry into the watercourse. Work is to be completed as quickly as possible.
4. Once the pipe installation is complete and the flume(s) are no longer necessary, they will be removed as quickly as possible and in the following manner: remove the downstream dam; remove the upstream dam; remove flume(s).
5. Restore, stabilize and reclaim bed and banks of watercourse to preconstruction profiles and protected with erosion resistant material compatible with flow velocity (e.g., do not use erosion control matting in the bankfull channel coarse gravel or rip rap) to the maximum extent possible between dams. All construction material (e.g. dams, rip rap) not required to return the watercourse to preconstruction condition will be removed from the site and stabilized above the high-water mark in an approved location. Removal of all materials will be done in a manner that will not introduce sediment to the watercourse.
6. Site stabilization, which includes control of stormwater drainage using a combination of methods such as silt fences, erosion blankets, diversion berms and check dams etc., is to be completed immediately upon removal of the flume or as directed by the Environmental Advisor. If stabilization is delayed, short term erosion control measures will be used to prevent sediment entering the watercourse. Material accumulated at silt fences is to be removed or stabilized in place. Silt fences are to be removed when the site is permanently stabilized.
7. Vegetate any disturbed areas by planting and seeding native trees, shrubs or grasses and cover such areas with mulch or erosion control matting to prevent soil erosion and to help seeds germinate.
8. If post-construction monitoring reveals erosion problems, remedial work is to be undertaken as quickly as possible.

NOTES

ENBRIDGE

LOCATION: ALL DRY FLUME WATER CROSSINGS IN ONTARIO			
DRAWING TITLE: GENERIC SEDIMENT CONTROL PLAN DRY FLUME WATER CROSSINGS			
SCALE: NTS		DATE: DECEMBER 2021	
FILE No.		PROJECT No.	
DRAWN: GTH	CHECKED	DRAWING	REV: 0
APPROVED			

Generic Sediment Control Plan Dam and Pump Water Crossings

This plan sets out the measures that will be taken by Enbridge Gas Inc. (EGI) and its contractors to control downstream sediment to the lowest level practically achievable during the construction, use and removal of dam and pump type crossings. The conditions and techniques set out on this plan are to be followed unless approved otherwise by the Department of Fisheries and Oceans (DFO). This includes the current DFO Code of Practice for temporary cofferdams and diversion channels available at https://www.dfo-mpo.gc.ca/pnw-ppe/codes/cofferdams-batardeaux-eng.html

Conditions for using the Standard

- The crossing can be completed in 7 calendar days or less avoiding the restricted activity timing window
- The watercourse is 15 m or less wide (current water level) AND flow conditions are 1.5m^3/sec or less
- The in-water work site disturbs a maximum of 50 linear m or less of the watercourse

Note: fish passage in a dam and pump crossing is not required

General Measures

EGI must use materials, construction practices, mitigation techniques and monitoring of operations at every water crossing in order to prevent the death of fish, unauthorized harmful alteration, disruption or destruction of fish habitat or the impairment of water quality. General measures are available at https://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures-eng.html. The following requirements apply to any permanent or intermittent watercourse (stream, river, pond) and areas adjacent to it.

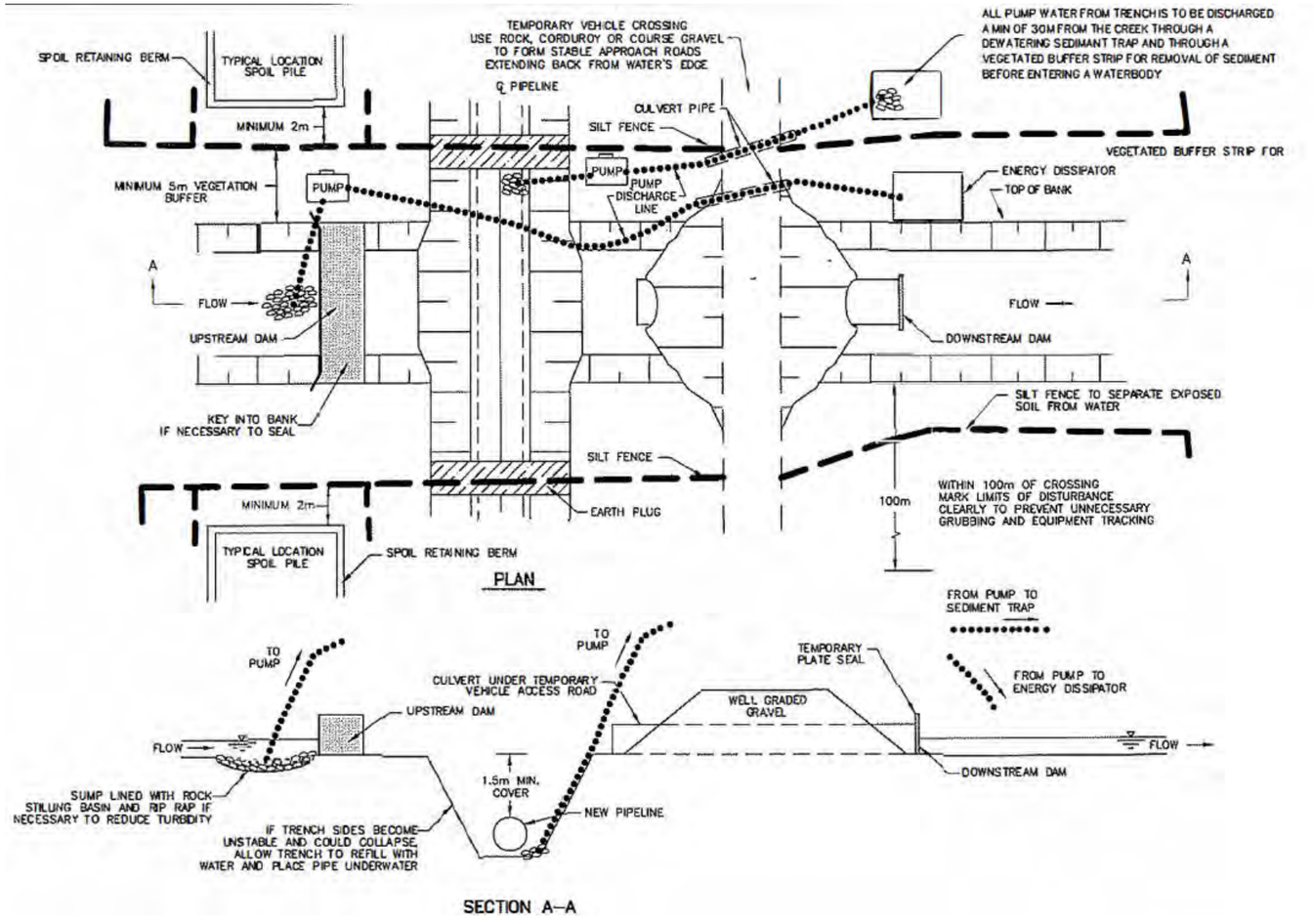
- EGI will adhere to all permits and approvals of federal and provincial agencies related to watercourse crossings.
- EGI will notify the appropriate federal or provincial agencies prior to commencement of a watercourse crossing in accordance with regulatory permit conditions.
- In-stream work will occur during the appropriate time windows for the geographic region and for the fish species present unless otherwise permitted by the appropriate agencies.
- Prior to removal of the low vegetative cover, effective mitigation techniques for erosion and sediment control must be in place to protect water quality. Limit the areal extent of disturbance to the minimum needed for construction and delay grubbing to immediately prior to grading operations.
- All watercourses will require a minimal disturbance zone (MDZ) to be clearly marked with flagging prior to the commencement of clearing activities or any construction activity near the watercourse. This flagging will be set back a minimum of 5m from the watercourse and will be based on site specific conditions. Extra work area required at watercourse crossing will be situated away from the watercourse outside of the MDZ.
- Materials removed or stockpiled during construction (e.g., excavated soil, backfill material) must be deposited in a manner to ensure sediment does not enter a watercourse. Appropriate erosion and sediment controls (e.g. revegetation, vegetated buffer strips, drainage control, sediment settling devices, and sediment fence or other appropriate mitigation measures) will be installed around spoil or stockpiles, to prevent sediment from stockpile runoff from entering a watercourse.
- All vehicles, machinery and other construction equipment shall not enter the water. There must be no fording of any stream.
- Except during construction of the crossing, EGI will not obstruct any watercourse so as to impede the free movement of fish.
- Flow will be maintained at all times downstream of the watercrossing.
- All exposed soil must be stabilized (e.g. graded to a stable slope and erosion control measures implemented) as quickly as possible to prevent erosion.
- EGI is to adhere to the Generic Sediment Control Plan For Temporary Vehicle Crossings.
- All required materials (e.g., silt fencing, filter cloth, polyethylene liners, granular material, rip rap, dam materials) and installation equipment (e.g., pipe, flumes, pumps, pump hoses, generators, spores, energy dissipaters) will be on-site and in good working order prior to construction.
- Prior to commencing watercourse crossings, local weather stations will be monitored to determine whether any precipitation is forecasted. In-stream activity will be delayed if flows are in flood stage and until weather conditions are favourable. If practical work will be delayed until weather conditions are favourable. If necessary, to proceed with work under unfavourable conditions, EGI will exercise due diligence.
- If there is any flow in the watercourse, EGI is to install pumps to maintain streamflow around the blocked off section of channel. An energy dissipater is to be built to accept pump discharge and prevent watercourse erosion.
- Adequate pump capacity will be on site to handle anticipated water flows and any potential increases in flow during the construction period. Backup pumps with adequate capacity to handle 100% of the downstream flow must be on site and ready for immediate replacement, should the primary operating pump(s) fail.
- Water intakes used in fish bearing waters will be screened in accordance with current DFO Code of Practice for end-of-pipe fish protection screens for small water intakes in freshwater https://www.dfo-mpo.gc.ca/pnw-ppe/codes/screen-ecran-eng.html.
- Fish recovery and transfer will be conducted prior to and during the isolation of flow and in accordance with permit regulations. See detailed construction sequence for timing of fish recovery operations.
- Instream activities in all watercourses (e.g., trenching, pipe installation, backfilling) will be completed in as short a time as possible to minimize disturbance to water quality, fish and fish habitat.
- In situations where the crossing can be completed in one day, in-stream excavation will begin in the early morning to allow for same day installation.
- Refueling and lubrication of equipment will be conducted in areas that will allow any accidental spill of deleterious substance to be disposed of in an approved location before it reaches any watercourse. Appropriate spill prevention kits will be readily available on site.
- The area around water crossings is to be regularly monitored and if erosion problems develop, immediate action is to be taken with appropriate treatments and completed as quickly as possible. Accumulated sediment is to be removed regularly.
- Revegetation must be completed as quickly as possible. Revegetate any disturbed areas by planting and seeding native trees, shrubs or grasses and cover such areas with mulch or erosion control matting to prevent soil erosion and to help seeds germinate.
- All use of silt fence, rock check dams and dewatering traps shall be constructed/installed in accordance to the most up to date EGI specifications and drawings. Where these mitigation measures are not sufficient to prevent sediment from entering the watercourse, additional mitigation measures will be implemented to prevent sediment from entering the watercourse.
- EGI will be held responsible for implementation of this plan. Any questions regarding the implementation of this plan should be directed towards the Environmental Advisor assigned to the project.

Contingency Plan

If unforeseen events (e.g., bedrock in trench, dam washout) cause the strategies set out in this plan to be insufficient or inappropriate to meet the objective, EGI is expected to respond in a timely manner with all reasonable measures consistent with safety, to prevent, counteract or remedy any effects on fish or fish habitat that may result. DFO is to be notified as soon as practical. **NOTE:** There is a Duty to Notify and Duty to Take Corrective Measures to report death of fish or a HADD of fish habitat to DFO.

Spill reporting procedures established by EGI shall be used to report any unexpected discharge of silt or sediment or other deleterious substance at the water crossing. At a minimum contact the Environmental Advisor at **1-855-336-2056.**

If DFO determines that long term damage to fish habitat has occurred due to failure of this plan to control sediment, a restoration plan will be developed by EGI, in consultation with and approval from DFO for implementation by EGI.



Detailed Construction Sequence - Dam and Pump Crossings

In general terms, the following sequence of construction and mitigation measures will be followed at all "dam and pump" type water crossings.

1. Mark out and maintain limits of authorized work areas with fencing or flagging tape to avoid unnecessary disturbance of vegetation. Ensure equipment operators working on the crossing have been briefed about this plan and the measures needed to protect water quality. Install pre-work sediment control measures, including silt fences and measures to contain excavated spoil and backfill. All necessary equipment and materials to build the dams and to pump water must be on site or readily available prior to commencing in-water construction. Pipe shall be strung, welded and coated ready for installation prior to watercourse trenching.
2. If possible, install pumps in a natural pool upstream of the excavation. Excavate temporary sump within right-of-way if no natural pool exists. Check pump operation to equalize flow and ensure water intakes used in fish bearing waters are screened in accordance with DFO Code of Practice. Rip rap, stilling wells, filter cloth, gravel filters or other mitigation measures will be used at the upstream inlet of the pump to prevent suspension of sediment from pumping when necessary. Rip rap and rock check dams will be used when necessary to prevent scouring and erosion at the pump outlet. Pump discharge lines shall be installed to keep pumped water from coming into contact with soil on the construction site.
3. Dams are to be made of steel plate, inflatable rubber dam (aquadam), pea stone bags, or metre bags and constructed so that sediment is not introduced to the watercourse. An impervious membrane is to be incorporated into the dam if necessary, to control seepage flow. Dams may need keying into the banks and streambed. Install downstream dam only if needed to keep the trench area dry. Dewater the area between dams and for fish bearing streams, conduct fish recovery operations. All pump water is to be discharged well away (minimum 30 m) from the creek and through a sediment trap to prevent reentry of sediment into the watercourse.
4. Excavate trench through plugs and streambed as quickly as possible, re-positioning discharge hose as necessary. Lower the pipe in the trench and backfill immediately. During pumping activities, monitor flow upstream and downstream to ensure normal flow levels. The top 300 mm of trench backfill is to be clean rock, cobble material or native streambed material. EGI is to use granular backfill if the native material is not suitable. Any excess material is to be disposed of above the high-water mark in an approved location and stabilized to prevent reentry into the watercourse. Work is to be completed as quickly as possible.
5. Restore, stabilize and reclaim bed and banks of watercourse to preconstruction profiles and protected with erosion resistant material compatible with flow velocity (e.g., coarse gravel or rip rap) to the maximum extent possible between dams. Do not use erosion control matting in the bankfull channel. All construction material (e.g. dams, rip rap, pea stone bags) will be removed from the site to an approved location. Removal of all materials will be done in a manner to prevent entry of sediment to the watercourse. The downstream dam will be removed first. Keep pump running until normal flow is resumed. Complete bank trimming and erosion protection. If pea stone bags are used for the dams, place and remove by hand to avoid equipment breaking bags.
6. Site stabilization, which includes control of stormwater drainage using a combination of methods such as silt fences, erosion blankets, diversion berms and check dams etc. is to be completed immediately upon trench backfilling or as directed by the Environmental Advisor. If stabilization is delayed, short term erosion control measures will be used to prevent sediment entering the watercourse. Material accumulated at silt fences is to be removed or stabilized in place. Silt fences are to be removed when the site is permanently stabilized.
7. Vegetate any disturbed areas by planting and seeding native trees, shrubs or grasses and cover such areas with mulch or erosion control matting to prevent soil erosion and to help seeds germinate.
8. If post-construction monitoring reveals erosion problems, remedial work is to be undertaken as quickly as possible.

NOTES

ENBRIDGE

LOCATION

All DAM AND PUMP WATER CROSSINGS IN ONTARIO

DRAWING TITLE

GENERIC SEDIMENT CONTROL PLAN DAM AND PUMP WATER CROSSINGS

SCALE	DATE
NTS	DECEMBER 2021
FILE No.	**PROJECT No.**
DRAWN GTH / **CHECKED**	**DRAWING** / **REV** 0

APPROVED

B.9 Indigenous Consultation Record

DRAFT

Appendix B9 Enbridge Gas Inc. Indigenous Consultation Record for the Kirkwall to Hamilton Dawn Parkway System Renewal Program (“Project”) Record updated as of October 23, 2026

Mississaugas of the Credit First Nation [MCFN]

Line item	Date	Method	Summary of Enbridge Activity	Summary of Community Activity	Issues or Concerns Raised & Responses
1.0	July 6, 2026	Email	An Enbridge Gas representative emailed the MCFN representative to provide the Notice of Upcoming Environmental Study and Preliminary Desktop Environmental and Cultural Heritage Summary Memo for the Project (the “Memo”). Enbridge Gas advised that capacity funding was available for MCFN to support technical review, fieldwork participation, and meaningful consultation, and invited questions or a meeting to discuss the Project. The Notice provided information regarding the proposed Project, Environmental Study, anticipated regulatory process and consultation, and engagement. The Memo outlined the Project, regulatory process, environmental and archaeological studies, potential impacts and mitigation measures and opportunities for Indigenous input and participation in future fieldwork.		
1.1	July 17, 2026	Email		An MCFN representative emailed the Enbridge Gas representative to provide a response letter to the Project. The letter requested participation in any archaeological or environmental assessments, including reviewing draft reports, and requested capacity funding. An MCFN representative advised that MCFN would begin its review of the Memo once the Technical Review Agreement was completed.	
1.2	July 22, 2026	Email	An Enbridge Gas representative emailed the MCFN representative to provide the Field Participation Agreement and Technical Review Agreement executed on behalf of Enbridge Gas.		
1.3	July 23, 2026	Email		An MCFN representative emailed the Enbridge Gas representative to return the Field Participation Agreement and Technical Review Agreement. The MCFN representative advised that comments on the Memo would be provided.	

Line item	Date	Method	Summary of Enbridge Activity	Summary of Community Activity	Issues or Concerns Raised & Responses
1.4	August 4, 2026	Email	An Enbridge Gas representative emailed the MCFN representative to invite participation in a virtual information session to be held between August 17 and August 31, 2026, regarding the study. The representative explained that feedback from the virtual information session would help confirm a preferred route and inform mitigation plans, provided contact information for the Project Manager at Dillon, and asked MCFN to indicate whether it wished to participate in the session or provide comments directly on the materials provided. Comments were requested by September 15, 2026.		
1.5	August 6, 2026	Email	An Enbridge Gas representative emailed the MCFN representatives to advise of a corrected web address for the virtual information session and attached a revised notice containing the web address.		
1.6	September 4, 2026	Email	The Enbridge Gas representative emailed the MCFN representative to follow up on an offer to meet and discuss the Project. The Enbridge Gas representative provided virtual open-house slides and questionnaires, invited comments directly if preferred, requested available meeting dates, and advised that capacity funding was available to support MCFN's participation.		
1.7	September 10, 2026	Email	The Enbridge Gas representative emailed the MCFN representative to provide notification of the proposed Project and advised that a notification letter was attached. The letter described the Project and preliminary work undertaken, including potential authorizations that may be required. Enbridge Gas confirmed that capacity funding was available to support MCFN's participation and advised that Enbridge Gas was available to meet at any time during the Project development process. The letter also advised that an Environmental Report (ER) would be prepared in accordance with the OEB's Environmental Guidelines, with completion anticipated in Q1 2027, and provided Enbridge Gas contact information for further discussion.		
1.8	September 25, 2026	Email	A Stantec Consulting Ltd. (Stantec) representative emailed an MCFN representative to advise that Stage 3 archaeological assessments were planned for several archaeological sites in support of the Project. The Stantec representative advised that fieldwork could begin as early as October 5, 2026, invited MCFN team members to participate in the archaeological fieldwork, noted that mobilization details would be provided once confirmed, and requested that participation agreements be arranged with Enbridge Gas representatives if they desired to participate.		
1.9	September 25, 2026	Email		An MCFN representative emailed the Stantec representative seeking additional information on the Stage 3 Archaeological field visit for MCFN scheduling purposes.	

Line item	Date	Method	Summary of Enbridge Activity	Summary of Community Activity	Issues or Concerns Raised & Responses
1.10	October 1, 2026	Email	A Stantec representative emailed MCFN representatives with mobilization details for upcoming Stage 3 archaeological fieldwork for the Project. Fieldwork was scheduled to begin October 6, 2026. Stantec provided logistics, including the anticipated work period, archaeological site numbers, crew size, required PPE, start time, meeting location, and access and parking information. Stantec noted that access arrangements may change pending landowner confirmation, and that further updates would be provided as work progresses.		
1.11	October 5, 2026	Email	A Stantec representative emailed MCFN with information for field teams about a property they will be accessing during Stage 3 site visits.		
1.12	October 6, 2026	Email	A Stantec representative emailed MCFN representatives to provide information regarding ecological surveys planned for October 14 to 16, 2026.		
1.13	October 6, 2026	Email		An MCFN representative emailed the Stantec representative requesting that, moving forward, notifications regarding environmental fieldwork be provided directly to the identified MCFN representative.	
1.14	October 2026	Field Visit	On October 6, 7, 9, 13, 21, 28, 29, and 30, 2026, Stantec conducted Stage 3 archaeological assessment fieldwork associated with the Project. A representative of MCFN attended the field program in an Indigenous monitoring or participation capacity. The activities were completed within the Project study area. To date, no concerns or recommendations were identified by the MCFN representative arising out of the fieldwork.		
1.15	October 7, 2026	Email	A Stantec representative emailed MCFN representatives to correct the Project name referenced on October 6, 2026, email regarding the meeting location for the ecological surveys.		

Six Nations of the Grand River [SNGR]

Line item	Date	Method	Summary of Enbridge Activity	Summary of Community Activity	Issues or Concerns Raised & Responses
2.0	July 6, 2026	Email	An Enbridge Gas representative emailed the SNGR representative to provide the Notice of Upcoming Environmental Study the Memo. Enbridge Gas advised that capacity funding was available for SNGR to support technical review, fieldwork participation, and meaningful consultation, and invited questions or a meeting to discuss the Project. The Notice provided information regarding the proposed Project, Environmental Study, anticipated regulatory process, consultation, and engagement. The Memo outlined the Project, regulatory process, environmental and archaeological studies, potential impacts and mitigation measures, and opportunities for Indigenous input and participation in future fieldwork.		
2.1	July 7, 2026	Email		An SNGR representative emailed the Enbridge Gas representative to advise that another SNGR representative would reach out with availability for a meeting regarding the Project and asked if SNGR was meaningfully consulted on the 2019 route selection.	
2.2	July 8, 2026	Email	An Enbridge Gas representative emailed the SNGR representative advising that Enbridge Gas would follow up regarding the 2019 route selection engagement.		
2.3	July 15, 2026	Email	An Enbridge Gas representative emailed the SNGR representative requesting potential dates for an introductory meeting for the Project.		
2.4	July 15, 2026	Email		The SNGR representative confirmed that another SNGR representative received the meeting request and assumed that the SNGR representative would reach out within the next couple of weeks with dates.	
2.5	August 4, 2026	Email	An Enbridge Gas representative emailed the SNGR representative to invite participation in a virtual information session to be held between August 17 and August 31, 2026, regarding the study. The representative explained that feedback from the virtual information session would help confirm a preferred route and inform mitigation plans, provided contact information for the Project Manager at Dillon, and asked SNGR to indicate whether it wished to participate in the session or provide comments directly on the materials provided. Comments were requested by September 15, 2026.		
2.6	August 6, 2026	Email	An Enbridge Gas representative emailed the SNGR representatives to advise of a corrected web address for the virtual information session and attached a revised notice containing the web address.		

Line item	Date	Method	Summary of Enbridge Activity	Summary of Community Activity	Issues or Concerns Raised & Responses
2.7	August 7, 2026	Email	An Enbridge Gas representative emailed the SNGR representative in response to questions about historical consultation and engagement and attached records relating to the same.		
2.8	August 10, 2026	Email		An SNGR representative emailed the Enbridge Gas representative to advise that SNGR records indicated consultation on prior route selection for the paused project was incomplete. Records of a June 5, 2019, meeting that identified outstanding commitments, including confirmation of a proposed 10:1 tree replacement ratio and provision of an aquatic study related to Spencer Creek, were provided. SNGR also noted that the records contained no follow-up on these matters, and the commitments were not reflected in the meeting record submitted to the Ontario Energy Board. The SNGR representative requested updates on these issues and advised that consultation on route selection should continue.	
2.9	August 20, 2026	Email	An Enbridge Gas representative emailed the SNGR representative to acknowledge concerns regarding historical consultation activities and advised that these concerns had been shared with the environmental team for review. The Enbridge Gas representative also advised that the environmental team would investigate the request regarding a 10:1 tree replacement ratio and would determine whether an aquatic study related to Spencer Creek was available. The Enbridge Gas representative also noted that a meeting regarding the Project was scheduled for September 1, 2026, and advised that environmental team members and the Project Manager would attend to seek SNGR feedback regarding route selection.		

Line item	Date	Method	Summary of Enbridge Activity	Summary of Community Activity	Issues or Concerns Raised & Responses
2.10	August 20, 2026	Email		An SNGR representative emailed the Enbridge Gas representative to clarify that the September 1 meeting regarding the Project was intended as an introductory discussion of the Project overview, capacity funding, and consultation planning. It was noted that a separate meeting should address meaningful consultation and technical review activities. The SNGR representative also noted that, because of the proposed trench-based construction and the environmentally sensitive setting, SNGR would require an Environmental Impact Statement (EIS) before route selection. SNGR expected to be consulted on the EIS terms of reference and expected the EIS to be available before significant Project decisions were finalized.	
2.11	August 30, 2026	Email	An Enbridge Gas representative emailed the SNGR representative requesting that several monthly meetings be scheduled now to ensure regular and timely meetings are held on this Project. Enbridge Gas also provided the number of people attending the September 1, 2026, meeting at SNGR for room capacity/seating availability consideration.		
2.12	August 31, 2026	Email		The SNGR representative emailed the Enbridge Gas representative to confirm that they would review the calendar for monthly meetings and that there was sufficient space in the meeting room for the September 1 meeting.	
2.13	September 1, 2026	Email		An SNGR representative emailed the Enbridge Gas representative regarding the Project to provide proposed dates and formats for future dialogue sessions. The SNGR representative advised that the dates reflected the introduction of new projects, meeting-space considerations, and seasonal calendar changes. The SNGR representative requested confirmation of availability for two in-person and three virtual sessions and advised that invitations would be issued upon receipt of a response.	

Line item	Date	Method	Summary of Enbridge Activity	Summary of Community Activity	Issues or Concerns Raised & Responses
2.14	September 1, 2026	Meeting	Enbridge Gas representatives and Stantec met with SNGR representatives at SNGR's office to provide Project information. A hard copy of the Draft 2019 Environmental Report, which includes ranking of routes and the Stage 1 archeological assessment, was provided to SNGR at this meeting. Discussion included the 2019 route selection, 10:1 tree replacement, Project need/driver, construction techniques, environmental studies, plant and animal species of significance to SNGR, property ownership, easements and sums paid, potential impacts to Indigenous rights and accommodation, mitigation measures, and the offer of capacity funding for a consultant to assist SNGR in the participation and review of Project documents. During the meeting, SNGR noted that it disagreed with the route selection process in 2019. In response, Enbridge Gas noted SNGR was invited to provide feedback on the routes at this time, and Stantec is to provide additional information on the route rankings. A discussion regarding the 10:1 tree replacement request from SNGR ensued. It was noted by Enbridge Gas of the need for the current Project to restore system capacity. SNGR requested additional studies prior to route selection; however, Enbridge Gas noted the process followed was appropriate. It was noted that construction for the Project would be trench-based. SNGR inquired about compensation for crop losses and suggested this information would be used for their own metrics and for accommodation discussions. Enbridge Gas inquired as to which Aboriginal or Treaty rights SNGR anticipated could be impacted by the Project. SNGR identified harvesting rights, but more information would be needed to determine the extent of potential impacts. Enbridge. Enbridge Gas reviewed mitigation measures and committed to providing a draft Spencer Creek restoration plan, and asked SNGR for quotes for capacity funding.		
2.15	September 4, 2026	Email	An Enbridge Gas representative emailed the SNGR representatives regarding the Project to confirm that the proposed dates were acceptable and requested that calendar invitations be sent. The Enbridge Gas representative thanked the SNGR team for a recent meeting, advised that follow-up actions were already being addressed, and stated that meeting notes would be provided for review and records. The Enbridge Gas representative advised that slides presented at the virtual open houses and questionnaires for the Projects were attached to supplement information previously provided, noted that completion of the questionnaires was not required because comments could be submitted directly, and invited comments through any preferred method. The Enbridge Gas representative also advised that a quote for capacity funding to support SNGR engagement in both Projects, including the hiring of a consultant, was anticipated and invited any questions.		

Line item	Date	Method	Summary of Enbridge Activity	Summary of Community Activity	Issues or Concerns Raised & Responses
2.16	September 10, 2026	Email		An SNGR representative emailed the Enbridge Gas representative and advised that Shared Value Solutions (SVS) was supporting SNGR as its consultant and would expedite preparation of the capacity funding estimate, which was expected to be provided by September 21.	
2.17	September 10, 2026	Email	An Enbridge Gas representative emailed the SNGR representative to provide notification of the proposed Project and advised that a notification letter was attached. The letter described the Project and preliminary work undertaken, including potential authorizations that may be required. Enbridge Gas confirmed that capacity funding was available to support SNGR's participation and advised that Enbridge Gas was available to meet at any time during the Project development process. The letter also advised that an Environmental Report (ER) would be prepared in accordance with the OEB's Environmental Guidelines, with completion anticipated in Q1 2027, and provided Enbridge Gas contact information for further discussion.		
2.18	September 11, 2026	Email		An SNGR representative emailed the Enbridge Gas representative to advise that SNGR had been introduced to the Project and had discussed the subjects identified in the Project notification letter. The representative stated that a response was being provided to ensure the record did not indicate that SNGR had failed to respond.	
2.19	September 14, 2026	Email	An Enbridge Gas representative emailed the SNGR representative to acknowledge receipt of communication and express appreciation for the response.		

Line item	Date	Method	Summary of Enbridge Activity	Summary of Community Activity	Issues or Concerns Raised & Responses
2.20	September 16, 2026	Email		An SVS representative emailed an Enbridge Gas representative regarding preparation of a technical review estimate on behalf of SNGR for the Project. SVS advised that it had been retained by SNGR to complete a technical review and requested the unredacted Environmental Report and other relevant environmental studies completed to date to support preparation of the estimate. SVS also advised that the proposed budget was intended to include additional consultation activities and preliminary investigation of cumulative disturbance to Six Nations land, identified as priorities for SNGR in relation to the Project.	
2.21	September 16, 2026	Email	An Enbridge Gas representative emailed the SVS representative regarding the technical review estimate being prepared on behalf of SNGR for the Project. Enbridge Gas provided the Spencer Creek Restoration Plan, Geomorphic Assessment, and draft Natural Heritage Report for information, noting that the first two documents would be reviewed and updated to reflect current site conditions and that a new Natural Heritage Report would be prepared following completion of the current field programs. Enbridge Gas also advised that the previously provided Environmental Report contained redactions related to names and personal information, rather than study findings, and asked SVS to confirm whether an unredacted version was still required.		
2.22	September 17, 2026	Email		An SVS representative emailed an Enbridge Gas representative regarding preparation of a technical review estimate on behalf of SNGR for the Project. SVS confirmed that an unredacted version of the Environmental Report was not required and requested information regarding the anticipated field programs, including scheduling and associated reporting.	
2.23	September 18, 2026	Email	An Enbridge Gas representative emailed the SVS representative regarding information requested to support preparation of a technical review estimate on behalf of SNGR for the Project. Enbridge Gas advised that a detailed schedule was not yet available; however, field programs were anticipated to begin in early October 2026 and continue through July-August 2027, with the Natural Heritage report anticipated in winter 2027-2028. Enbridge Gas further advised that archaeology reports would be prepared as early as possible to support SNGR review and submission to MCM, with the goal of receiving clearance prior to March 2028.		

Line item	Date	Method	Summary of Enbridge Activity	Summary of Community Activity	Issues or Concerns Raised & Responses
2.24	September 22, 2026	Email		An SNGR representative emailed the Enbridge Gas representative to provide a capacity funding estimate from a consultant.	
2.25	September 25, 2026	Email	A Stantec representative emailed SNGR representatives to advise that Stage 3 archaeological assessments were planned for several archaeological sites in support of the Project, that fieldwork may begin as early as October 5, 2026, and to invite members of SNGR to participate in the archaeological fieldwork. The Stantec representative advised that additional mobilization details would be provided once plans were finalized and requested that participation agreements or contracts be arranged through Enbridge Gas representatives copied on the email.		
2.26	September 25, 2026	Email		A SNGR representative emailed Stantec to acknowledge receipt of the Stage 3 archeology field visit information.	
2.27	September 28, 2026	Email		An SNGR representative emailed the Enbridge Gas representative to provide the 2026 Standard Archaeology Construction Monitor Agreement, requested that it be completed, signed, and returned as soon as possible for processing, advised that the standard agreement was not to be altered, and noted that any additional information could be included in an appendix.	
2.28	September 29, 2026	Email	An Enbridge Gas representative emailed the SNGR representative to provide a completed Archeology Construction Monitor Agreement for SNGRs signature.		
2.29	October 1, 2026	Email	A Stantec representative emailed SNGR representatives with mobilization details for upcoming Stage 3 archaeological fieldwork for the Project. Fieldwork was scheduled to begin on October 6, 2026. Stantec provided logistics, including the anticipated work period, archaeological site numbers, crew size, required PPE, start time, meeting location, and access and parking information. Stantec noted that access arrangements may change pending landowner confirmation, and that further updates would be provided as work progresses.		

Line item	Date	Method	Summary of Enbridge Activity	Summary of Community Activity	Issues or Concerns Raised & Responses
2.30	October 2, 2026	Email	An Enbridge Gas representative emailed the SNGR representatives with draft minutes of September 1, 2026, meeting for SNGR review. The email also provided updates to the Projects since the meeting, including an increase in the estimated area of tree loss. It gave the status of follow-up items from the meeting: a reminder that route rankings were included in the 2019 Draft Environmental Report, a link to which was provided to SNGR on August 7, 2026 (the email erroneously noted August 8), and the requested documents, namely the 2020 Draft Natural Heritage Report, Draft Spencer Creek Restoration Plan, and Draft Geomorphic Assessment. Enbridge Gas also acknowledged receipt of the request for capacity funding and noted its response, also on October 2, 2026, asking for minor edits and clarification on the SVS quote.		
2.31	October 2, 2026	Email	An Enbridge Gas representative emailed the SNGR representative regarding the capacity funding estimate for the Project. Enbridge Gas requested revisions to correct the scope period to May 2027, including a review of the Addendum to the draft Environmental Report (ER), and confirm that SVS would provide comments on the ER and Addendum within the 45-day review period. Enbridge Gas advised that once the requested revisions were made, it could approve the quote and provide funding.		
2.32	October 2, 2026	Email	An Enbridge Gas representative emailed the SNGR representative regarding the capacity funding quote for the Projects and requested clarification on certain fees. Enbridge Gas asked SNGR to confirm the calculations with SVS.		
2.33	October 5, 2026	Email	A Stantec representative emailed SNGR representatives with an update regarding site access for upcoming Stage 3 archaeological work for the Project. Stantec provided information from the Project lands agent regarding site access conditions and requested that the information be shared with SNGR staff participating in the work.		
2.34	October 6, 2026	Email	A Stantec representative emailed SNGR representatives regarding upcoming ecological surveys, inviting SNGR participation and requesting that monitoring agreements were in place with Enbridge Gas.		
2.35	October 7, 2026	Email		A SNGR representative requested that another SNGR representative be included in any discussions on all fieldwork.	
2.36	October 7, 2026	Email		The SNGR representative emailed the Enbridge Gas representative to add to the discussion on fieldwork saying an SNGR representative would be on site.	

Line item	Date	Method	Summary of Enbridge Activity	Summary of Community Activity	Issues or Concerns Raised & Responses
2.37	October 7, 2026	Email		An SNGR representative emailed the Enbridge Gas representative to return a signed monitoring agreement.	
2.38	October 8, 2026	Email	An Enbridge Gas representative emailed the SNGR representative to follow up regarding the October 2, 2026, email asking for edits to the SVS quote		
2.39	October 8, 2026	Email	An Enbridge Gas representative emailed the SNGR representative to follow up and confirm receipt of an October 2, 2026, email that included draft September 1, 2026, meeting notes and attachments.		
2.40	October 9, 2026	Email	A Stantec representative emailed a SNGR representative to advise that they can meet Stantec's ecological survey representative at 9:00 a.m. on October 14, 2026.		
2.41	October 9, 2026	Email	A Stantec archaeological representative emailed an SNGR representative to advise that the team would return to the same property the following week, aiming to be on site at 8:00 a.m. A Stantec representative advised that no fieldwork would occur on Monday, October 12, 2026, and that the team would be on site from Tuesday, October 13 through Friday, October 16, 2026.		
2.42	October 2026	Field Visit	On October 6, 7, 9, 13, 21, 28, 29, and 30, 2026, Stantec conducted Stage 3 archaeological assessment fieldwork associated with the Project. An SNGR representative attended the field program in an Indigenous monitoring or participation capacity. The activities were completed within the Project study area. To date, no concerns or recommendations were identified by the SNGR representative arising from the fieldwork.		
2.43	October 15, 2026	Email	A Stantec representative emailed an SNGR representative to advise that, due to forecasted rain overnight and the following morning, archaeological fieldwork for the Project would not occur on Friday, October 16, 2026. A Stantec representative advised that the team would return October 19 to 23, 2026, to resume Stage 3 activities.		

Line item	Date	Method	Summary of Enbridge Activity	Summary of Community Activity	Issues or Concerns Raised & Responses
2.44	October 20, 2026	Email		A SNGR representative emailed the Enbridge Gas representative confirming receipt of the October 2 email with meeting minutes and attachments. The SNGR representative also informed Enbridge Gas that in addition to the funding Enbridge Gas offered for an external consultant to assist with SNGR participation in the Project, SNGR was also seeking capacity funding for internal staff time.	
2.45	October 20, 2026	Email		A SNGR representative acknowledged receipt of the October 2, 2026, email from Enbridge Gas asking for edits to the SVS quote and proposal and indicated they would locate the updated quote and forward.	
2.46	October 20, 2026	Email		SNGR provided an updated quote from SVS incorporating the changes Enbridge Gas requested and correcting tax/calculation errors in the quote.	
2.47	October 21, 2026	Email	A Stantec archeological representative emailed an SNGR representative to advise that field staff had already been informed of access arrangements for Thursday and to ensure the same information was available if different staff were dispatched. A Stantec representative advised that the team would move to a different site and access the site area from an adjacent property. A Stantec representative advised that the lands agents identified an orange route for pickup driving only, a parking area just south of the tree stand where no hunting was occurring at that time, and a black walking route to the archaeology area through a break in the fence. A Stantec representative advised that cameras were located along the laneway to alert the landowner of activity on the property.		
2.48	October 21, 2026	Email		A SNGR representative emailed a Stantec representative thanking them.	
2.49	October 23, 2026	Email	An Enbridge Gas representative emailed the SNGR representatives regarding the upcoming October 29, 2026, Project meeting and asked SNGR to identify any items it would like included on the meeting agenda.		

Haudenosaunee Development Institute [HDI]

Line item	Date	Method	Summary of Enbridge Activity	Summary of Community Activity	Issues or Concerns Raised & Responses
3.0	July 6, 2026	Email	An Enbridge Gas representative emailed the HDI representative to provide the Notice of Upcoming Environmental Study and Memo. Enbridge Gas advised that capacity funding was available for HDI to support technical review, fieldwork participation, and meaningful consultation, and invited questions or a meeting to discuss the Project. The Notice provided information regarding the proposed Project, Environmental Study, anticipated regulatory process, consultation, and engagement. The Memo outlined the Project, regulatory process, environmental and archaeological studies, potential impacts and mitigation measures, and opportunities for Indigenous input and participation in future fieldwork.		
3.1	August 4, 2026	Email	An Enbridge Gas representative emailed the HDI representative to invite participation in a virtual information session to be held between August 17 and August 31, 2026, regarding the study. The representative explained that feedback from the virtual information session would help confirm a preferred route and inform mitigation plans, provided contact information for the Project Manager at Dillon, and asked HDI to indicate whether it wished to participate in the session or provide comments directly on the materials provided. Comments were requested by September 15, 2026.		
3.2	August 6, 2026	Email	An Enbridge Gas representative emailed the HDI representatives to advise of a corrected web address for the virtual information session and attached a revised notice containing the web address.		
3.3	September 4, 2026	Email	An Enbridge Gas representative emailed the HDI representative to follow up on an offer to meet and discuss the Project. The Enbridge Gas representative provided virtual open-house slides and questionnaires, invited comments directly if preferred, requested available meeting dates, and advised that capacity funding was available to support HDI’s participation.		
3.4	September 10, 2026	Email	An Enbridge Gas representative emailed the HDI representative to provide notification of the proposed Project and advised that a notification letter was attached. The letter described the Project and preliminary work undertaken, including potential authorizations that may be required. Enbridge Gas confirmed that capacity funding was available to support HDI’s participation and advised that Enbridge Gas was available to meet at any time during the Project development process. The letter also advised that an Environmental Report (ER) would be prepared in accordance with the OEB’s Environmental Guidelines, with completion anticipated in Q1 2027, and provided Enbridge Gas contact information for further discussion.		

Line item	Date	Method	Summary of Enbridge Activity	Summary of Community Activity	Issues or Concerns Raised & Responses
3.5	September 25, 2026	Email	A Stantec representative emailed an HDI representative to advise that Stage 3 archaeological assessments were planned for several archaeological sites in support of the Project. The Stantec representative advised that fieldwork could begin as early as October 5, 2026, invited HDI team members to participate in the archaeological fieldwork, noted that mobilization details would be provided once confirmed, and requested that participation agreements or contracts be arranged with Enbridge Gas representatives.		
3.6	October 6, 2026	Email	The Stantec representative emailed the HDI representative to inform of ecological surveys expected to take place October 14-16, 2026, asking to coordinate an agreement with Enbridge Gas if there is interest in participating.		
3.7	October 7, 2026	Email	The Stantec representative corrected the October 6, 2026 email in which the incorrect project was named for upcoming ecological surveys.		
3.8	October 9, 2026	Email	Stantec representative provided meeting location and time for October 14, 2026, ecological fieldwork.		

Appendix C Existing Conditions

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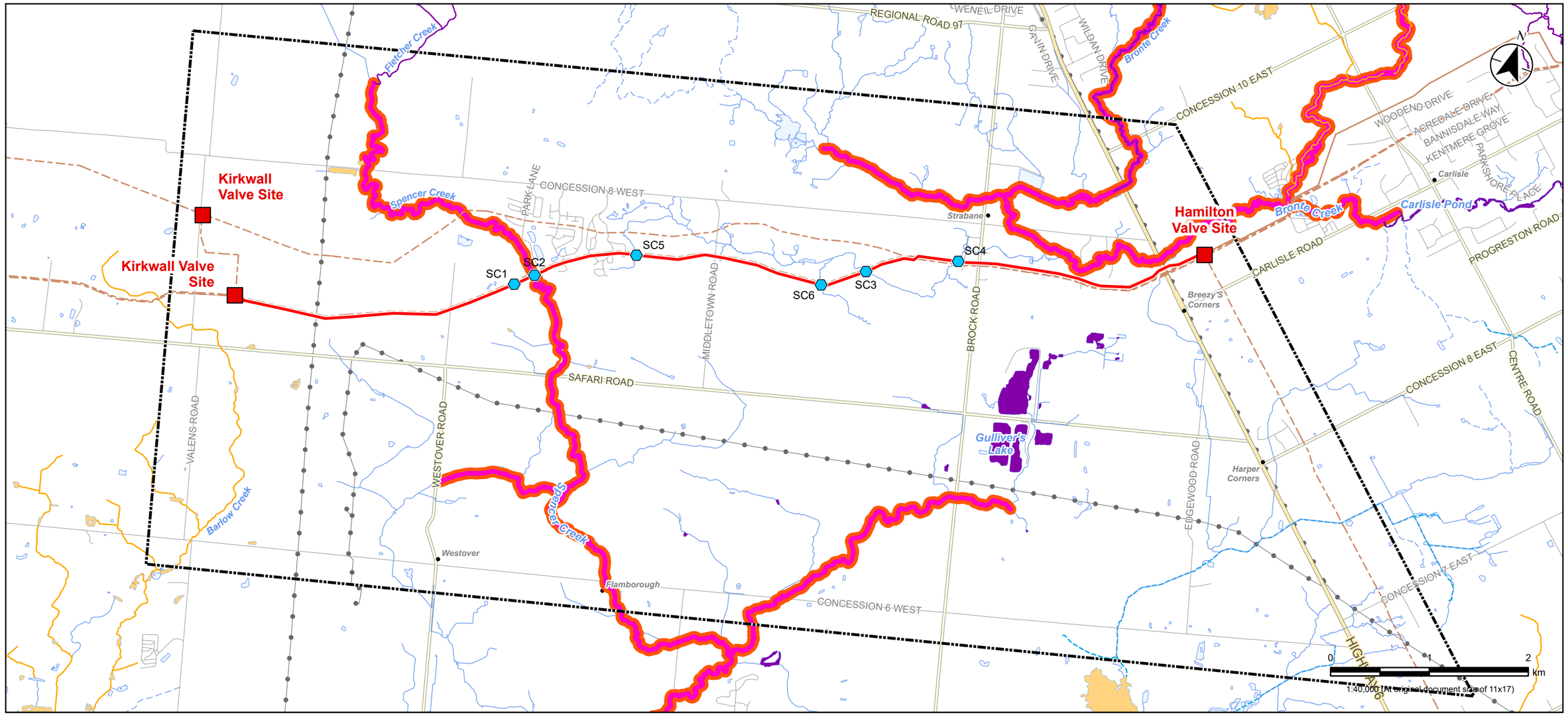

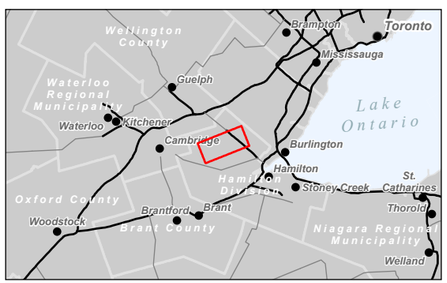

Legend

- Watercourse Crossing
- Constructed Drain
- Watercourse Thermal Regime, Cold
- Watercourse Thermal Regime, Warm
- Watercourse (Intermittent)
- Watercourse (Permanent)
- Aquatic Species at Risk - Endangered
- Aquatic Species at Risk Critical Habitat
- Waterbody Thermal Regime, Cold
- WaterbodyThermal Regime, Warm
- Waterbody

Project Components

- Enbridge Station/Valve
- Proposed Pipeline
- Existing Pipeline
- Study Area

Base Data

- Expressway / Highway
- Major Road
- Minor Road
- Hydro Line

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Contains information licensed under the Open Government Licence – Ontario, and the Open Government Licence - Canada, accessed 2026.
3. Additional unmarked water crossings will require field verification.

Stantec

Project Location
Hamilton, ON

REVA
Prepared by AWhite on 2026-11-05
Technical Review By MKnight on 2026-10-05

Client/Project
ENBRIDGE GAS INC.
DAWN PARKWAY RENEWAL PROGRAM
KIRKWALL TO HAMILTON: ADDENDUM TO THE 2019 ENVIRONMENTAL REPORT

Figure No.
1

Title
Potential Watercourse Crossings

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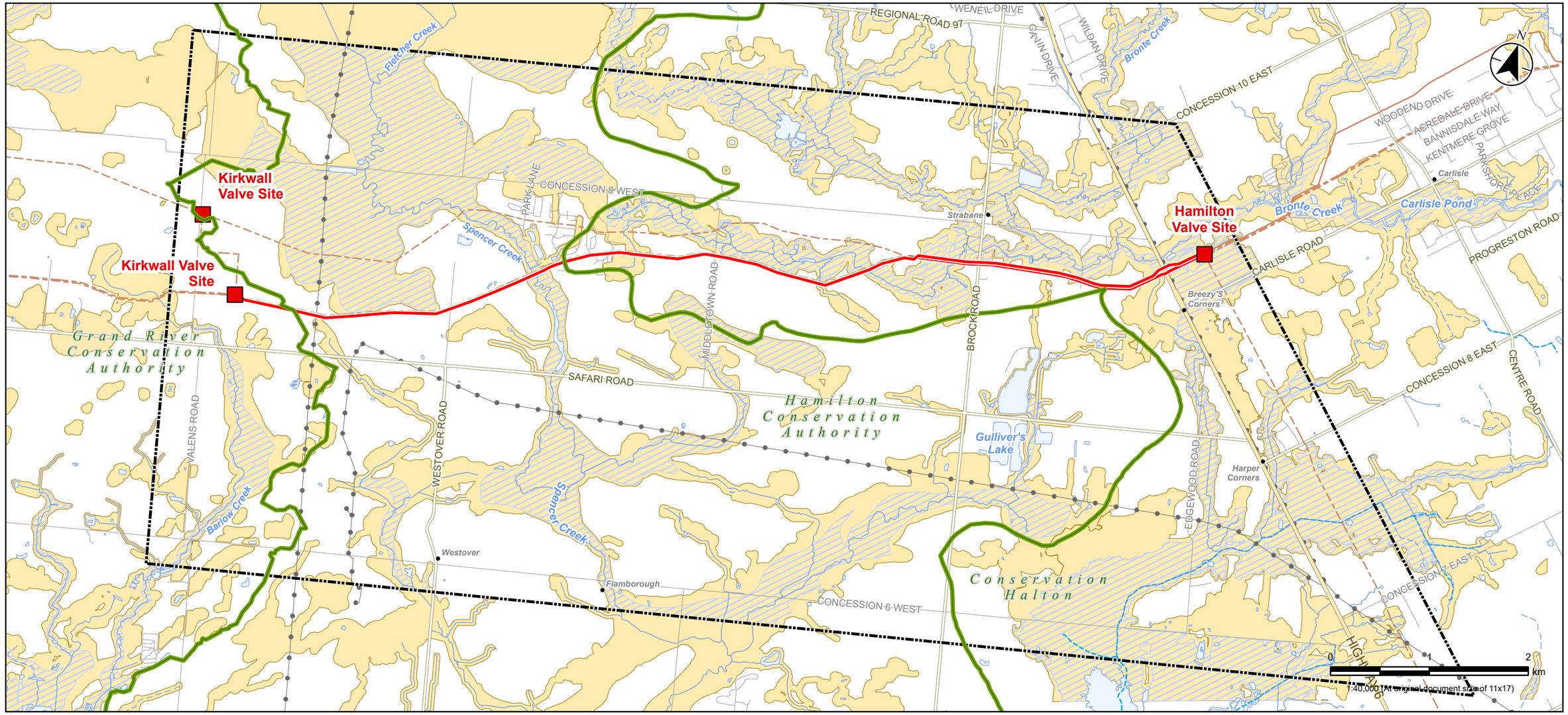
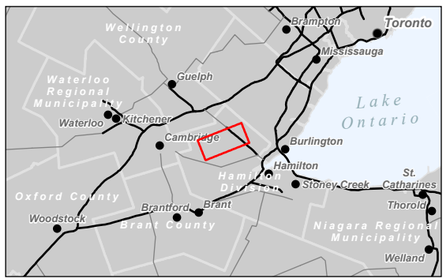
Disclaimer: This document has been prepared based on information provided by third parties as cited in the Notes section. Stantec has not verified the accuracy, timeliness and/or completeness of this information and is not responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy, timeliness and completeness of the data. The recipient releases Stantec, its affiliates, officers, employees, consultants and agents, from any and all claims arising in any way from its use of, or reliance upon, the content contained herein.





Legend

- Conservation Authority Administrative Boundary
- Areas Affected by Conservation Authority Regulations - Subject to Change
- Regulated Flood Plain - Subject to Change

Project Components

- Enbridge Station/Valve
- Proposed Pipeline
- Existing Pipeline
- Study Area

Base Data

- Expressway / Highway
- Major Road
- Minor Road
- Hydro Line
- Constructed Drain
- Watercourse (Intermittent)
- Watercourse (Permanent)
- Waterbody

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Contains information licensed under the Open Government Licence – Ontario, and the Open Government Licence - Canada, accessed 2026.

Stantec

Project Location
Hamilton, ON

REVA
Prepared by AWhite on 2026-11-02
Technical Review By MKnight on 2026-10-05

Client/Project
ENBRIDGE GAS INC.
DAWN PARKWAY RENEWAL PROGRAM: KIRKWALL TO HAMILTON: ADDENDUM TO THE 2019 ENVIRONMENTAL REPORT

Figure No.
2

Title
Floodplain and Regulation Limit

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Appendix D Terrestrial Habitat

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Table D-1 Significant Wildlife Habitat Assessment in Proximity to Proposed Pipeline Route (Ecoregion 6E)

Seasonal Concentration Areas

Wildlife Habitat Type	Criteria	Methods	Habitat Assessment
Waterfowl Stopover and Staging Area (Terrestrial and Aquatic)	**Terrestrial:** Field with sheet water during spring (mid March to May). Fields flooding during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl. Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available. **Aquatic:** Ponds, marshes, lakes, bays, coastal inlets and watercourses used during migration. These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water). Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify.	ELC surveys, wildlife habitat assessments, and air photo interpretation will be used to assess features in proximity to the proposed pipeline route that may support waterfowl stopover and staging areas.	**Candidate:** Ponds present in proximity to the proposed pipeline route and spring flooding may occur at Westover Road based on spring aerial photography. Habitat assessment to be completed during 2026-2027 field investigations.
Shorebird Migratory Stopover Area	Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. Great Lakes coastal shorelines, including groynes and other forms of amour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. Sewage treatment ponds and storm water ponds do not qualify as a SWH.	ELC surveys and air photo interpretation will be used to assess features in proximity to the proposed pipeline route that may support migratory shorebirds.	**Absent:** This SWH is considered absent due to natural unvegetated shoreline habitat being absent in proximity to the proposed pipeline route.

Wildlife Habitat Type	Criteria	Methods	Habitat Assessment
Raptor Wintering Area	The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. Raptor wintering (hawk/owl) sites need to be > 20 ha with a combination of forest and upland. Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands Field area of the habitat is to be wind swept with limited snow depth or accumulation. Eagle sites have open water and large trees and snags available for roosting.	ELC surveys and air photo interpretation will be used to assess features in proximity to the proposed pipeline route that may support wintering raptors.	**Candidate:** Suitable upland forested and pasture habitat (>20 ha) may occur west of Middletown Road adjacent to forested areas. Assessment of upland habitat suitability to be completed during 2026-2027 field investigations.
Bat Hibernacula	Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. Active mine sites should not be considered as SWH. The locations of bat hibernacula are relatively poorly known.	ELC surveys, wildlife habitat assessments, and air photo interpretation will be used to assess features in proximity to the proposed pipeline route that may support bat hibernacula.	**Absent:** This SWH is considered absent due to crevices, caves or abandoned mines being absent in proximity to the proposed pipeline route.
Bat Maternity Colonies	Maternity colonies can be found in tree cavities, vegetation and often in buildings (buildings are not considered to be SWH). Maternity roosts are not found in caves and mines in Ontario. Maternity colonies located in mature deciduous or mixed forest stands with >10/ha large diameter (>25cm diameter at breast height [DBH]) wildlife trees. Female bats prefer wildlife tree (snags) in early stages of decay, class 1-3 or class 1 or 2. Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred.	ELC surveys, wildlife habitat assessments, and air photo interpretation will be used to assess features in proximity to the proposed pipeline route that may support bat maternity colonies.	**Candidate:** Forest habitat is present in proximity to the proposed pipeline route which may support bat maternity colonies. Habitat assessment to be completed during 2026-2027 field investigations.
Turtle Wintering Areas	For most turtles, wintering areas are in the same general area as their core habitat. Water must be deep enough not to freeze and have soft mud substrates. Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate dissolved oxygen. Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH.	ELC surveys, wildlife habitat assessments, and air photo interpretation will be used to assess features in proximity to the proposed pipeline route that may support areas of permanent standing water but not deep enough to freeze.	**Candidate:** Wetlands and waterbodies present in proximity to the proposed pipeline route that may provide suitable overwintering habitat. Habitat assessment to be completed during 2026-2027 field investigations.

Wildlife Habitat Type	Criteria	Methods	Habitat Assessment
Reptile Hibernaculum	For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural or naturalized locations. The existence of features that go below frost line, such as rock piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH. Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line. Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. Five-lined Skink (*Plestiodon fasciatus*) prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures	ELC surveys and wildlife habitat assessments will be used to document features in proximity to the proposed pipeline route that may support snake hibernacula.	**Candidate:** Suitable habitat may be present near the proposed pipeline route in the forested, agricultural, and urban areas where rock piles or foundations may be present. To be determined during 2026-2027 field investigations.
Colonial-Nesting Bird Breeding Habitat (Bank and Cliff)	Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area such as Cliff faces, bridge abutments, silos, and barns. Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. Does not include a licensed/permitted Mineral Aggregate Operation.	ELC surveys, wildlife habitat assessments, and air photo interpretation will be used to assess features in proximity to the proposed pipeline route that may support colonial bird breeding habitat.	**Candidate:** Suitable habitat may be present near watercourses crossing the proposed pipeline route where eroding banks may be present. To be determined during 2026-2027 field investigations.
Colonial-Nesting Bird Breeding Habitat (Tree/Shrubs)	Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. Most nests in trees are 11 to 15 m from ground, near the top of the tree.	ELC surveys and wildlife habitat assessments will be used to assess features in proximity to the proposed pipeline route that may support colonial bird breeding habitat (Trees/Shrubs).	**Candidate:** GEO identified the presence of mixed wader nesting colonies (MNR 2026a). To be confirmed during 2026-2027 field investigations.
Colonial-Nesting Bird Breeding Habitat (Ground)	Nesting colonies of gulls and terns are on islands or peninsulas (natural or artificial) associated with open water, marshy areas. Brewer's Blackbird (*Euphagus cyanocephalus*) colonies are found loosely on the ground or in low bushes in close proximity to streams and irrigation ditches within farmlands.	ELC surveys wildlife habitat assessments, and air photo interpretation will be used to assess features in proximity to the proposed pipeline route that may support colonial bird breeding habitat (Ground).	**Candidate:** GEO identified the presence of colonial waterbird nesting area (MNR 2026a). To be confirmed during 2026-2027 field investigations.

Wildlife Habitat Type	Criteria	Methods	Habitat Assessment
Migratory Butterfly Stopover Areas	A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present and will be located within 5 km of Lake Erie or Lake Ontario. The habitat is typically a combination of field and forest and provides the butterflies with a location to rest prior to their long migration south. The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat. Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes.	GIS analysis was used to measure distance from the Lake Ontario shoreline.	**Absent:** This SWH is considered absent due to the Study Area not being located within 5 km of Lake Ontario.
Landbird Migratory Stopover Areas	Woodlots need to be >10 ha in size and within 5 km of Lake Ontario. If multiple woodlands are located along the shoreline those Woodlands <2 km from Lake Ontario are more significant. Sites have a variety of habitats, forest, grassland and wetland complexes. The largest sites are more significant. Woodlots and forest fragments are important habitats to migrating birds. These features located along the shore and located within 5km of Lake Erie and Lake Ontario are Candidate SWH.	GIS analysis was used to measure distance from the Lake Ontario shoreline.	**Absent:** This SWH is considered absent due to the Study Area not being located within 5 km of Lake Ontario.

Wildlife Habitat Type	Criteria	Methods	Habitat Assessment
Deer Winter Congregation Areas	Deer yarding areas or winter concentration areas (yards) are areas deer move to in response to the onset of winter snow and cold. This is a behavioural response and deer will establish traditional use areas. The yard is composed of two areas referred to as Stratum I and Stratum II. Stratum II covers the entire winter yard area and is usually a mixed or deciduous forest with plenty of browse available for food. Agricultural lands can also be included in this area. Deer move to these areas in early winter and generally, when snow depths reach 20 cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30 cm snow depth. In mild winters, deer may remain in the Stratum II area the entire winter. The Core of a deer yard (Stratum I) is located within the Stratum II area and is critical for deer survival in areas where winters become severe. It is primarily composed of coniferous trees (pine, hemlock, cedar, spruce) with a canopy cover of more than 60%. MNR determines deer yards following methods outlined in “Selected Wildlife and Habitat Features: Inventory Manual." Woodlots with high densities of deer due to artificial feeding are not significant.	The GEO database and MNR consultation were used to identify deer winter congregation areas (MNR 2026a).	**Present:** Large deer wintering area associated with the Beverly Swamp and adjacent woodlands identified within proximity to the proposed pipeline route (MNR 2026a).

Rare Vegetation Communities

Wildlife Habitat Type	Criteria	Methods	Habitat Assessment
Sand Barren, Alvar, Cliffs and Talus Slopes	**Sand Barren:** A sand barren area >0.5ha in size. Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. Usually located within other types of natural habitat such as forest or savannah. Vegetation can vary from patchy and barren to tree covered, but less than 60%. **Alvar:** An Alvar site > 0.5 ha in size. An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plants. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or relict plant and animal species. Vegetation cover varies from patchy to barren with a less than 60% tree cover. **Cliff and Talus Slopes:** Most cliff and talus slopes occur along the Niagara Escarpment. A Cliff is vertical to near vertical bedrock >3m in height. A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris.	ELC surveys and air photo interpretation were used to assess vegetation communities in proximity to the proposed pipeline route.	To be determined during 2026-2027 field investigations.
Old-growth Forest	Woodland areas 30 ha or greater in size or with at least 10 ha interior habitat assuming 100 m buffer at edge of forest. Old-growth forests are characterized by heavy mortality or turnover of over-storey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	ELC surveys and air photo interpretation were used to assess vegetation communities in proximity to the proposed pipeline route.	To be determined during 2026-2027 field investigations.

Wildlife Habitat Type	Criteria	Methods	Habitat Assessment
Tallgrass Prairie and Savannah	**Tallgrass Prairie:** No minimum size to site. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. A tallgrass prairie has ground cover dominated by prairie grasses. An open tallgrass prairie habitat has < 25% tree cover. **Savannah:** No minimum size to site. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. A savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%.	ELC surveys and air photo interpretation were used to assess vegetation communities in proximity to the proposed pipeline route.	To be determined during 2026-2027 field investigations.
Other Rare Vegetation Communities	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps. ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in appendix M of the Significant Wildlife Habitat Technical Guide (SWHTG). The MNR/NHIC will have up to date listing for rare vegetation communities.	ELC surveys and air photo interpretation will be used to assess vegetation communities in proximity to the proposed pipeline route.	To be determined during 2026-2027 field investigations.

Specialized Habitat for Wildlife

Wildlife Habitat Type	Criteria	Methods	Habitat Assessment
Waterfowl Nesting Area	A waterfowl nesting area extends 120 m from a wetland (> 0.5 ha) or a wetland (>0.5ha) and any small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each individual wetland where waterfowl nesting is known to occur. Upland areas should be at least 120 m wide so that predators such as raccoons, skunks, and foxes have difficulty finding nests. Wood Ducks (*Aix sponsa*) and Hooded Mergansers (*Lophodytes cucullatus*) utilize large diameter trees (>40 cm DBH) in woodlands for cavity nest sites.	ELC surveys, wildlife habitat assessment, and air photo interpretation will be used to assess features in proximity to the proposed pipeline route that may support nesting waterfowl.	**Candidate:** Suitable habitat may be present near the proposed pipeline route in the upland areas near the wetland areas. To be determined during 2026-2027 field investigations.

Wildlife Habitat Type	Criteria	Methods	Habitat Assessment
Bald Eagle and Osprey nesting, Foraging, and Perching Habitat	Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. Osprey (*Pandion haliaetus*) nests are usually at the top of a tree whereas Bald Eagle (*Haliaeetus leucocephalus*) nests are typically in super canopy trees in a notch within the tree's canopy. Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms).	ELC surveys, wildlife habitat assessments, air photo interpretation and wildlife habitat assessment will be used to assess features in proximity to the proposed pipeline route that may support nesting, foraging and perching habitat for large raptors.	**Candidate:** Suitable habitat may be present near the proposed pipeline route in the forested areas near the wetland areas. To be determined during 2026-2027 field investigations.
Woodland Raptor Nesting Habitat	All natural or conifer plantation woodland/forest stands >30ha with >10ha of interior habitat. Interior habitat determined with a 200m buffer. Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Cooper's Hawk (*Accipiter cooperii)* nest along forest edges sometimes on peninsulas or small off-shore islands. In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nests.	ELC surveys, wildlife habitat assessment, and GIS analysis were used to assess features in proximity to the proposed pipeline route that may support nesting habitat for woodland raptors.	**Candidate:** Suitable forests (i.e., >10 ha of interior habitat) present within proximity to the proposed pipeline route. To be determined during 2026-2027 field investigations.
Turtle Nesting Areas	Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. For an area to function as a turtle nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used.	ELC surveys, wildlife habitat assessment, and air photo interpretation will be used to assess features in proximity to the proposed pipeline route that may support turtle nesting areas.	**Candidate:** Suitable habitat may be present near the proposed pipeline route in the more open areas near the wetland areas. To be determined during 2026-2027 field investigations.
Seeps and Springs	Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system. Seeps and springs are important feeding and drinking areas especially in the winter and will typically support a variety of plant and animal species.	Surveys and air photo interpretation will be used to assess areas/features of groundwater upwelling, including seeps and springs.	**Candidate:** To be determined during 2026-2027 field investigations.

Wildlife Habitat Type	Criteria	Methods	Habitat Assessment
Amphibian Breeding Habitat (Woodland and Wetland)	**Amphibian Breeding Habitat (Woodland):** Presence of a wetland, lake or pond of area >500m^2 (about 25m diameter) within or adjacent (within 120m) to a woodland (no minimum size). The wetland, lake or pond and surrounding forest, would be the candidate SWH. Some small wetlands may not be mapped and may be important breeding pools for amphibians. Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat. **Amphibian Breeding Habitat (Wetland):** Wetlands >500m^2 (about 25m diameter), supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNR mapping and could be important amphibian breeding habitats. Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. American Bullfrogs (*Lithobates catesbeianus*) require permanent water bodies with abundant emergent vegetation.	ELC surveys and wildlife habitat assessments will be used to assess features in proximity to the proposed pipeline route that may support woodland breeding amphibians.	**Candidate:** Suitable habitat may be present near the proposed pipeline route in the surrounding woodland and wetland habitats. To be determined during 2026-2027 field investigations.
Woodland Area-sensitive Bird Breeding Habitat	Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs old) forest stands or woodlots >30 ha. Interior forest habitat is at least 200 m from forest edge habitat.	ELC surveys, wildlife habitat assessments, air photo interpretation, and GIS analysis were used to determine whether woodlots that occurred in proximity to the proposed pipeline route that were >30 ha with interior habitat present (>200 m from edge).	**Candidate:** Suitable forests (i.e., >30 ha with interior habitat) present in proximity to the proposed pipeline route. To be determined during 2026-2027 field investigations.

Habitat For Species of Conservation Concern

Wildlife Habitat Type	Criteria	Methods	Habitat Assessment
Marsh Bird Breeding Habitat	Nesting occurs in wetlands. All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present. For Green Heron (*Butorides virescens*), habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water.	ELC surveys wildlife habitat assessments, and air photo interpretation were used to identify marshes with shallow water and emergent vegetation in proximity to the proposed pipeline route that may support marsh breeding birds.	**Candidate:** Suitable habitat may be present near the proposed pipeline route in the marsh wetland habitats. To be determined during 2026-2027 field investigations.
Open Country Bird Breeding Habitat	Large grassland areas (including natural and cultural fields and meadows) >30 ha. Grasslands not Class 1 or 2 agricultural lands and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years). Grasslands sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older. The indicator bird species are area sensitive requiring larger grassland areas than the common grassland species.	ELC surveys, wildlife habitat assessments, air photo interpretation, and GIS analysis were used to identify grassland communities in proximity to the proposed pipeline route that may support area-sensitive breeding birds.	**Candidate:** This SWH is considered likely absent due to the lack of large grasslands and field >30 ha. To be determined during 2026-2027 field investigations.
Shrub/Early Successional Bird Breeding Habitat	Large field areas succeeding to shrub and thicket habitats >10 ha in size. Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no row-cropping, haying or live-stock pasturing in the last 5 years). Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species. Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands.	ELC surveys, wildlife habitat assessments, air photo interpretation, and GIS analysis were used to identify large communities that may support shrub/early successional breeding birds.	**Candidate:** Suitable habitat may be present near the proposed pipeline route in the surrounding thicket habitats. To be determined during 2026-2027 field investigations.
Terrestrial Crayfish	Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish. Constructs burrows in marshes, mudflats, meadows, the ground can’t be too moist. Can often be found far from water. Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually, the soil is not too moist so that the tunnel is well formed.	ELC surveys were used to identify shallow marsh and meadow marsh communities that occurred in proximity to the proposed pipeline route; searches for crayfish chimneys will be conducted during wildlife habitat assessments.	**Candidate:** Suitable habitat may be present near the proposed pipeline route in the surrounding wetland habitats. To be determined during 2026-2027 field investigations.

Wildlife Habitat Type	Criteria	Methods	Habitat Assessment
Special Concern and Rare Wildlife Species	When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially rare species; linking candidate habitat on the site needs to be completed to ELC ecosites.	ELC surveys, wildlife habitat assessment, and air photo interpretation will be used to assess features in proximity to the proposed pipeline route that may support SOCC.	**Candidate:** Candidate habitat for SOCC to be assessed during 2026-2027 field investigations

Animal Movement Corridors

Wildlife Habitat Type	Criteria	Methods	Habitat Assessment
Amphibian Movement Corridor	Movement corridors between breeding habitat and summer habitat. Movement corridors must be determined when Amphibian breeding habitat - wetland is confirmed as SWH. Corridors may be found in all ecosites associated with water.	Identified after Amphibian Breeding Habitat - Wetland is confirmed. Movement corridors should be considered when amphibian breeding habitat is confirmed as SWH from Amphibian Breeding Habitat (Wetland).	**Candidate:** Amphibian movement corridors are likely present along watercourses in proximity to the proposed pipeline route.
Deer Movement Corridor	Movement corridor must be determined when Deer Wintering Habitat is confirmed as SWH. Corridors may be found in all forested ecosites.	Movement corridors should be considered when Deer Wintering Areas are identified.	**Candidate:** Deer movement corridor anticipated to/from the Deer Wintering Area to the west along hedgerows, east along Spencer Creek, and south along riparian vegetation.

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Table D-2 Habitat Potential for Species at Risk in Proximity to the Proposed Pipeline Route

Plants

Species	Habitat Preference	Habitat Potential
American Chestnut (*Castanea dentata)*	Grows in rich mixed and deciduous forests, frequently with oak; most populations have been decimated by chestnut blight (Nixon 1997). Typical habitat is upland deciduous forest on acid to neutral, sandy soil (COSEWIC 2004).	Suitable habitat for the species may be present in proximity to the proposed pipeline route where deciduous forests occur. A botanical inventory will be completed in 2026-2027 to confirm species presence or absence.
American Columbo (*Frasera caroliniensis)*	Occurs in a variety of habitats but is most commonly associated with dry open forested slopes but can be found in clearings and thickets as well as swampy areas; Its long-life span may allow for persistence in sub-optimal habitats (COSEWIC 2006). Grows in dry to moist deciduous forests and openings (Reznicek et al. 2011).	Suitable habitat for the species may be present in proximity to the proposed pipeline route where openings occur in thickets or deciduous forests. A botanical inventory will be completed in 2026-2027 to confirm species presence or absence.
Black Ash (*Fraxinus nigra)*	Black Ash occurs as a pure stand or in mixed stands with Black Spruce (*Picea mariana*), Balsam Fir (*Abies balsamea*), Eastern White Cedar (*Thuja occidentalis*), Speckled Alder (*Alnus incana* ssp. Rugosa), Red Maple (*Acer rubrum*), and Silver Maple (*Acer saccharinum*); tolerates standing water, intolerant of shade. (Farrar 1995).	Suitable habitat for the species may be present in proximity to the proposed pipeline route in the surrounding wetland habitats. A botanical inventory will be completed in 2026-2027 to confirm species presence or absence.
Butternut (*Juglans cinerea)*	Butternut is a medium-sized tree commonly found in a variety of habitats throughout Southern Ontario, including woodlands and hedgerows. Ideal habitat includes rich, moist, and well-drained soils often found along streams, but may also be found on well-drained gravel sites, particularly those made of limestone (COSEWIC 2003). Butternut is intolerant of shade and occurs singly or in small groups with a variety of associates (Farrar 1995).	Suitable habitat exists for this species may be present in proximity to the proposed pipeline route within any deciduous or mixed woodlands and hedgerows. A botanical inventory will be completed in 2026-2027 to confirm species presence or absence.
Downy Yellow False Foxglove (*Aureolaria virginica)*	Found in dry woods with pine (*Pinus sp.*), hickory (*Carya sp.*), and/or oak (*Quercus sp*,; Reznicek et al. 2011). At the extant Ontario sites, this species is also associated with various combinations of Black Oak (*Quercus velutina*), Northern Red Oak (*Quercus rubra*) and White Oak (*Quercus alba*), with white oak being present at every site. (NHIC 2012).	Suitable habitat for the species may be present in proximity to the proposed pipeline route in more upland forested habitats. A botanical inventory will be completed in 2026-2027 to confirm species presence or absence.
Eastern Flowering Dogwood (*Cornus florida)*	Eastern Flowering Dogwood is an understory plant of dry to fresh deciduous and mixed forests, which frequently grows on the tops of slopes or other dry microsites, and occasionally in moister areas where no flooding occurs; preferred soils range from sand to sandy loam and clay loam (COSEWIC 2007)	Suitable habitat exists for this species may be present in proximity to the proposed pipeline route within any deciduous or mixed woodlands. A botanical inventory will be completed in 2026-2027 to confirm species presence or absence.
Fern-leaved Yellow False Foxglove (*Aureolaria pedicularia)*	Fern-leaved Yellow False Foxglove is found in Oak, oak-pine, and oak-hickory savanna, including old, forested dunes; transition zones between savanna and marsh. This species appears very associated to the presence of Black Oaks (Rezniek et.al. 2011).	Suitable habitat for the species may be present in proximity to the proposed pipeline route around the upland forested habitats and transition zones between the meadow and marsh habitats. A botanical inventory will be completed in 2026-2027 to confirm species presence or absence.

Species	Habitat Preference	Habitat Potential
Few-flowered Club-rush (*Trichophorum planifolium)*	Few-flowered Club-rush requires open-canopied forest with little shrub cover and excellent drainage (Crins 1986). It is found on semi-open south- or west-facing slopes in deciduous and mixed woods. It is only known to occur in southern Ontario in the valley of the Rouge River in the eastern region of Metropolitan Toronto and in Hamilton (COSEWIC 2000).	Suitable habitat for the species may be present in proximity to the proposed pipeline route. A botanical inventory will be completed in 2026-2027 to confirm species presence or absence.
Red Mulberry (*Morus rubra)*	Red Mulberry occurs in moist forests habitats including river valleys, floodplains, swales, sandspits, and slopes of the Niagara Escarpment (COSEWIC 2014b).	Suitable habitat exists for this species may be present in proximity to the proposed pipeline route within moist forests and thickets. A botanical inventory will be completed in 2026-2027 to confirm species presence or absence.
Spotted Wintergreen (*Chimaphila maculata)*	Occurs in a variety of forested habitats including coniferous, mixed, and deciduous forests, as well as dry sand communities (Freeman 2009).	Suitable habitat for the species may be present in proximity to the proposed pipeline route. A botanical inventory will be completed in 2026-2027 to confirm species presence or absence.

Insects

Species	Habitat Preference	Habitat Potential
Gypsy Cuckoo Bumble Bee (*Bombus bohemicus)*	Gypsy Cuckoo Bumble Bees are found in various habitats such as meadows, woodlands, boreal forest, and agricultural and urban areas (MNR 2026c). They are generalist foragers but are associated with flowering plants in wooded areas and blueberry fields (COSEWIC 2014a). They do not build nests but are obligate parasites of other bumblebee species (e.g. Rusty-patched [*Bombus affinis*] and Yellow-banded Bumble Bees [*Bombus terricola*]) and have been found in the same habitat as their hosts, which nest in abandoned underground rodent burrows (MNR 2026c). Their preferred overwintering habitat is unknown but bumble bees generally overwinter underground, in mulch, and in rotting logs near nest sites (COSEWIC 2014a).	Suitable habitat for this species may be present in proximity to the proposed pipeline route within the open meadow, woodland, agricultural, and urban habitats where nectaring flowers are present. A habitat assessment and surveys will be completed in 2026-2027.

Reptiles

Species	Habitat Preference	Habitat Potential
Blanding's Turtle (*Emydoidea blandingii*)	Blanding's Turtles frequent lakes, ponds, and marshes, and prefer shallow water with abundant aquatic vegetation and a soft bottom (MacCulloch 2002). Nesting occurs in dry conifer or mixed hardwood forests, up to 410 m from any body of water, in loose substrates including sand, organic soil, gravel and cobblestone. Turtles may also nest along gravel roadways (COSEWIC 2005).	Suitable habitat for this species may be present in proximity to the proposed pipeline route within the PSWs. A habitat assessment and surveys will be completed in 2026-2027.
Spiny Softshell (*Apalone spinifera*)	Found along lakes and large rivers. Requires sandy beaches or riverbanks for nesting, shallow soft-bottomed water bodies to function as nurseries or refugia, basking areas and deep pools for thermoregulation, and riffle areas for foraging (COSEWIC 2002).	This species is associated with the Sydenham and Thames Rivers and not known to occur in proximity to the proposed pipeline route. Suitable habitat for this species is considered absent in proximity to the proposed pipeline route.

Amphibians

Species	Habitat Preference	Habitat Potential
Jefferson Salamander (*Ambystoma jeffersonianum*)	The Jefferson Salamander is terrestrial during the adult stage and inhabits upland deciduous forests with suitable breeding areas including limestone sinkhole ponds, kettle ponds, vernal pools and other natural basins. Breeding areas are often ephemeral and are fed by spring runoff, groundwater, or springs. In Canada, the species is associated with mature, Carolinian forests. Suitable habitat is often only available in fragmented deciduous woodlots of marginal agricultural land (COSEWIC 2010).	This species is not known to occur in proximity to the proposed pipeline route (Ontario Nature 2019). Suitable habitat for this species is considered absent in proximity to the proposed pipeline route.
Unisexual Ambystoma (Jefferson Salamander dependent population) (*Ambystoma laterale – (2) jeffersonianum*)	The Unisexual Ambystoma are found near or within deciduous or mixed-wood upland forests that contain suitable breeding ponds (e.g. limestone sinkhole ponds, kettle ponds, and other natural basins). Breeding areas are often ephemeral and are fed by spring runoff, groundwater, or springs. This species is found in the same habitat as Jefferson Salamander, who they use as sperm donors to complete their life cycle (COSEWIC 2016). Outside of the breeding season, this species lives in leaf litter, under logs, and in underground cavities close to their breeding habitats. Mammal burrows, rock crevices, or underground cavities below the frost line are used to overwinter (MNR 2026c).	This species is not known to occur in proximity to the proposed pipeline route (Ontario Nature 2019). Suitable habitat for this species is considered absent in proximity to the proposed pipeline route.

Mammals

Species	Habitat Preference	Habitat Potential
Eastern Red Bat (*Lasiurus borealis)*	The Eastern Red Bat is a solitary, tree dwelling species that roosts in deciduous and coniferous forests. Maternity roosts tend to be in tall, large diameter trees (COSEWIC 2023).	Suitable maternity roosting habitat may be present in forested areas along the proposed pipeline route. Candidate maternity roost trees will be identified within suitable ELC communities. Limits of clearing to be determined in 2026-2027.
Eastern Small-footed Myotis (*Myotis leibii)*	The Eastern Small-footed Myotis hibernates in the fall in caves and abandoned mines. During summer months, this species roosts in crevices and cracks associated with rocky sites but may also use old buildings (e.g., barns, and houses) (Humphrey 2017).	Suitable roosting habitat may be available in barns and old structures; however, no structures are proposed for removal. Suitable maternity roosting habitat may also be present in forested areas along the proposed pipeline route. Candidate maternity roost trees will be identified within suitable ELC communities. Limits of clearing to be determined in 2026-2027.
Hoary Bat (*Lasiurus cinereus)*	The Hoary Bat is a solitary, tree dwelling species that roosts in deciduous and coniferous forests. Maternity roosts tend to be located in tall, large diameter trees (COSEWIC 2023).	Suitable maternity roosting habitat may be present in forested areas along the proposed pipeline route. Candidate maternity roost trees will be identified within suitable ELC communities. Limits of clearing to be determined in 2026-2027.
Little Brown Myotis (*Myotis lucifugus)*	The Little Brown Myotis is a widespread species commonly found in warm sites such as buildings, attics, roof crevices, under bridges or in cavities of canopy trees in the forest (COSEWIC 2013).	Suitable roosting habitats may be available in barns and old structures; however, no structures are proposed for removal. Suitable maternity roosting habitat may be present in forested areas along the proposed pipeline route. Candidate maternity roost trees will be identified within suitable ELC communities. Limits of clearing to be determined in 2026-2027.

Species	Habitat Preference	Habitat Potential
Northern Myotis (*Myotis septentrionalis)*	The Northern Myotis is found in upland forests, typically foraging for aerial insects in the forest understory. Maternity roosts are typically located under the bark of large trees and are rarely found in human-made structures. Hibernating colonies typically reside in cave crevices (COSEWIC 2013).	Suitable maternity roosting habitat may be present in forested areas along the proposed pipeline route. Candidate maternity roost trees will be identified within suitable ELC communities. Limits of clearing to be determined in 2026-2027.
Silver-haired Bat (*Lasionycteris noctivagans)*	The Silver-haired Bat is a solitary, tree dwelling species that forms maternity colonies in tree cavities, hollow trees and under bark (COSEWIC 2023).	Suitable maternity roosting habitat may be present in forested areas along the proposed pipeline route. Candidate maternity roost trees will be identified within suitable ELC communities. Limits of clearing to be determined in 2026-2027.
Tri-coloured Bat (*Perimyotis subflavus)*	Tri-coloured Bats prefer partly open habitat such as fields with large trees or woodland edges while avoiding both denser and more open areas. In the summer, Tri-coloured Bats roost in trees or dead clusters of leaves on trees (COSEWIC 2013).	Suitable maternity roosting habitat may be present in forested areas along the proposed pipeline route. Candidate maternity roost trees will be identified within suitable ELC communities. Limits of clearing to be determined in 2026-2027.

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Appendix E Cultural Heritage Assessment Memo

DRAFT

Stantec

Memo

To: Enbridge Gas Ontario

From: Frank Smith, MA, CAHP
Julia Richards, MA
Stantec Consulting Ltd.

Project/File: 160901401

Date: October 6, 2026

Reference: Dawn Parkway System Renewal Project: Kirkwall to Hamilton

1 Introduction

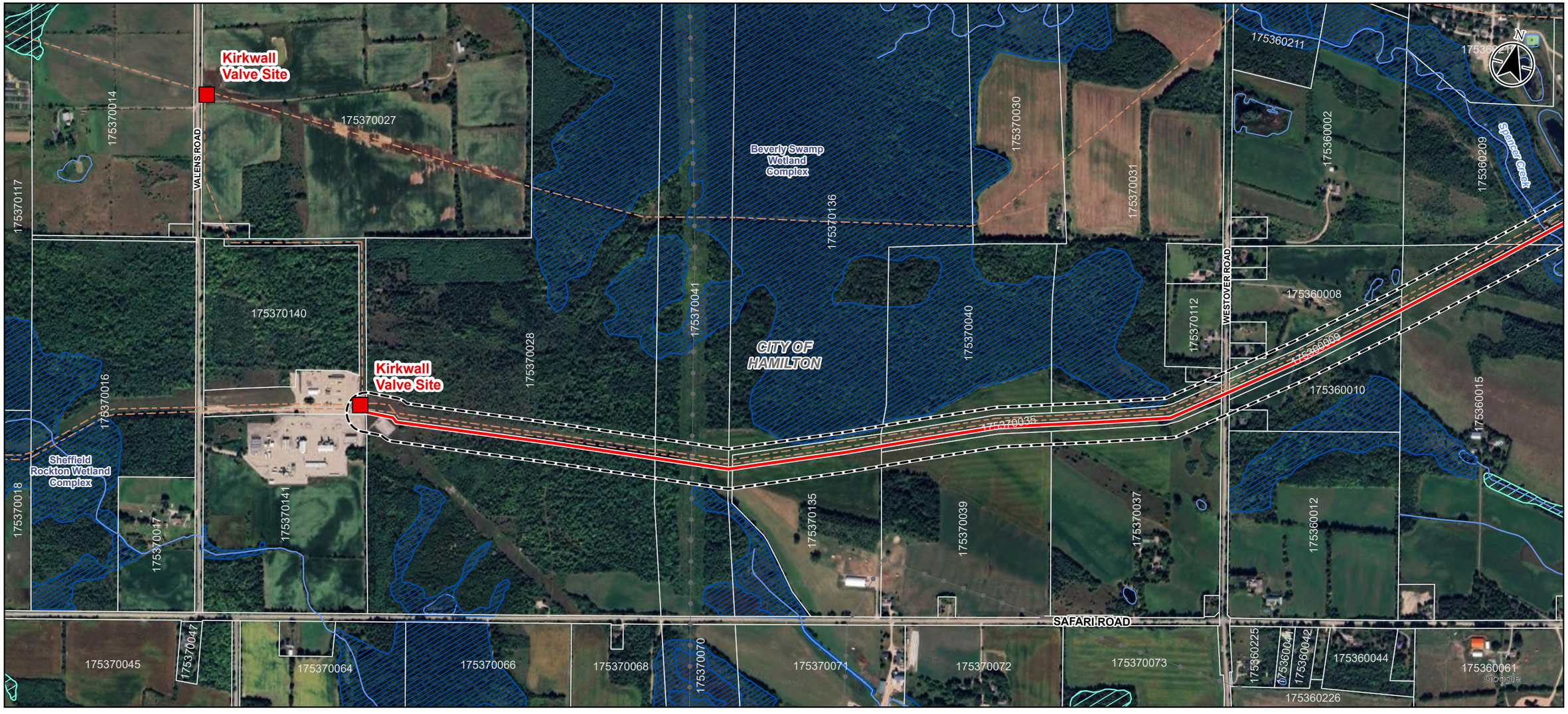
Enbridge Gas Ontario (Enbridge Gas) is proposing a project that will be constructed between the existing Enbridge Gas Kirkwall valve site, located northeast of the intersection of Safari Road and Valens Road and the existing Enbridge Gas Hamilton valve site, located east of Highway 6 and north of Carlisle Road (the Study Area). The Kirkwall-Hamilton Project involves the installation of a new 48-inch, 10-kilometre (km) pipeline effectively connected the two sections (Figure 1). The Study Area is located within the City of Hamilton largely through agricultural fields from Valens Road to Highway 6.

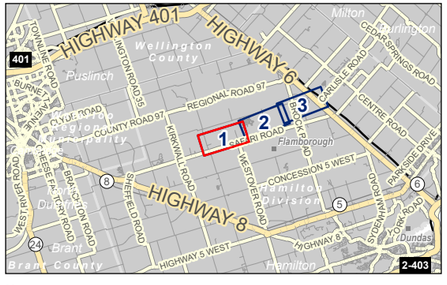
To facilitate this Project, Enbridge Gas retained Stantec to prepare a *Cultural Heritage Memo* for the Study Area. The need to consider known and potential built heritage resources (BHRs) and cultural heritage landscapes (CHLs) is defined by Section 4.3.4 of the *Ontario Energy Board (OEB) Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Projects and Facilities in Ontario* (OEB Guidelines) (OEB 2023).

The Study Area was previously assessed for known and potential BHRs and CHLs in a *Cultural Heritage Assessment Report* (CHAR) prepared by Stantec in 2019 (Stantec 2019). The objectives of this Memo are to summarize the findings of the CHAR, re-affirm the BHRs and CHLs identified in the CHAR, identify and screen new potential and known

BHRs and CHLs within the Study Area, assess potential impacts resulting from the Project, and recommend future actions.

To screen for known or potential cultural heritage value or interest (CHVI), this Memo follows the *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes: A Checklist for the Non-Specialist* (the Checklist) published by the Ministry of Citizenship and Multiculturalism (MCM) in 2016 and last updated in 2022 (MCM 2022). Potential impacts, both direct and indirect, are assessed using the seven potential negative effects to BHRs and CHLs identified in the OEB Guidelines (OEB 2023).





Legend

- Study Area
- Enbridge Station/Valve
- Proposed Pipeline
- Existing Pipeline
- Hydro Line
- Watercourse (Permanent)
- Parcel Boundary (PIN)
- Wetland, Provincially Significant
- Wetland, Unevaluated
- Waterbody

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Notes

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Stantec

Project Location
Hamilton, ON

REVA
Prepared by AWhite on 2026-09-24
Technical Review by JRichards on 2026-09-24

Client/Project
ENBRIDGE GAS INC.
DAWN SYSTEM RENEWAL PROJECT
KIRKWALL TO HAMILTON

Figure No.
1.1

Title
Study Area

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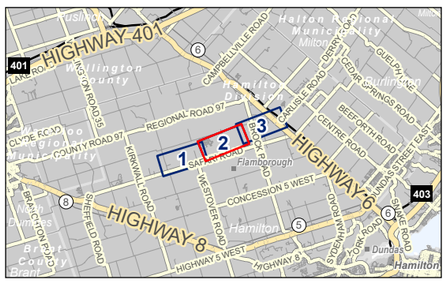

Legend

- Study Area
- Proposed Pipeline
- Existing Pipeline
- Watercourse (Permanent)
- Parcel Boundary (PIN)
- Wetland, Provincially Significant
- Wetland, Unevaluated
- Waterbody

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Technical Review by JRichards on 2026-09-24

Client/Project
ENBRIDGE GAS INC.
DAWN SYSTEM RENEWAL PROJECT
KIRKWALL TO HAMILTON

Figure No.
1.2

Title
Study Area

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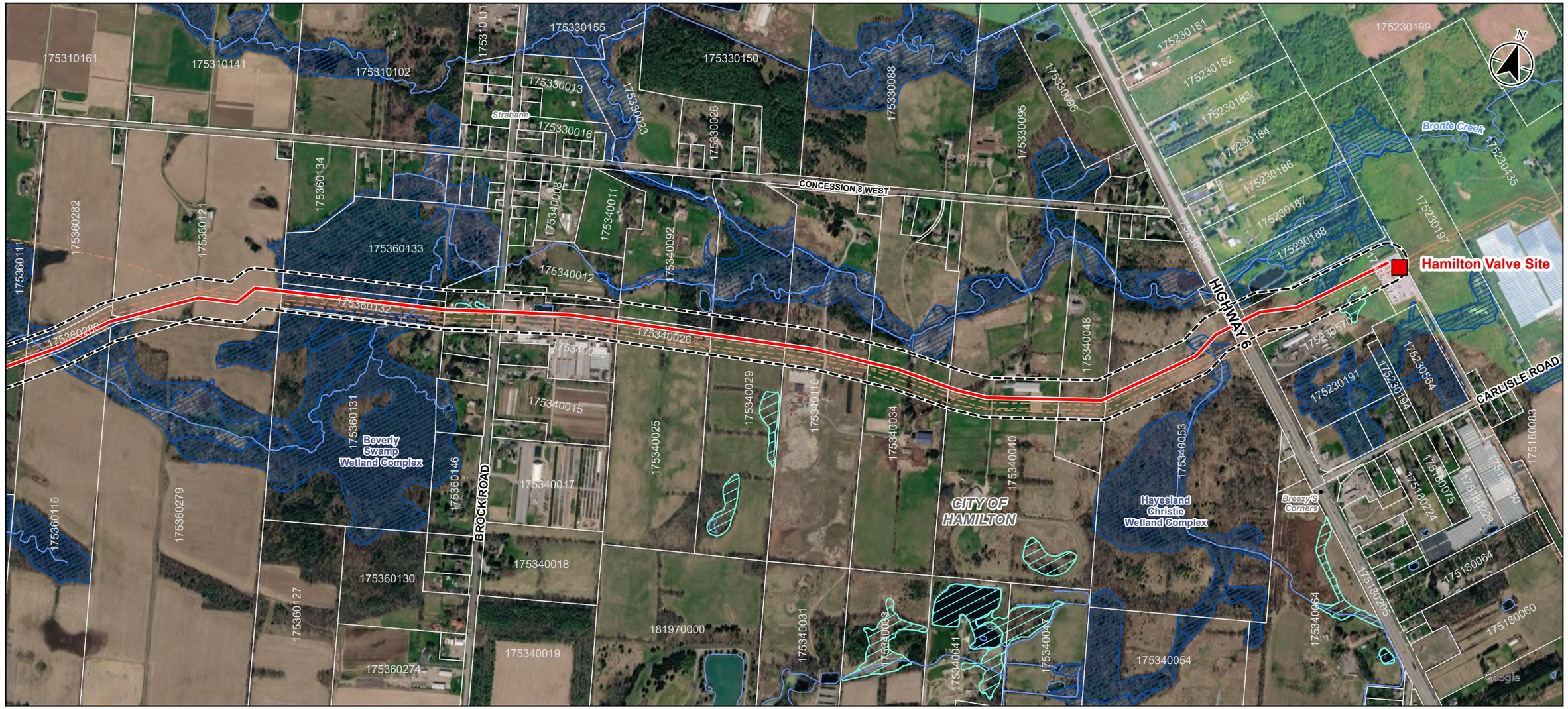

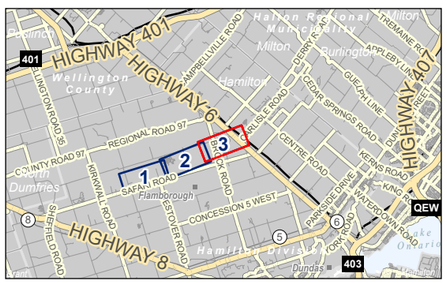

Legend

- Study Area
- Enbridge Station/Valve
- Proposed Pipeline
- Existing Pipeline
- Hydro Line
- Watercourse (Permanent)
- Parcel Boundary (PIN)
- Wetland, Provincially Significant
- Wetland, Unevaluated
- Waterbody

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Project Location
Hamilton, ON

REVA
Prepared by AWhite on 2026-09-24
Technical Review by JRichards on 2026-09-24

Client/Project
ENBRIDGE GAS INC.
DAWN SYSTEM RENEWAL PROJECT
KIRKWALL TO HAMILTON

Figure No.
1.3

Title
Study Area

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2 Methodology

2.1 Municipal and Agency Information Requests

Requests for information from municipalities, agencies, and heritage-based organizations in the area within which the Project is proposed were undertaken to determine the presence of listed, designated, or otherwise identified heritage properties within the Study Area. Stantec issued information requests to the City of Hamilton, the Ontario Heritage Trust (OHT), and the MCM. Consultation with the public and Indigenous communities is carried out as part of the broader environmental study process. Should BHRs or CHLs be identified by the public or Indigenous communities, they will be incorporated into the finalized version of the Memo. For this study, properties previously known by municipal staff or provincial agencies as containing or having the potential to contain CHVI were determined to be potential heritage properties.

2.2 Screening of Cultural Heritage Value or Interest

In general, buildings and structures of more than 40 years of age were screened during the survey using the criteria prescribed in the MCM *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes* (the MCM Criteria) (MCM 2022) and professional judgement. This included a field program to re-affirm the findings of the CHAR and to identify and screen additional known and potential BHRs and CHLs within the Study Area.

A vehicular windshield survey was conducted on August 19, 2026, by Paige Murray and Julia Richards, Cultural Heritage Specialists with Stantec. The weather conditions were sunny and hot. The windshield survey was conducted from the publicly accessible right-of-way (RoWs), unless specified otherwise.

For the purposes of this memo, the resource number used in the CHAR is carried forward into this memo for consistency. These resources are identified with a cultural heritage

resource number (CHR) and 2019, to denote its identification in the CHAR (e.g. CHR-1 2019). Where a new known or potential BHR or CHL was identified, the structure or landscape was assigned a BHR/CHL number as applicable and 2026, to denote it was not included in the CHAR (e.g. BHR-1 2026). However, there were no new known or potential BHR or CHL identified through the field program.

2.3 Assessment of Impacts

Where a component of a known or potential BHR or CHL was situated within the Study Area, the impacts of the proposed undertaking were evaluated. The impacts, both direct and indirect, are evaluated according to the possible effects or impacts resulting from the development of a hydrocarbon project that could affect cultural heritage resources as outlined in the OEB Guidelines.

Seven potential negative effects have been identified in the OEB Guidelines (OEB 2023), including:

1. Destruction or removal of any—or part of any—significant heritage attributes or features
2. Alteration that is not sympathetic, or is not compatible, with heritage character of appearance
3. Isolation of heritage attributes or features from their surrounding environment, context or a significant relationship
4. Visual intrusions, direct or indirect obstruction of significant views or vistas from, within, or to a built or natural feature
5. Shadows created by new development that alter the appearance or character of a heritage resource
6. A change in physical character, such as when development fills in formerly open spaces, or when significant vegetation is removed
7. Ground disturbances or land alterations, such as a change in grade, alteration of soil composition or drainage patterns that could adversely affect a cultural heritage resource

The potential for negative impacts resulting from vibration due to construction and operation activities and the transportation of Project components and personnel were also evaluated. Although the existing effect of traffic and construction vibrations on historical period structures is not fully known, negative effects have been demonstrated on buildings with a setback of less than 40 metres from the curbside (Crispino and D'Apuzzo 2001; Ellis 1987; National Park Service 2001; Rainer 1982; Wiss 1981;). The proximity of Project components to previously identified or potential BHRs and CHLs was considered in this assessment, particularly those within 50 metres from the proposed pipeline alignment, to encompass a wide enough buffer zone to account for built resources less than 40 metres from curbside or potential Project activities. The 50-metre buffer represents a conservative approach to effects identification.

3 Review of Cultural Heritage Assessment Report

What follows is a high-level summary of the histories of the former Townships of Beverly, East Flamborough and West Flamborough from survey and settlement to the 20th century. More detailed and complete histories are contained in the 2019 CHAR.

3.1 Historical Context Summary

The Study Area is located in the City of Hamilton, Ontario, within the former county of Wentworth across three former townships: Beverly, East Flamborough, and West Flamborough. Historically the Study Area is situated within Lots 29 to 36, Concession 6 and Lots 25 to 36, Concession 7 in the former Township of Beverly; Lots 1 to 5, Concession 6, Lots 1 to 12, Concession 7 within the former Township of East Flamborough; and Lots 12 to 13, Concession 9 within the former Township of East Flamborough.

3.1.1 Township of Beverly

The Township of Beverly was surveyed in 1797 by Augustus Jones. Settlement was influenced by the establishment of mills and railway development but was ultimately slow due to challenging terrain (Cornell 1967: 8). In the beginning of the 19th century, the population of the township was low at 81 people, but began to increase rapidly by mid century with the influx of British settlers, and most of the land had been claimed (Page & Smith 1875; Irwin & Co. 1883: 37).

Continual population growth was aided by the introduction of the Great Western Railway (GWR) in 1854 (Page & Smith 1875: iv; Houghton 2008: 88). By the end of the 19th century the population reached 4,890 (Irwin 1883: 38).

During the 20th century, the Township of Beverly remained predominantly rural, and the hamlets and villages witnessed a decline in population as larger markets grew in Hamilton and Toronto (Collins 2001). This decline was typical of rural communities in the 20th century. The Study Area within the Township of Beverly continued to be rural.

As the 20th century progressed, construction of better highways and the development of the trucking industry aided in renewed population growth throughout the township. Farms shifted to focus on dairy farming by the 1960s which was a profitable industry for farmers. (Collins 2001: 9).

In 1974, the Township of Beverly amalgamated with the Townships of West and East Flamborough, to form the Town of Flamborough. Subsequently in 2001, the Town of Flamborough became a part of the City of Hamilton (Hamilton Public Library 2017).

3.1.2 Townships of East and West Flamborough

The Townships of East and West Flamborough were surveyed in the same year, 1793 by Augustus Jones. Settlement patterns followed waterways, as they were a source for mill

power and road intersections. East and West Flamborough were incorporated as separate townships in 1854 (Woodhouse 1965: 14).

The main settlement in West Flamborough is Dundas. In the beginning of the 19th century Dundas experienced accelerated growth with the construction of the Desjardins Canal between 1826 and 1837. The canal connected Dundas with Burlington Bay and Dundas became a busy port on Lake Ontario (Freeman 2001: 37).

Dundas continued to grow into the mid 19th century with the construction of the GWR in 1854 as it shifted from canal shipments to the shipment of goods through the railway. By the end of the century, the Dundas was one of the major manufacturing towns in the province (Page & Smith 1875: ix).

At the turn of the 20th century, Dundas was in industrial decline while Hamilton was growing and offering more employment opportunities (Meyers 1954: 25). Commuter traffic was facilitated by the development of better roads, such as the Kings Highway 6 that ran from Hamilton to Owen Sound (Bevers 2019).

The main settlement in East Flamborough was Waterdown but it remained relatively small compared to Dundas. Settlement in the Township of East Flamborough was initially hindered until the 1820s to 1830s by heavily wooded lands, but by the mid 19th century all the lots in the township were taken up (Green et al. 1997: 3).

At the beginning of the 20th century, the Study Area remained within a rural portion of the township. West Flamborough experienced a slight increase in population with increased construction of the Canadian Pacific Railway (CPR) between Hamilton and Guelph in 1911 (Waterdown East Flamborough Centennial Committee 1967: 37).

In 1974 municipal restructuring merged East and West Flamborough with the Township of Beverly to create the Town of Flamborough, which subsequently became part of the City of Hamilton by 2001 (Hamilton Public Library 2017b).

3.2 Summary of Identified BHRs/CHLs

The field program for the CHAR was completed on January 30, 2019. The field program photographed and noted the location of known and potential BHRs and CHLs within the Study Area. A total of 26 properties were identified as BHRs or CHLs in the CHAR. Since the 2019 report, the Study Area has changed such that 13 previously identified BHRs and CHLs are no longer within the 2026 Study Area. Inclusion within the current Study Area has been identified within Table 1. BHRs or CHLs no longer included within the Study Area are not discussed further within this Memo. Table 1 summarizes the findings of the field program completed for the CHAR.

Table 1 Identified BHRs/CHLs in the CHAR

Municipal Address	Type of Resource	Reference Number	Included in 2026 Study Area
1399 Safari Road	Farmstead	CHR-1 (2019)	Yes
1289 Safari Road	Farmstead	CHR-2 (2019)	Yes
1172 Concession 8 West	Undetermined	CHR-3 (2019)	Yes
1437 Middletown Road	Farmstead	CHR-4 (2019)	Yes
1412 Middletown Road	Residence	CHR-5 (2019)	Yes
1035 Safari Road	Farmstead	CHR-6 (2019)	Yes
1470 Brock Road	Residence	CHR-7 (2019)	Yes
812 Concession 8 West	Farmstead	CHR-8 (2019)	Yes
919 Safari Road	Farmstead	CHR-9 (2019)	Yes

Reference: Dawn Parkway System Renewal Project: Kirkwall to Hamilton

Municipal Address	Type of Resource	Reference Number	Included in 2026 Study Area
794 Concession 8 West	Barn	CHR-10 (2019)	Yes
750 Concession 8 West	Farmstead	CHR-11 (2019)	Yes
716 Concession 8 West	Farmstead	CHR-12 (2019)	Yes
700 Concession 8 West	Farmstead	CHR-13 (2019)	Yes
1213 Safari Road	Farmstead	CHR-14 (2019)	No
1414 Safari Road	Farmstead	CHR-15 (2019)	No
1286 Safari Road	Farmstead	CHR-16 (2019)	No
1212 Safari Road	Residence	CHR-17 (2019)	No
1166 Safari Road	Farmstead	CHR-18 (2019)	No
1032 Safari Road	Farmstead	CHR-19 (2019)	No
1054 Safari Road	Outbuildings	CHR-20 (2019)	No
994 Safari Road	Residence and Outbuildings	CHR-21 (2019)	No
954 Safari Road	Barn	CHR-22 (2019)	No
902 Safari Road	Residence and Outbuildings	CHR-23 (2019)	No
875 Safari Road	Farmstead	CHR-24 (2019)	No
1436 Brock Road	Residence	CHR-25 (2019)	No
1157 Safari Road	Farmstead	CHR-26 (2019)	No

4 Municipal and Agency Information Requests

To identify known or potential heritage resources, the MCM, OHT, and City of Hamilton were contacted. The results of the information requests are summarized in Table 2.

Table 2 Municipal and Agency Information Request Summary

Organization	Contact	Results
MCM	Mariana Kimi Nito, Heritage Advisor mariana.nito@ontario.ca	Consultation email sent on September 24, 2026. Response pending.
OHT	Samuel Bayefsky, Real Property Coordinator samuel.bayefsky@heritagetrust.on.ca	Consultation email sent on September 24, 2026. Sammy replied on September 24, 2026 stating that OHT does not own any properties within or adjacent to the Study Area.
City of Hamilton	Development Planning pdgeninq@hamilton.ca	Consultation email sent on September 24, 2026. Response pending.

5 Re-Affirmation of 2019 CHAR Findings

As previously discussed, a field program was completed to re-affirm the findings of the CHAR and identify additional known and potential BHRs and CHLs within the Study Area. There were no new BHRs or CHLs identified during the field program. BHRs and CHLs from the 2019 CHAR were documented from publicly accessible roadways and their locations were digitally recorded using ESRI's ArcGIS Field Maps application.

The Study Area is rural and residential in character with structures built in a variety of time periods and constructed of varying materials. There is a concentration of late 19th century farmsteads. Within the Study Area many properties are set far back from the road and obscured by vegetation. The Study Area is bound by Concession 8 West to the north

and Safari Road to the south, and Highway 6 to the east. The Study Area crosses Middletown Road, Westover Road, and Brock Road. The general topography of the Study Area can be characterized by rolling hills such that some properties are located in depressions or on top of hills.

Concession 8 West is a two lane road paved with asphalt. Both sides of the road have mature trees that contribute to a tree canopy, and vegetation. There are wooden utility poles on the north side of the street (Photo 1).

Safari Road is a two lane road paved with asphalt. Both sides of the road have mature trees that contribute to a tree canopy and vegetation. Utility poles are present on both sides of the road (Photo 2).

Highway 6 is a four lane road paved with asphalt and is a main thoroughfare in Hamilton. There is a gravel shoulder on each side of the road and mature trees. Utility poles and metal hydro towers are present on either side of the road (Photo 3).

Brock Road is a two lane road paved with asphalt. Residences have variable setbacks where some residences are set far back and obscured by vegetation. Each side of the road has utility poles and mature trees (Photo 4).

Middletown Road is a two lane road paved with asphalt. While the Study Area is generally comprised of rolling hills, Middletown Road is located on an especially steep hill such that the road ends and is not passable at the base of the hill. Each side of the road has utility poles and mature trees (Photo 5).

Westover Road is a two lane gravel road. The road travels over rolling hills and has a dead end at the base of a steep hill. Each side of the road has utility poles and mature trees (Photo 6).

Reference: Dawn Parkway System Renewal Project: Kirkwall to Hamilton



Photo 1: Concession 8 West, looking west



Photo 2: Safari Road, looking east



Photo 3 Highway 6, looking north



Photo 4 Brock Road, looking north

Reference: Dawn Parkway System Renewal Project: Kirkwall to Hamilton



Photo 5 Middletown Road, looking north



Photo 6 Westover Road, looking south

A total of 17 properties or landscapes were inventoried. This includes the 13 BHRs identified in the CHAR (Table 3). The location of these BHRs are depicted in Figure 2.

Reference: Dawn Parkway System Renewal Project: Kirkwall to Hamilton

Table 3 Re-Affirmation of Built Heritage Resources and Cultural Heritage Landscapes Identified in the CHAR

Reference Number	Type of Resource	Description and Review of CHVI	Current Photograph
CHR-1 (2019)	Farmstead	This property contains a residence and a barn. The residence and barn are obscured by vegetation and distance from the road. The residence is a one and one half storey structure with gable roof clad in red brick with dichromatic brickwork. The barn is a gable roof structure clad in metal. The property is landscaped with mature Norway Spruces and a stone wall on the south side of the property. The CHAR identified that the residence has potential design value as an example of an Ontario vernacular structure with Gothic Revival design influences. The barn also has potential design value as a representative example of a late 19th century vernacular barn. The property also has potential contextual value as it supports the late 19th century rural character of the area and is physically and historically linked to its surroundings. **Based on the field program completed for the Memo, the property retains the potential CHVI identified in the CHAR.**	
CHR-2 (2019)	Farmstead	This property contains a residence and a barn. The residence is obscured by distance from the road and vegetation. The residence is a two storey structure with a hip roof. The barn has a side gable roof. The property is listed on the 1991 LACAC inventory for the City of Hamilton. The CHAR identified the residence as having potential design value as an Ontario vernacular structure with Georgian design influences. The property also has potential contextual value as it supports the late 19th century rural character and is physically and historically linked to its surroundings. **Based on the field program completed for the Memo, the property retains the potential CHVI identified in the CHAR.**	

Reference: Dawn Parkway System Renewal Project: Kirkwall to Hamilton

Reference Number	Type of Resource	Description and Review of CHVI	Current Photograph
CHR-3 (2019)	Farmstead	This property contains a residence and a barn. The residence and barn are obscured by vegetation and distance from the road. The property is listed on the 1991 LACAC inventory for the City of Hamilton. The CHAR identified the property as having potential contextual value as it supports the late 19th century rural character of the area and is physically and historically linked to its surroundings. **Based on the field program completed for the Memo, the property retains the potential CHVI identified in the CHAR.**	
CHR-4 (2019)	Farmstead	This property contains a residence and a barn. The residence is a one and one half storey structure with a cross gable roof. The exterior has been changed since 2019 and is no longer clad in siding but appears to be clad in stucco panels. The barn is a timber frame structure with a cross gable roof. The property is listed on the 1991 LACAC inventory for the City of Hamilton. The CHAR identified the property as having potential design value as an example of a late 19th century Ontario vernacular structure. The property also has potential contextual value as it supports the late 19th century rural character of the area and is physically and historically linked to its surroundings. **Based on the field program completed for the Memo, the property retains the potential CHVI identified in the CHAR.**	

Reference: Dawn Parkway System Renewal Project: Kirkwall to Hamilton

Reference Number	Type of Resource	Description and Review of CHVI	Current Photograph
CHR-5 (2019)	Residence	This property contains a residence and outbuildings. The residence and outbuildings are obscured by distance from the road and vegetation. The residence is a one and one half storey structure with a cross gable roof clad in brick. The property is listed on the 1991 LACAC inventory for the City of Hamilton. The CHAR identified the property as having potential design value as a representative example of a late 19th century Ontario vernacular residence with Gothic Revival design influences. The property also has potential contextual value as it supports the late 19th century rural character of the area and is physically and historically linked to its surroundings. **Based on the field program completed for the Memo, the property retains the potential CHVI identified in the CHAR.**	
CHR-6 (2019)	Farmstead	This property contains a residence and outbuildings. The residence is a one and one half storey structure with a side gable roof clad in siding. There was a timber frame barn present on the property in 2019 that has since been removed. The property is listed on the 1991 LACAC inventory for the City of Hamilton. The CHAR identified the property as having potential design value as a representative example of a mid to late 19th century Ontario vernacular residence with Ontario Cottage design influences. The property also has potential contextual value as it supports the late 19th century rural character of the area and is physically and historically linked to its surroundings. **Based on the field program completed for the Memo, the property retains the potential CHVI identified in the CHAR.**	

Reference: Dawn Parkway System Renewal Project: Kirkwall to Hamilton

Reference Number	Type of Resource	Description and Review of CHVI	Current Photograph
CHR-7 (2019)	Residence	This property contains a residence that was built in 2021. The residence captured in 2019 has been demolished. **Based on the field program completed for the Memo, the property does not retain the potential CHVI identified in the CHAR as the residence has been demolished.**	
CHR-8 (2019)	Farmstead	This property contains a residence, a barn, coach house, and drive shed which are obscured by distance from the road and vegetation. The residence is a one and one half storey structure with a gable roof. The exterior contains a covered partial wood porch. The barn is a timber frame structure with side gable roof. The CHAR identified the property as having potential design value as a representative example of a late 19th century Ontario vernacular residence. The property also has potential contextual value as it supports the late 19th century rural character of the area and is physically and historically linked to its surroundings. **Based on the field program completed for the Memo, the property retains the potential CHVI identified in the CHAR.**	

Reference: Dawn Parkway System Renewal Project: Kirkwall to Hamilton

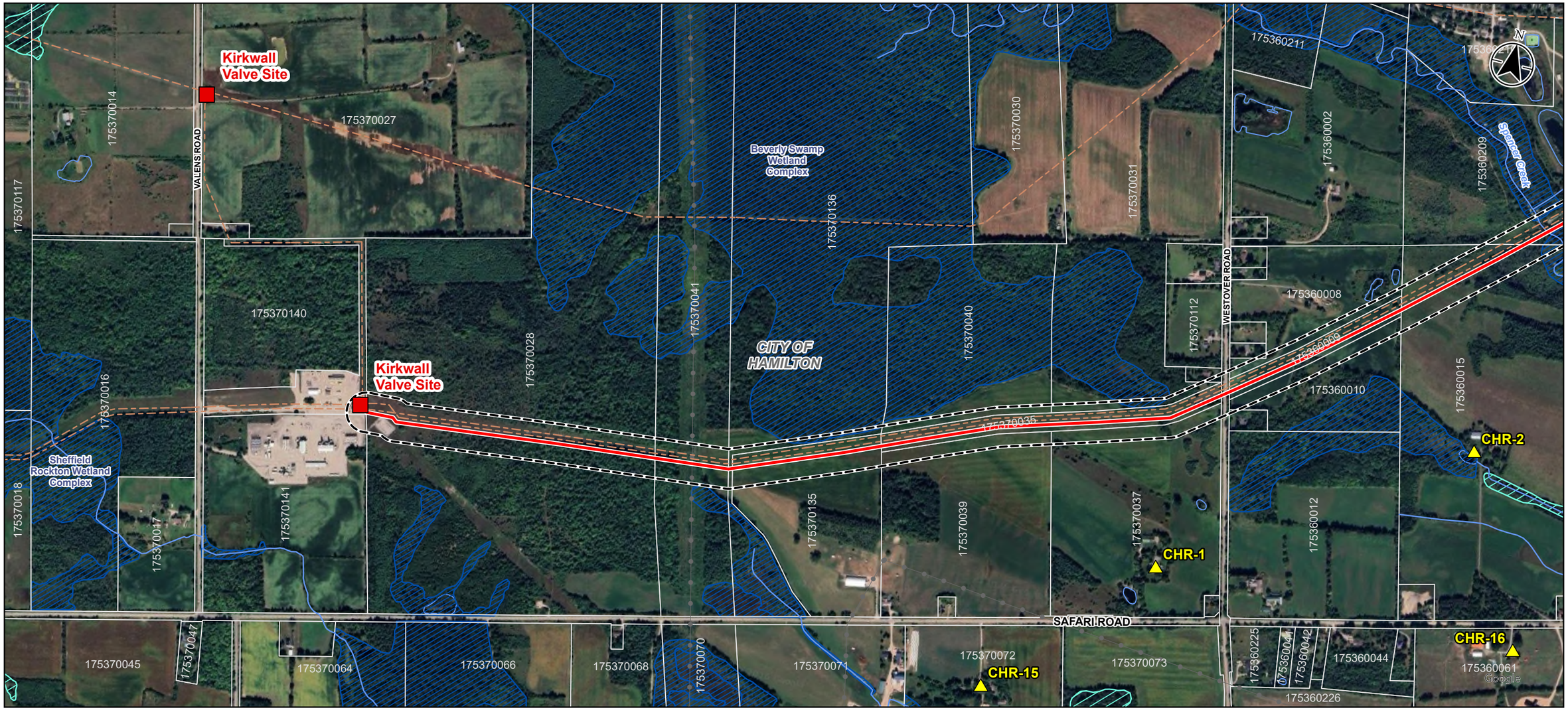
Reference Number	Type of Resource	Description and Review of CHVI	Current Photograph
CHR-9 (2019)	Farmstead	This property contains a residence and outbuildings. The residence is a two storey structure with a side gable roof. There was a timber barn documented in winter 2019 that was demolished in the summer of 2019. The property is listed on the 1991 LACAC inventory of the City of Hamilton. The CHAR identified the property as having potential design value as a representative example of a late 19th century Ontario vernacular residence with Georgian Revival design influences. The property also has potential contextual value as it supports the late 19th century rural character of the area and is physically and historically linked to its surroundings. **Based on the field program completed for the Memo, the property retains the potential CHVI identified in the CHAR.**	
CHR-10 (2019)	Barn	This property contains a residence, outbuilding and barn. The barn was obscured by distance from the road and vegetation. The residence is a one storey structure with a side gable roof clad in siding. The barn is a timber frame structure with a gable roof and has a bank. The barn has potential design value as a representative example of a late 19th century Ontario vernacular barn. The property also has potential contextual value as it supports the late 19th century rural character of the area and is physically and historically linked to its surroundings. **Based on the field program completed for the Memo, the property retains the potential CHVI identified in the CHAR.**	

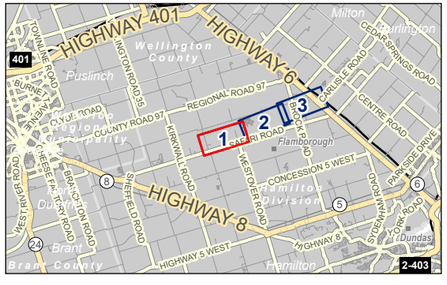
Reference: Dawn Parkway System Renewal Project: Kirkwall to Hamilton

Reference Number	Type of Resource	Description and Review of CHVI	Current Photograph
CHR-11 (2019)	Farmstead	This property contains a residence and a barn which are obscured by distance from the road and vegetation. The property is listed in 1991 LACAC inventory for the city of Hamilton. The CHAR identified the property as having potential contextual value as it supports the late 19th century rural character of the area and is physically and historically linked to its surroundings. **Based on the field program completed for the Memo, the property retains the potential CHVI identified in the CHAR.**	
CHR-12 (2019)	Farmstead	This property contains a residence and a barn. The residence and barn are obscured by distance and vegetation. The residence is a one and one half storey structure with a side gable roof. T. The barn is a timber frame bank barn structure with a side gable roof. The residence and barn have potential design value as representative examples of late 19th century Ontario vernacular structures. The property has potential contextual value as it supports the late 19th century rural character of the area and is physically and historically linked to its surroundings. **Based on the field program completed for the Memo, the property retains the potential CHVI identified in the CHAR.**	

Reference: Dawn Parkway System Renewal Project: Kirkwall to Hamilton

Reference Number	Type of Resource	Description and Review of CHVI	Current Photograph
CHR-13 (2019)	Farmstead	This property contains a residence and a barn. The residence and barn are both obscured by distance from the road and vegetation. The residence is a one and one half storey structure with a side gable roof. The exterior contains a covered partial porch. The barn is a timber frame structure with a side gable roof. The property is listed on the 1991 LACAC inventory for the City of Hamilton. The residence and barn have potential design value as a representative example of a late 19th century Ontario vernacular structure. The property also has potential contextual value as it supports the late 19th century rural character of the area and is physically and historically linked to its surroundings. **Based on the field program completed for the Memo, the property retains the potential CHVI identified in the CHAR.**	





Legend

- Study Area
- Cultural Heritage Resource
- Enbridge Station/Valve
- Proposed Pipeline
- Existing Pipeline
- Hydro Line
- Watercourse (Permanent)
- Parcel Boundary (PIN)
- Wetland, Provincially Significant
- Wetland, Unevaluated
- Waterbody

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Notes

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Stantec

Project Location
Hamilton, ON

REVA
Prepared by AWhite on 2026-09-24
Technical Review by JRichards on 2026-09-24

Client/Project
ENBRIDGE GAS INC.
DAWN SYSTEM RENEWAL PROJECT
KIRKWALL TO HAMILTON

Figure No.
2.1

Title
Previously Identified and Potential Built Heritage Resources and Cultural Heritage Landscapes

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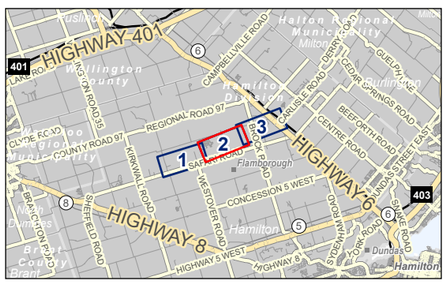

Legend

- Study Area
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Stantec

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REVA
Prepared by AWhite on 2026-09-24
Technical Review by JRichards on 2026-09-24

Client/Project
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DAWN SYSTEM RENEWAL PROJECT
KIRKWALL TO HAMILTON

Figure No.
2.2

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Previously Identified and Potential Built Heritage Resources and Cultural Heritage Landscapes

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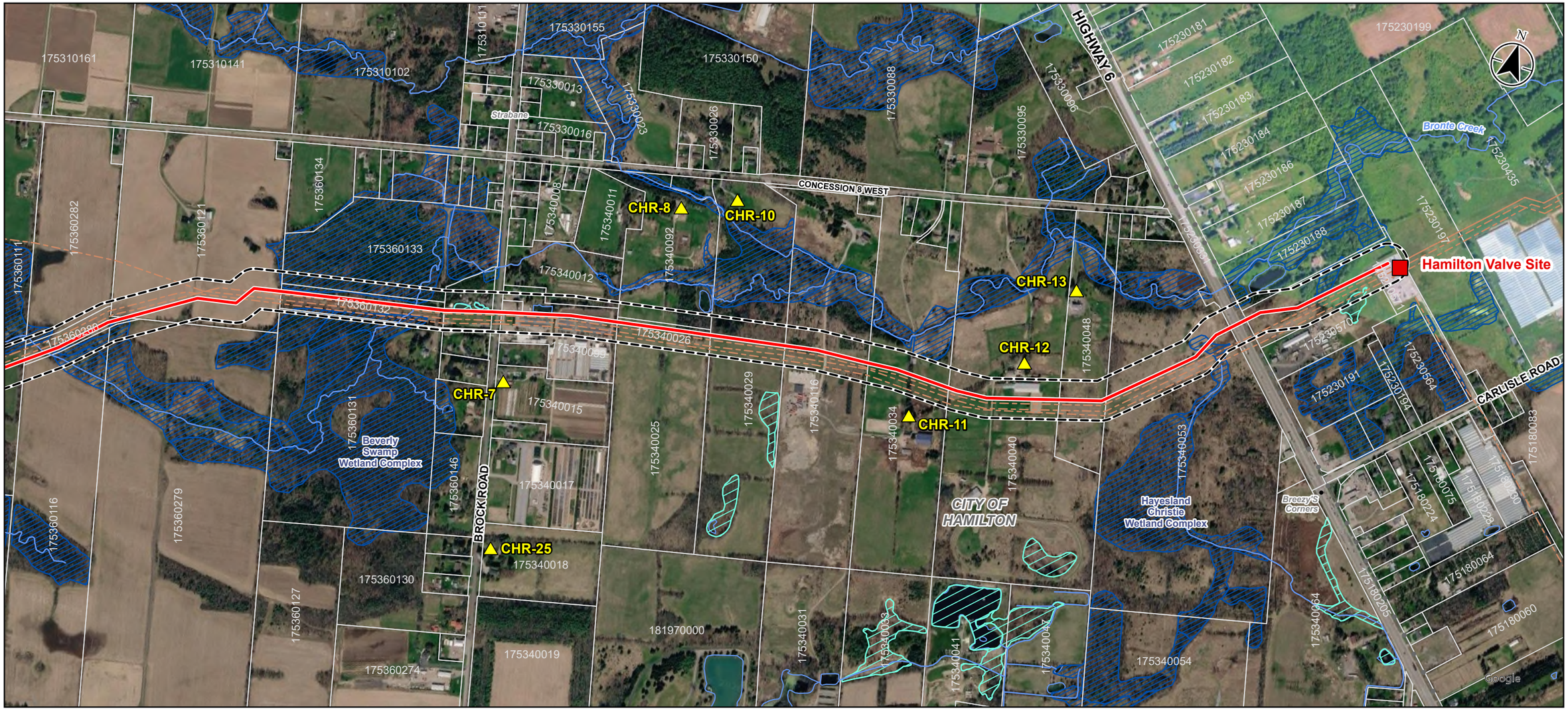

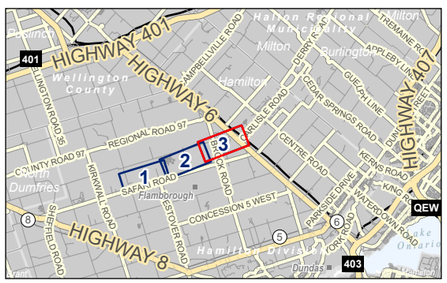

Legend

- Study Area
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- Enbridge Station/Valve
- Proposed Pipeline
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Project Location
Hamilton, ON

REVA
Prepared by AWhite on 2026-09-24
Technical Review by JRichards on 2026-09-24

Client/Project
ENBRIDGE GAS INC.
DAWN SYSTEM RENEWAL PROJECT
KIRKWALL TO HAMILTON

Figure No.
2.3

Title
Previously Identified and Potential Built Heritage Resources and Cultural Heritage Landscapes

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6 Preliminary Impact Assessment

6.1 Description of Proposed Undertaking

The Project construction process includes various activities as described below:

- **Site Preparation and Clearing**: The first activity is typically the survey and staking, which delineates the boundaries of the road allowance and temporary work areas where necessary. Next, the temporary work areas are cleared of brush and trees, if necessary. Safety barriers are then installed at the limits of the temporary work areas where public safety considerations are required, and aspects of the Traffic Management Plan are implemented (i.e., signs, vehicle access).
- **Pipeline Installation:** Following site preparation and clearing, the pipeline may be installed by one of the following methods:
  - **Horizontal Directional Drilling (HDD):** This trenchless pipeline installation method involves creating entry and exit pits on either side of a feature (such as roads), drilling a pilot hole and reaming the hole to the required size with the aid of drilling fluid, and then pulling the pipeline back through the hole.
  - **Trenching:** This pipeline installation method involves excavation of a trench, lowering the pipeline into place, and backfilling the trench. During backfilling the originally excavated subsoil is placed over the pipe in the trench. In stony areas, the pipe may be sand padded to protect the coating. In shallow water table areas, the pipeline may be weighted to provide negative buoyancy.
- **Pressure Testing:** The pipeline will be pressure tested by filling the pipe with nitrogen or water. The pipeline will be held at a high pressure for a set period of time, per the requirements of CSA Z662-19 Clause 8 and applicable Enbridge Gas specifications for pressure testing.

Clean-Up and Restoration: This will include the restoration of all work areas disturbed during construction. Erosion and sediment controls (ESC) installed during construction (if required) will be removed. Re-seeding of any grassed areas, landscaping, repair and restoration of roads and sidewalks, and laneway and driveway rehabilitation will all be completed.

6.2 Identification of Preliminary Potential Project Specific Impacts and Proposed Mitigation Measures

The results of the preliminary impact assessment and preparation of mitigation measures are presented in Table 4. Distances provided are based on the distance of the BHR or CHL from the Project Location (proposed pipeline alignment) and not the property parcel boundary.

Reference: Dawn Parkway System Renewal Project: Kirkwall to Hamilton

Table 4 Preliminary Impact Assessment and Mitigation Measures

Reference Number	Location	Previous Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation
CHR-1 (2019)	1399 Safari Road	Identified in 2019 CHAR	**No Impacts Anticipated:** The residence and barn are located adjacent to the Project Location. Construction activities are proposed more than 250 metres south of the residence and barn. Therefore, the property is not at risk of direct or indirect impacts, and no mitigation measures or further cultural heritage studies are required.	**Continued avoidance is recommended.**
CHR-2 (2019)	1289 Safari Road	Identified on 1991 LACAC inventory and in 2019 CHAR	**No Impacts Anticipated:** The residence is located adjacent to the Project Location. Construction activities are proposed more than 355 metres south of the residence. Therefore, the property is not at risk of direct or indirect impacts, and no mitigation measures or further cultural heritage studies are required.	**Continued avoidance is recommended.**
CHR-3 (2019)	1172 Concession 8 West	Identified on 1991 LACAC inventory and in 2019 CHAR	**Indirect:** The residence is situated adjacent to the Project Location. Construction activities are proposed within 21 metres of the identified CHR. The position of the residence within 21 metres has the potential for indirect impacts resulting from vibration damage during construction activities.	**Preferred Option:** Avoid the CHR by establishing a buffer zone around the residence to limit construction activity to more than 50 metres away. This should use appropriate preventive measures such as mapping the CHR on construction maps and temporary fencing. Staging and laydown areas should also be non-invasive and avoid the CHR. Where avoidance is not feasible, the alternative option should be applied. **Alternative Option:** Where construction activities are anticipated within the 50-metre buffer zone, a pre-construction vibration assessment by a qualified engineer is recommended to determine if vibration monitoring or site plan controls are required.
CHR-4 (2019)	1437 Middletown Road	Identified on 1991 LACAC inventory and in 2019 CHAR	**No Impacts Anticipated:** The residence is located adjacent to the Project Location. Construction activities are proposed more than 143 metres south of the residence. Therefore, the property is not at risk of direct or indirect impacts, and no mitigation measures or further cultural heritage studies are required.	**Continued avoidance is recommended.**

Reference: Dawn Parkway System Renewal Project: Kirkwall to Hamilton

Reference Number	Location	Previous Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation
CHR-5 (2019)	1412 Middletown Road	Identified on 1991 LACAC inventory and in 2019 CHAR	**No Impacts Anticipated:** The residence is located adjacent to the Project Location. Construction activities are proposed more than 393 metres south of the residence. Therefore, the property is not at risk of direct or indirect impacts, and no mitigation measures or further cultural heritage studies are required.	**Continued avoidance is recommended.**
CHR-6 (2019)	1035 Safari Road	Identified on 1991 LACAC inventory and in 2019 CHAR	**No Impacts Anticipated:** The residence is located adjacent to the Project Location. Construction activities are proposed more than 1042 metres south of the residence. Therefore, the property is not at risk of direct or indirect impacts, and no mitigation measures or further cultural heritage studies are required.	**Continued avoidance is recommended.**
CHR-7 (2019)	1470 Brock Road	Identified in 2019 CHAR	**N/A:** The identified CHVI is no longer present as the residence has been demolished.	**N/A**
CHR-8 (2019)	812 Concession 8 West	Identified in 2019 CHAR	**No Impacts Anticipated:** The residence is located adjacent to the Project Location. Construction activities are proposed more than 271 metres north of the residence. Therefore, the property is not at risk of direct or indirect impacts, and no mitigation measures or further cultural heritage studies are required.	**Continued avoidance is recommended.**
CHR-9 (2019)	919 Safari Road	Identified on 1991 LACAC inventory and in 2019 CHAR	**No Impacts Anticipated:** The residence is located adjacent to the Project Location. Construction activities are proposed more than 1060 metres south of the residence. Therefore, the property is not at risk of direct or indirect impacts, and no mitigation measures or further cultural heritage studies are required.	**Continued avoidance is recommended.**
CHR-10 (2019)	794 Concession 8 West	Identified in 2019 CHAR	**No Impacts Anticipated:** The barn is located adjacent to the Project Location. Construction activities are proposed more than 311 metres north of the barn. Therefore, the property is not at risk of direct or indirect impacts, and no mitigation measures or further cultural heritage studies are required.	**Continued avoidance is recommended.**

Reference: Dawn Parkway System Renewal Project: Kirkwall to Hamilton

Reference Number	Location	Previous Heritage Recognition	Type and Description of Potential/Anticipated Impact	Mitigation
CHR-11 (2019)	750 Concession 8 West	Identified on 1991 LACAC inventory and in 2019 CHAR	**Indirect:** The residence is situated adjacent to the Project Location. Construction activities are proposed within 49 metres of the identified CHR. The position of the residence within 49 metres has the potential for indirect impacts resulting from vibration damage during construction activities.	**Preferred Option:** Avoid the CHR by establishing a buffer zone around the residence to limit construction activity to more than 50 metres away. This should use appropriate preventive measures such as mapping the CHR on construction maps and temporary fencing. Staging and laydown areas should also be non-invasive and avoid the CHR. Where avoidance is not feasible, the alternative option should be applied. **Alternative Option:** Where construction activities are anticipated within the 50-metre buffer zone, a pre-construction vibration assessment by a qualified engineer is recommended to determine if vibration monitoring or site plan controls are required.
CHR-12 (2019)	716 Concession 8 West	Identified in 2019 CHAR	**No Impacts Anticipated:** The residence and barn are located adjacent to the Project Location. Construction activities are proposed more than 371 metres north of the residence and barn. Therefore, the property is not at risk of direct or indirect impacts, and no mitigation measures or further cultural heritage studies are required.	**Continued avoidance is recommended.**
CHR-13 (2019)	700 Concession 8 West	Identified on 1991 LACAC inventory and in 2019 CHAR	**No Impacts Anticipated:** The residence and barn are located adjacent to the Project Location. Construction activities are proposed more than 209 metres north of the residence and barn. Therefore, the property is not at risk of direct or indirect impacts, and no mitigation measures or further cultural heritage studies are required.	**Continued avoidance is recommended.**

7 Recommendations

Historical research, municipal and agency data requests, and the field program completed for this CHR identified a total of 13 CHRs (2019). Following an assessment of impacts, no direct impacts were identified. Properties with potential risk for indirect impacts due to vibration damage were identified for:

- CHR-3 (2019): 1172 Concession 8 West
- CHR-11 (2019): 750 Concession 8 West

The preferred option is to avoid the CHRs by establishing a buffer zone around the resources to avoid construction activity within 50 metres of the buildings. This should use appropriate preventive measures such as mapping on construction maps or plans and temporary fencing. Staging and laydown areas should also be selected to be non-invasive and avoid the built heritage resource or cultural heritage landscape.

Where avoidance is not feasible, the alternative option should be applied. If the 50-metre buffer cannot be avoided, the alternative option to mitigate this risk is for a qualified building condition specialist or engineer to develop a strategy to carry out condition surveys and vibration monitoring, where required. The purpose of the condition surveys is to establish baseline conditions of structures prior to construction activities occurring within their vicinity, and the vibration monitoring is to be used as a precautionary measure against excessive impacts which may cause shifts in foundations, walls, masonry, or historic finishes.

The pre-condition survey may include screening activities to identify critical properties and determine appropriate vibration levels based on building type, age, and condition. Vibration monitoring may consist of random confirmatory vibration monitoring during construction at the most critical properties. A post-condition survey should be carried out on an as-needed basis to be determined by a qualified building condition specialist or

engineer to confirm no historic foundations, walls, masonry, or historic finishes were damaged due to vibration effects.

8 Limitations and Use

The conclusions in the Memo titled Dawn Parkway System Renewal Project: Kirkwall to Hamilton are Stantec's professional opinion, as of the time of the Memo, and concerning the scope described in the Memo. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. The Memo relates solely to the specific project for which Stantec was retained and the stated purpose for which the Memo was prepared. The Memo is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

Stantec has assumed all information received from Enbridge Gas Ontario (the "Client") and third parties in the preparation of the Memo to be correct. While Stantec has exercised a customary level of judgment or due diligence in the use of such information, Stantec assumes no responsibility for the consequences of any error or omission contained therein.

This Memo is intended solely for use by the Client in accordance with Stantec's contract with the Client. While the Memo may be provided by the Client to applicable authorities having jurisdiction and to other third parties in connection with the project, Stantec disclaims any legal duty based upon warranty, reliance or any other theory to any third party, and will not be liable to such third party for any damages or losses of any kind that may result.

Reference: Dawn Parkway System Renewal Project: Kirkwall to Hamilton

Respectfully,

Stantec Consulting Ltd.

Digitally signed by Richards, Julia
Date: 2026.10.06 14:06:09 -04'00'

Julia Richards, MA
Cultural Heritage Specialist
Mobile: (226) 559-1463
julia.richards @stantec.com

Digitally signed by Smith, Frank
Date: 2026.10.06 14:21:38 -04'00'

Frank Smith, MA, CAHP
Cultural Heritage Specialist
Mobile: (226) 448-7417
frank.smith @stantec.com

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Appendix F Stage 2 Acceptance Letter and Stage 2 Archaeological Assessment

DRAFT

Ministry of Heritage, Sport, Tourism, and Culture Industries

Archaeology Program Unit
Programs and Services Branch
Heritage, Tourism and Culture Division
401 Bay Street, Suite 1700
Toronto ON M7A 0A7
Tel.: (416) 418-0949
Email: Zeeshan.Abedin@ontario.ca

Ministère des Industries du patrimoine, du sport, du tourisme et de la culture

Unité des programme d'archéologie
Direction des programmes et des services
Division du patrimoine, du tourisme et de la culture
401, rue Bay, bureau 1700
Toronto ON M7A 0A7
Tél. : (416) 418-0949
Email: Zeeshan.Abedin@ontario.ca

Ontario

Jun 7, 2021

Parker S. Dickson (P256)
Stantec Consulting
171 Queens London ON N6A 5J7

RE: Review and Entry into the Ontario Public Register of Archaeological Reports: Archaeological Assessment Report Entitled, "Stage 2 Archaeological Assessment: Kirkwall – Hamilton Pipeline Project, Parts of Various Lots and Concessions, Geographic Townships of Beverly, West Flamborough, and East Flamborough, former Wentworth County, now City of Hamilton, Ontario", Dated Mar 30, 2021, Filed with MHSTCI Toronto Office on Apr 7, 2021, MHSTCI Project Information Form Number P256-0616-2020, MHSTCI File Number 0010304

Dear Mr. Dickson:

This office has reviewed the above-mentioned report, which has been submitted to this ministry as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18.[1] This review has been carried out in order to determine whether the licensed professional consultant archaeologist has met the terms and conditions of their licence, that the licensee assessed the property and documented archaeological resources using a process that accords with the 2011 *Standards and Guidelines for Consultant Archaeologists* set by the ministry, and that the archaeological fieldwork and report recommendations are consistent with the conservation, protection and preservation of the cultural heritage of Ontario.

The report documents the assessment of the study area as depicted in Figures 6.1 to 6.8 and of the above titled report and Figures 1.1 to 1.8 of the Supplementary Documentation, and recommends the following:

5.1 LOCATION 1
Location 1 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 1 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 1.

5.2 LOCATION 2
Location 2 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 2 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 2.

5.3 LOCATION 3
Location 3 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 3 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 3.

5.4 LOCATION 4
Location 4 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 4 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 4.

5.5 LOCATION 5
Location 5 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 5 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 5.

5.6 LOCATION 6
Location 6 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 6 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 6.

5.7 LOCATION 7
Location 7 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 7 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 7.

5.8 LOCATION 8
Location 8 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 8 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 8.

5.9 LOCATION 9
Location 9 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 9 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 9.

5.10 LOCATION 10
Location 10 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 10 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 10.

5.11 LOCATION 11
Location 11 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 11 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 11.

5.12 LOCATION 12 (AiHa-60)

Location 12 (AiHa-60) retains further cultural heritage value or interest and fulfills the criteria for Stage 3 archaeological assessment as per Section 2.2 Standard 1.a.ii.(2) and Section 2.2 Guideline 2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). Therefore, Stage 3 archaeological assessment is recommended for Location 12 (AiHa-60) to further evaluate the site's cultural heritage value or interest.

The Stage 3 archaeological assessment of Location 12 (AiHa-60) will be conducted according to the procedures outlined in the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The Stage 3 archaeological assessment will include the hand excavation of one-metre by one-metre test units every five metres in systematic levels and into the first five centimetres of subsoil. A controlled surface pickup (CSP) is not required as the site is located in an area inaccessible for ploughing. Additional one-metre test units, amounting to 20% of the grid total, will be placed in areas of interest within the site extent. Excavated soil will be screened through six millimeter mesh and recovered artifacts will be recorded and catalogued by the corresponding grid unit designation. If a subsurface cultural feature is encountered, the plan of the exposed feature will be recorded, and geotextile fabric will be placed over the unit before backfilling the unit.

Further, in accordance with Section 3.4 Standard 2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011), Indigenous communities must be engaged during Stage 3 activities when assessing the cultural heritage value or interest of an Indigenous archaeological site. Early engagement will help to formulate a strategy to effectively mitigate the impacts to the archaeological site through avoidance and protection or excavation, if viable for the Project.

5.13 LOCATION 13 (AiHa-61)

Location 13 (AiHa-61) retains further cultural heritage value or interest and fulfills the criteria for Stage 3 archaeological assessment as per Section 2.2 Standard 1.a.ii.(2) of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). Therefore, Stage 3 archaeological assessment is recommended for Location 13 (AiHa-61) to further evaluate the site's cultural heritage value or interest.

The Stage 3 archaeological assessment of Location 13 (AiHa-61) will be conducted according to the procedures outlined in the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The Stage 3 archaeological assessment will include the hand excavation of one-metre by one-metre test units every five metres in systematic levels and into the first five centimetres of subsoil. A CSP is not required as the site is located in an area inaccessible for ploughing. Additional one-metre test units, amounting to 20% of the grid total, will be placed in areas of interest within the site extent. Excavated soil will be screened through six millimetre mesh and recovered artifacts will be recorded and catalogued by the corresponding grid unit designation. If a subsurface cultural feature is encountered, the plan of the exposed feature will be recorded, and geotextile fabric will be placed over the unit before backfilling the unit. Further, in accordance with Section 3.4 Standard 2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011), Indigenous communities must be engaged during Stage 3 activities when assessing the cultural heritage value or interest of an Indigenous archaeological site. Early engagement will help to formulate a strategy to effectively mitigate the impacts to the archaeological site through avoidance and protection or excavation, if viable for the Project.

5.14 LOCATION 14

Location 14 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 14 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 14.

5.15 LOCATION 15

Location 15 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 15 has been sufficiently documented. Therefore, no

further archaeological assessment is recommended for Location 15.

5.16 LOCATION 16
Location 16 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 16 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 16.

5.17 LOCATION 17
Location 17 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 17 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 17.

5.18 LOCATION 18
Location 18 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 18 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 18.

5.19 LOCATION 19
Location 19 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 19 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 19.

5.20 LOCATION 20 (AiHa-62)
Location 20 (AiHa-62) retains further cultural heritage value or interest and fulfills the criteria for Stage 3 archaeological assessment as per Section 2.2 Standard 1.a.ii.(1) and Standard 1.b.iii of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). Therefore, Stage 3 archaeological assessment is recommended for Location 20 (AiHa-62) to further evaluate the site's cultural heritage value or interest.

The Stage 3 archaeological assessment of Location 20 (AiHa-62) will be conducted according to the procedures outlined in the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The Stage 3 archaeological assessment will include the hand excavation of one-metre by one-metre test units every five metres in systematic levels and into the first five centimetres of subsoil. A CSP is not required as the site is located in an area inaccessible for ploughing. Additional one-metre test units, amounting to 20% of the grid total, will be placed in areas of interest within the site extent. Excavated soil will be screened through six millimetre mesh and recovered artifacts will be recorded and catalogued by the corresponding grid unit designation. As the site includes an Early Archaic component, a sample of the soil from the test units will be screened through three millimeter mesh in accordance with Section 3.2.2 Standard 7 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). If a subsurface cultural feature is encountered, the plan of the exposed feature will be recorded, and geotextile fabric will be placed over the unit before backfilling the unit.

Further, in accordance with Section 3.4 Standard 2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011), Indigenous communities must be engaged during Stage 3 activities when assessing the cultural heritage value or interest of an Indigenous archaeological site. Early engagement will help to formulate a strategy to effectively mitigate the impacts to the archaeological site through avoidance and protection or excavation, if viable for the Project.

5.21 LOCATION 21 (AiHa-63)
Location 21 (AiHa-63) retains further cultural heritage value or interest and fulfills the criteria for Stage 3 archaeological assessment as per Section 2.2 Standard 1.b.i of the MHSTCI's 2011 Standards and

Guidelines for Consultant Archaeologists (Government of Ontario 2011). Therefore, Stage 3 archaeological assessment is recommended for Location 21 (AiHa-63) to further evaluate the site's cultural heritage value or interest.

The Stage 3 archaeological assessment of Location 21 (AiHa-63) will be conducted according to the procedures outlined in the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The Stage 3 archaeological assessment will include the hand excavation of one-metre by one-metre test units every five metres in systematic levels and into the first five centimetres of subsoil. A CSP is not required as the site is located in an area inaccessible for ploughing. Additional one-metre test units, amounting to 20% of the grid total, will be placed in areas of interest within the site extent. Excavated soil will be screened through six millimetre mesh and recovered artifacts will be recorded and catalogued by the corresponding grid unit designation. If a subsurface cultural feature is encountered, the plan of the exposed feature will be recorded, and geotextile fabric will be placed over the unit before backfilling the unit.

Further, in accordance with Section 3.4 Standard 2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011), Indigenous communities must be engaged during Stage 3 activities when assessing the cultural heritage value or interest of an Indigenous archaeological site. Early engagement will help to formulate a strategy to effectively mitigate the impacts to the archaeological site through avoidance and protection or excavation, if viable for the Project.

5.22 LOCATION 22

Location 22 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 22 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 22.

5.23 LOCATION 23

Location 23 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 23 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 23.

5.24 LOCATION 24

Location 24 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 24 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 24.

5.25 LOCATION 25

Location 25 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 25 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 25.

5.26 LOCATION 26 (AiHa-64)

Location 26 (AiHa-64) retains further cultural heritage value or interest and fulfills the criteria for Stage 3 archaeological assessment as per Section 2.2 Standard 1.b.i of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). Therefore, Stage 3 archaeological assessment is recommended for Location 26 (AiHa-64) to further evaluate the site's cultural heritage value or interest.

The Stage 3 archaeological assessment of Location 26 (AiHa-64) will be conducted according to the procedures outlined in the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The Stage 3 archaeological assessment will include the hand excavation of

one-metre by one-metre test units every five metres in systematic levels and into the first five centimetres of subsoil. A CSP is not required as the site is located in an area inaccessible for ploughing. Additional one-metre test units, amounting to 20% of the grid total, will be placed in areas of interest within the site extent. Excavated soil will be screened through six millimetre mesh and recovered artifacts will be recorded and catalogued by the corresponding grid unit designation. If a subsurface cultural feature is encountered, the plan of the exposed feature will be recorded, and geotextile fabric will be placed over the unit before backfilling the unit.

Further, in accordance with Section 3.4 Standard 2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011), Indigenous communities must be engaged during Stage 3 activities when assessing the cultural heritage value or interest of an Indigenous archaeological site. Early engagement will help to formulate a strategy to effectively mitigate the impacts to the archaeological site through avoidance and protection or excavation, if viable for the Project.

5.27 LOCATION 27

Location 27 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 27 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 27.

5.28 LOCATION 28 (AiHa-65)

Location 28 (AiHa-65) retains further cultural heritage value or interest and fulfills the criteria for Stage 3 archaeological assessment as per Section 2.2 Standard 1.a.ii.(2) and Section 2.2 Guideline 2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). Therefore, Stage 3 archaeological assessment is recommended for Location 28 (AiHa-65) to further evaluate the site's cultural heritage value or interest.

The Stage 3 archaeological assessment of Location 28 (AiHa-65) will be conducted according to the procedures outlined in the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The Stage 3 archaeological assessment will include the hand excavation of one-metre by one-metre test units every five metres in systematic levels and into the first five centimetres of subsoil. A CSP is not required as the site is located in an area inaccessible for ploughing. Additional one-metre test units, amounting to 20% of the grid total, will be placed in areas of interest within the site extent. Excavated soil will be screened through six millimetre mesh and recovered artifacts will be recorded and catalogued by the corresponding grid unit designation. If a subsurface cultural feature is encountered, the plan of the exposed feature will be recorded, and geotextile fabric will be placed over the unit before backfilling the unit.

Further, in accordance with Section 3.4 Standard 2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011), Indigenous communities must be engaged during Stage 3 activities when assessing the cultural heritage value or interest of an Indigenous archaeological site. Early engagement will help to formulate a strategy to effectively mitigate the impacts to the archaeological site through avoidance and protection or excavation, if viable for the Project.

5.29 LOCATION 29

Location 29 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 29 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 29.

5.30 LOCATION 30

Location 30 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 30 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 30.

5.31 LOCATION 31 (AiHa-66)
Location 31 (AiHa-66) retains further cultural heritage value or interest and fulfills the criteria for Stage 3 archaeological assessment as per Section 2.2 Standard 1.a.ii.(2) of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). Therefore, Stage 3 archaeological assessment is recommended for Location 31 (AiHa-66) to further evaluate the site's cultural heritage value or interest.

The Stage 3 archaeological assessment of Location 31 (AiHa-66) will be conducted according to the procedures outlined in the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The Stage 3 archaeological assessment will include the hand excavation of one-metre by one-metre test units every five metres in systematic levels and into the first five centimetres of subsoil. A CSP is not required as the site is located in an area inaccessible for ploughing. Additional one-metre test units, amounting to 20% of the grid total, will be placed in areas of interest within the site extent. Excavated soil will be screened through six millimetre mesh and recovered artifacts will be recorded and catalogued by the corresponding grid unit designation. If a subsurface cultural feature is encountered, the plan of the exposed feature will be recorded, and geotextile fabric will be placed over the unit before backfilling the unit.

Further, in accordance with Section 3.4 Standard 2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011), Indigenous communities must be engaged during Stage 3 activities when assessing the cultural heritage value or interest of an Indigenous archaeological site. Early engagement will help to formulate a strategy to effectively mitigate the impacts to the archaeological site through avoidance and protection or excavation, if viable for the Project.

5.32 LOCATION 32
Location 32 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 32 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 32.

5.33 LOCATION 33
Location 33 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 33 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 33.

5.34 LOCATION 34
Location 34 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The cultural heritage value or interest of Location 34 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 34.

5.35 ADDITIONAL STAGE 2 ASSESSMENT
Approximately 4.9% of the study area comprises lands that were not surveyed during the Stage 2 assessment and which retain potential for the identification and documentation of archaeological resources. In accordance with Section 1.3.1 and Section 7.7.4 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011), Stage 2 archaeological assessment is required for any portion of the Project's anticipated construction activities which impacts an area of archaeological potential (Figure 6).

The objective of the Stage 2 archaeological assessment will be to document any archaeological resources within the study area and to determine whether these archaeological resources require further assessment. The Stage 2 archaeological assessment will include the systematic walking of open ploughed fields as outlined in Section 2.1.1 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists

(Government of Ontario 2011). The MHSTCI standards further require that agricultural land, both active and inactive, be recently ploughed and sufficiently weathered to improve the visibility of archaeological resources. Ploughing must be deep enough to provide total topsoil exposure, but not deeper than previous ploughing, and must provide at least 80% ground surface visibility.

Moreover, for areas inaccessible for ploughing, the Stage 2 archaeological assessment will include a test pit survey as outlined in Section 2.1.2 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). The MHSTCI standards require that each test pit be at least 30 centimetres in diameter, excavated to at least five centimetres into subsoil, and have all soil screened through six millimetre hardware cloth to facilitate the recovery of any cultural material that may be present. Prior to backfilling, each test pit will be examined for stratigraphy, cultural features, and evidence of fill.

If the archaeological field team determines any lands to be low and wet, steeply sloped, or disturbed during the course of the Stage 2 field work, those areas will not require survey, but will be photographically documented in accordance with Section 2.1 of the MHSTCI's 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011).

Based on the information contained in the report, the ministry is satisfied that the fieldwork and reporting for the archaeological assessment are consistent with the ministry's 2011 *Standards and Guidelines for Consultant Archaeologists* and the terms and conditions for archaeological licences. This report has been entered into the Ontario Public Register of Archaeological Reports. Please note that the ministry makes no representation or warranty as to the completeness, accuracy or quality of reports in the register.

Should you require any further information regarding this matter, please feel free to contact me.

Sincerely,

Zeeshan Abedin
Archaeology Review Officer

cc. Archaeology Licensing Officer
Norm Dumouchelle,Enbridge Gas Inc.
Zora Crnojacki,Ontario Energy Board

[1] *In no way will the ministry be liable for any harm, damages, costs, expenses, losses, claims or actions that may result: (a) if the Report(s) or its recommendations are discovered to be inaccurate, incomplete, misleading or fraudulent; or (b) from the issuance of this letter. Further measures may need to be taken in the event that additional artifacts or archaeological sites are identified or the Report(s) is otherwise found to be inaccurate, incomplete, misleading or fraudulent.*

Stage 2 Archaeological Assessment: Kirkwall – Hamilton Pipeline Project

Parts of Various Lots and Concessions, Geographic Townships of Beverly, West Flamborough, and East Flamborough, former Wentworth County, now City of Hamilton, Ontario

March 30, 2021

Prepared for:

Enbridge Gas Inc.
50 Keil Drive North
Chatham, Ontario N7M 5M1

Prepared by:

Stantec Consulting Ltd.
600-171 Queens Avenue
London, Ontario N6A 5J7

Licensee: Parker Dickson, MA
Licence Number: P256
PIF Number: P256-0616-2020
Project Number: 160961299

REVISED REPORT

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Executive Summary

Stantec Consulting Ltd. (Stantec) was retained by Enbridge Gas Inc. (Enbridge) to complete the Stage 2 archaeological assessment for the Kirkwall – Hamilton Pipeline Project (the Project). The study area for the Stage 2 assessment of the Project comprises approximately 77.6 hectares of various lots and concessions, Geographic Townships of Beverly, West Flamborough, and East Flamborough, former Wentworth County, now City of Hamilton, Ontario. The Stage 2 archaeological assessment was conducted during the preliminary planning phase of the Project in accordance with the provisions of the *Ontario Heritage Act* (Government of Ontario 1990a) and the requirements of Section 4.3.4 of the Ontario Energy Board's (OEB) *Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario, 7th Edition* (OEB 2016).

The Stage 2 archaeological assessment of the study area for the Project was conducted between May 8, 2020 and November 20, 2020 under Project Information Form number P256-0616-2020 issued to Parker Dickson, MA, of Stantec by the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI). During the Stage 2 survey, 34 archaeological locations were identified.

Locations 1 to 11, 14 to 19, 22 to 25, 27, 29, 30, and 32 to 34 do not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of these sites has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Locations 1 to 11, 14 to 19, 22 to 25, 27, 29, 30, and 32 to 34.**

Location 12 (AiHa-60), Location 13 (AiHa-61), Location 20 (AiHa-62), Location 21 (AiHa-63), Location 26 (AiHa-64), Location 28 (AiHa-65), and Location 31 (AiHa-66) retain further cultural heritage value or interest and fulfill the criteria for Stage 3 archaeological assessment as per various standards within Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). Therefore, **Stage 3 archaeological assessment is recommended for Location 12 (AiHa-60), Location 13 (AiHa-61), Location 20 (AiHa-62), Location 21 (AiHa-63), Location 26 (AiHa-64), Location 28 (AiHa-65), and Location 31 (AiHa-66) to further evaluate each site's cultural heritage value or interest.**

In addition to the above, a portion of the study area (approximately 4.9%) comprises lands that were not surveyed during the Stage 2 assessment and which retain potential for the identification and documentation of archaeological resources. Thus, in accordance with Section 1.3.1 and Section 7.7.4 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), **Stage 2 archaeological assessment is required for any portion of the Project's anticipated construction activities which impacts an area of archaeological potential.** Full and detailed recommendations are provided in the body of the report.



The MHSTCI is asked to review the results presented and to accept this report into the *Ontario Public Register of Archaeological Reports*.

The Executive Summary highlights key points from the report only; for complete information and findings, the reader should examine the complete report.

Project Personnel

Project Manager:	Michael Candido, B.Sc. (Env.)
Licensed Archaeologist:	Parker Dickson, MA (P256)
Field Directors:	Christian Meier, MA (R1122), Hillary Schwering, BA (R1064), Darren Kipping, MA (R422), Kristen Hahne, B.Sc., B.Ed. (R1154), Bobbi Sheppard, BA (R1152)
Field Crew:	Lucas Hillcoat, BA (R1145), Ruth Dickau, Ph.D. (R1171), Matt Seguin, MA (P1018), Nathan Ng, BA (R1223), John Johnson, Jodie Leach, Malak Elayas, Carolyn Spelt, Michael Veldman, Kyle Sanford, Arie Sinke, Olivia de Brabandere, Eric Tincombe, Ailie Ramage, Ben Arbon, Robert Mills, Lauren Blair, Kennedy Bell, Lauren Patterson, Julia Szezesniak, David Lichty, Stephen Thistle, Cole Thistile-Hill, Nicholas Kilpatrick, Simon Li, Maggie Mahony
Mapping:	Andrew White, M.Sc., GIS Specialist
Report Writer:	Parker Dickson, MA
Lab Analyst:	Kurt Kostuk
Quality Review:	Jeffrey Muir, BA, CAHP (R304)
Independent Review:	Colin Varley, MA, RPA (P002)

Acknowledgements

Proponent Contacts:	Ryan Park – Senior Advisor, Environment Norm Dumouchelle – Senior Analyst, Environment Jeffrey Fasoyiro – Advisor, Lands & Right of Way Chantelle Rodger – Advisor Permitting Kevin Berube – Senior Advisor, Community & Indigenous Engagement



Mississaugas of the Credit First Nation:	Megan DeVries – Archaeological Operations Supervisor Joelle Williams – Field Coordinator Marlene Morton – Field Coordinator Fawn Sault – Consultation Coordinator Mark LaForme – Director, Department of Consultation and Accommodation
Six Nations of the Grand River:	Lonny Bomberry – Director, Lands & Resources Dawn LaForme – Secretary/Receptionist, Lands & Resources Tanya Hill-Montour – Archaeology Supervisor, Lands & Resources
Haudenosaunee Development Institute:	Wayne Hill – Archaeology Supervisor Todd Williams – Director
Ministry of Heritage, Sport, Tourism and Culture Industries:	Robert von Bitter – Archaeological Data Coordinator Wai Hadlari – Archaeology Review Officer

1.0 PROJECT CONTEXT

1.1 DEVELOPMENT CONTEXT

Stantec Consulting Ltd. (Stantec) was retained by Enbridge Gas Inc. (Enbridge) to complete the Stage 2 archaeological assessment for the Kirkwall – Hamilton Pipeline Project (the Project). The study area for the Stage 2 assessment of the Project comprises approximately 77.6 hectares of various lots and concessions, Geographic Townships of Beverly, West Flamborough, and East Flamborough, former Wentworth County, now City of Hamilton, Ontario (Figure 1).

To increase existing capacity and accommodate additional demand for natural gas, Enbridge is proposing to construct a new 48-inch diameter natural gas pipeline. The proposed Project will be constructed between Enbridge's existing Kirkwall valve site, located northeast of the intersection of Safari Road and Valens Road, and Enbridge's existing Hamilton valve site, located east of Highway 6 and north of Carlisle Road, generally paralleling three existing Enbridge pipelines (Figure 2).

The Stage 2 archaeological assessment was conducted during the preliminary planning phase of the Project in accordance with the provisions of the *Ontario Heritage Act* (Government of Ontario 1990a) and the requirements of Section 4.3.4 of the Ontario Energy Board's (OEB) *Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario, 7th Edition* (OEB 2016).

1.1.1 Objectives

In compliance with the provincial standards and guidelines set out in the Ministry of Heritage, Sport, Tourism and Culture Industries' (MHSTCI) 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), the objectives of the Stage 2 archaeological assessment are as follows:

- To document archaeological resources within the study area;
- To determine whether the study area contains archaeological resources requiring further assessment; and
- To recommend appropriate Stage 3 assessment strategies for archaeological resources identified.

Permission to enter the study area and conduct the archaeological assessment was granted by Enbridge in consultation with individual property owners.

1.2 HISTORICAL CONTEXT

1.2.1 Post-contact Indigenous Resources

"Contact" is typically used as a chronological benchmark when discussing Indigenous archaeology in Canada and describes the contact between Indigenous and European cultures. The precise moment of contact is a constant matter of discussion. Contact in what is now the province of Ontario is broadly assigned to the 16th century (Loewen and Chapdelaine 2016).

The post-contact Indigenous occupation of southern Ontario was heavily influenced by the dispersal of various Iroquoian-speaking communities by the New York State Iroquois in the mid-17th century and the subsequent arrival of Algonkian speaking groups from northern Ontario at the beginning of the 18th century (Konrad 1981; Schmalz 1991). By 1690, Ojibwa speaking people had begun moving south into the lower Great Lakes basin. The Indigenous economy since the turn of the 18th century focused on fishing and the fur trade, supplemented by agriculture and hunting (Konrad 1981; Rogers 1978). Numerous Indigenous groups and communities are associated with the post-contact occupation of southern Ontario and the general area of the Project.

At the turn of the 17th century, the region of the study area was occupied by Iroquoian populations who are historically described as the *Neutre* (by the French) or the *Attiwandaron* (by the Huron-Wendat); their autonym is not conclusively known (Birch 2015). Claude Bernou's 1680 map indicates the then dispersed *Attiragenga* (near modern day Hamilton) and *Antouaronon* (west of the Grand River along the Lake Erie north shore) nations occupied the region of the study area (White 1978: Figure 2) and settlements dating to the 17th century have been identified in the Fairchild-Big Creeks, Upper Twenty Mile Creek, and Lower Grand River settlement clusters, near to the study area (Lennox and Fitzgerald 1990: Table 13.1). In 1649, the Seneca and the Mohawk led a campaign into southern Ontario and dispersed the Attiwandaron (Neutral) nations and the Seneca established dominance over the region (Heidenreich 1978; Konrad 1981).

By 1690, Ojibwa speaking people had begun moving south into the lower Great Lakes basin (Konrad 1981; Rogers 1978); particularly, the Mississauga nations gained dominance in the region. Mississauga oral traditions, as told by Chief Robert Paudash and recorded in 1905, indicate that after the Mississauga defeat of the Mohawk Nation the Mohawk retreated to their homeland south of Lake Ontario and a peace treaty was negotiated between those groups around 1695 (Paudash 1905). Upon the Mississaugas' return they decided to settle permanently in southern Ontario.

The Mississaugas settled and inhabited a large area at the western end of Lake Ontario throughout the 1700s and into the 1800s. Between 1695 and the mid-1820s the Mississaugas continued to follow a yearly cycle of resource harvest and movement throughout their southern Ontario territory (Praxis Research Associates n.d.). With the end of the American Revolutionary War in 1783, the Six Nations Iroquois returned to southern Ontario, when approximately 2,000 Iroquois were given land by the British for their loyalty during the war and to compensate for the land they had lost in their traditional homeland. The largest group settled in the Grand River valley near Brantford, Ontario, to become the Six Nations of the Grand River.

The expansion of the fur trade led to increased interaction between European and Indigenous people, and ultimately intermarriage between European men and Indigenous women. During the 18th century the progeny of these marriages began to no longer identify with either their paternal or maternal cultures, but instead as Métis. The ethnogenesis of the Métis progressed with the establishment of distinct Métis communities along the major waterways in the Great Lakes of Ontario. Métis communities were primarily focused around the upper Great Lakes and along Georgian Bay, however Métis people have historically lived throughout Ontario (Métis Nation of Ontario 2020; Stone and Chaput 1978:607-608).

The study area falls within the historical and traditional territory of a number of Indigenous communities, including, but not limited to, the Mississaugas of the Credit First Nation (Mississaugas of the New Credit First Nation n.d.), the Six Nations of the Grand River, and the Haudenosaunee Confederacy. Since contact with European explorers and immigrants and, later, with the establishment of provincial and federal governments (the Crown), the lands within Ontario and the Geographic Townships of Beverly, West Flamborough, and East Flamborough have been included in various treaties, land claims, and land cessions. Though not an exhaustive list, Morris (1943) provides a general outline of some of the treaties within the Province of Ontario from 1783 to 1923. While it is difficult to exactly delineate treaty boundaries today, an approximate outline of the treaty lands described by Morris is provided in Figure 3 (1943). According to Morris (1943), the study area is situated within the described limits of the 1792 indenture of the 1784 Between the Lakes Purchase between the English government (referred to as "the Crown") and the Mississaugas). This treaty:

> *...was made with the Mississa[ug]a Indians 7th December, 1792, though purchased as early as 1784. This purchase in 1784 was to procure for that part of the Six Nation Indians coming into Canada a permanent abode.*
>
> *The area included in this Treaty is, Lincoln County excepting Niagara Township; Saltfleet, Binbrook, Barton, Glanford and Ancaster Townships, in Wentworth County; Brantford, Onondaga, Tusc[a]r[o]ra, Oakland and Burford Townships in Brant County; East and West Oxford, North and South Norwich, and Dereham Townships in Oxford County; North Dorchester Township in Middlesex County; South Dorchester, Malahide and Bayham Township in Elgin County; all Norfolk and Haldimand Counties; Pelham, Wainfleet, Thorold, Cumberland and Humberstone Townships in Welland County ... .*
>
> (Morris 1943:17-18)

As demonstrated above, the nature of Indigenous settlement size, population distribution, and material culture shifted as European settlers encroached upon Indigenous territory. However, despite this shift, "written accounts of material life and livelihood, the correlation of historically recorded villages to their archaeological manifestations, and the similarities of those sites to more ancient sites have revealed an antiquity to documented cultural expressions that confirms a deep historical continuity to…systems of ideology and thought" (Ferris 2009:114). As a result, Indigenous peoples of southern Ontario have left behind archaeological resources throughout the region which show continuity with past peoples, even if they have not been explicitly recorded in Euro-Canadian documentation.

1.2.2 Euro-Canadian Resources

At its inception, Upper Canada was only sparsely settled by Europeans and the land had not been officially surveyed to any great extent. Thus, there was an urgency, by the then Lieutenant Governor of Upper Canada John Graves Simcoe, to survey this new province in order to establish military roads and to prevent settlers from clearing and settling land not legally belonging to them. In 1791, the Provinces of Upper Canada and Lower Canada were created from the former Province of Quebec by an act of British Parliament (Craig 1963:17). At this time, Colonel John Graves Simcoe was appointed as the Lieutenant Governor of Upper Canada and was tasked with governing the new province, directing its settlement and

establishing a constitutional government modelled after that of Britain (Coyne 1895). The change was affected at the behest of United Empire Loyalists who wished to live under the British laws and customs they were familiar with in Great Britain and the former 13 Colonies (Craig 1963:10-11). John Graves Simcoe had ambitious plans to create a model British society in North America, stating a desire to "inculcate British customs, manners, and principles in the most trivial, as well as most serious matters" in Upper Canada (Craig 1963:21). In 1792, Simcoe divided Upper Canada into 19 counties consisting of previously-settled lands, new lands opened for settlement, and lands not yet acquired by Crown. These new counties stretched from Essex in the west to Glengarry in the east.

1.2.2.1 Wentworth County

In 1792, at Simcoe's behest, the Eighth Act of the Upper Canada Parliament divided the province into four districts: Eastern, Midland, Home, and Western (Kernighan 1875:iii). The four districts were subdivided into 19 counties. The future location of Wentworth County was in the Home District, and was in parts of Haldimand, Lincoln, and York Counties. In 1816, the Gore District was created from lands in the Home and Niagara Districts, and the County of Wentworth was formed (Archives of Ontario 2015). Wentworth County was named in honour of John Wentworth, Royal Governor of New Hampshire from 1766-1775, and later a Lieutenant Governor of Nova Scotia (Johnston 1967:3-4). In 1849, the District System was abolished (Archives of Ontario 2015), and the Counties of Halton and Wentworth formed a single municipality. In 1853, the two counties were separated. Wentworth County totaled 272,000 acres (110,074.5 hectares) and comprised the City of Hamilton, Town of Dundas, and the Townships of Beverly, Binbrook, Barton, Ancaster, Saltfleet, East and West Flamborough (alternatively spelled Flamboro), and the Township of Glanford, where the study area is located (Kernighan 1875:iii-iv).

Early 19th century communities in Wentworth County included Dundas, Ancaster, and Hamilton. The completion of the Burlington Bay Canal in 1832 (Craig 1963:158) and the opening of the Great Western Railway in 1853, led to Hamilton's ascent as the dominant settlement and place of trade in the county (Kernighan 1875:v). Hamilton developed into a major manufacturing centre of Ontario, while the rest of the county was primarily agricultural. Wentworth County was especially known for its orchards and vineyards and was an important part of the Niagara Fruit Belt (Johnston 1967:209). Other crops grown in Wentworth County included wheat, barley, and tobacco (Johnston 1967:205-206).

At the turn of the 20th century, Hamilton had a population of 50,000 (Johnston 1967:247). The widespread adoption of the automobile opened rural portions of Wentworth County to suburban development. As a result, the population of Wentworth's townships began to increase and the City of Hamilton annexed portions of Barton, Ancaster, and Saltfleet Townships. By the 1950s, the population of Wentworth not within the city of Hamilton was about 60,000 (Johnston 1967:288-289). The population of Hamilton had grown to nearly 300,000 by 1966 (Dominion Bureau of Statistics 1967:10-12). In 1973, Wentworth County was amalgamated into the new Regional Municipality of Hamilton-Wentworth, which was restructured into the single-tier City of Hamilton in 2001 (Archives of Ontario 2015).

1.2.2.2 Township of Beverly

Established in 1792, Beverly Township (alternatively spelled Beverley) took its name from the Town of Beverly, located in East Yorkshire, England. The first survey of the Township of Beverly was undertaken by Augustus Jones in 1794 and included Concessions 1 through 5. Large portions of the township were swampy and known as “Beverly Swamp”. The remaining concessions, 6 through 10, were initially surveyed in 1797 by John Stegman, but due to the challenging landscape and Beverly Swamp, the survey was completed again in 1832 by James Kirkpatrick (Collins 2001:7). The township was laid out in relation to the survey of the Governor’s Road (Dundas Street), also completed by Jones from 1793 to 1795.

The majority of European settlement occurred after James Kirkpatrick’s survey in 1832. The first settlers in the Township of Beverly were Jacob Cope and George Jones, who arrived following the survey (Page & Smith 1875:x). The majority of early landowners in the township were absentee owners, which included merchants and officeholders in York (now Toronto), Niagara, and Montreal (Collins 2001:7).

Settlement in the Township of Beverly occurred primarily at road intersections and was influenced by the establishment of mills and railway development. In the 1820s, Governor’s Road, south of the study area, was planked through the township, influencing the location of the settlements of Lynden and Copetown. The Dundas and Waterloo Road was opened in the township in the early 19th century and planked in 1837 between the Desjardins Canal to the Village of Waterloo to the northeast. The roadway, west of the study area, allowed for the settlement of Rockton, Romulus, and Sheffield (Collins 2001:8). By 1859, the Dumfries and Beverly Road was planked and connected to the Dundas and Waterloo Road from the adjacent Township of North Dumfries, in the County of Brant.

Settlement in the township was slow due to the challenging terrain composed of rock, swamps, and forests. The township remained an unbroken forest until 1810, when a portion of land was cleared near Sheffield (Cornell 1967:8). By 1820, the township had only a population of 81, with 1,883 acres of cultivated land, out of a total 70,200 acres (Page & Smith 1875:x). In the 1830s, settlers from the British Isles began to arrive in the township and impact the population growth. The first settlements in the northern portion of the township in relation to the study area occurred in 1832 with the first settlers being John and William McKnight. They were followed soon after by John Valens, and the Pentland and Macdonald families (Irwin & Co. 1883:37).

In the first few decades of the 19th century, the population grew steadily from 617 in 1824 to 2,382 in 1839. In 1837, the community of Kirkwall commenced to settle, with the majority of settlers being of Scottish decent. After 1840, the settlement of the township grew quickly and by 1850 there was very little unclaimed land (Page & Smith 1875:X). In 1846, the township had 52,159 acres taken up, with 16,332 under cultivation. William Henry Smith described the township that year as well settled, with fine farms, and two or three excellent mill streams (Smith 1846:15).

In relation to the study area, the closest early settlement in the township is Kirkwall, which was established to the west at the present-day intersection of Kirkwall Road and Concession Road 8. Kirkwall, also known as “Little Scotland,” was settled by six families from Scotland in 1832 (Collins 2001:35). A

year later the settlers were joined by 12 additional families from Scotland, as well as an English family and four families from Northern Ireland (Collins 2001:35). Within three years of the arrival of the first European settlers, a log church was constructed to accommodate the growing congregation. In 1848, the log structure was replaced with a stone church (Collins 2001:35). In 1866, Kirkwall was a small post office village with a population of about 60. At the time the village had two stores, a church, a hotel, a blacksmith shop, and a boot and shoe shop (Mitchell 1866:343). Kirkwall remained a small village throughout the late 19th century, with a population of only 60 in 1886 (Irwin & Co. 1886:103).

The Great Western Railway (GWR) was constructed through the southern portion of the Township of Beverly from 1851 to 1853 (Page & Smith 1875:iv). The line opened in January 1854, operating between Windsor and Niagara Falls (Houghton 2008:88). Stations in the township were located in the hamlets of Lynden and Copetown. In 1883, the Township of Beverly reached a population of 4,890 (Irwin & Co. 1883:38).

A portion of the 1859 map of Beverly Township (Surtees 1859) is illustrated in Figure 4. Table 1 provides a summary of historical land tenure information from the 1859 map applicable to the study area.

Table 1: Summary of Applicable Landowner Information – 1859 Map of Beverly Township

Lot	Concession	Landowner	Parcel	Comment
25	7	G. Hunter	Southern parcel	No structures illustrated.
		John Patterson	Central parcel	No structures illustrated.
		Claude Lapsley	Northern parcel	No structures illustrated.
26	7	David Patterson	Southern parcel	No structures illustrated.
		Robt Parker	Northern parcel	No structures illustrated.
27	7	William Patterson	Entire parcel	No structures illustrated.
28	7	George Archer	Entire parcel	No structures illustrated.
29	7	Matthew Gilmore	Southern parcel	No structures illustrated.
		Seth Holcomb	Northern parcel	Portion of Valens Crooked Creek illustrated in northern portion of parcel.
30	7	Wm Currie	Southern parcel	No structures illustrated.
		Mr. Law	Northern parcel	Portion of Valens Crooked Creek illustrated in northern portion of parcel.
31	7	John Jamieson	Southern parcel	No structures illustrated.
		R. Dunn	Central parcel	No structures illustrated.
		John & James Smith	Northern parcel	Portion of Valens Crooked Creek illustrated in parcel.
32	7	Walter Robertson	Southern parcel	Portion of Valens Crooked Creek illustrated in parcel.
		John & James Smith	Northern parcel	Portion of Valens Crooked Creek illustrated in parcel.
33	7	Matthew Peebles	Southern parcel	Portion of Valens Crooked Creek illustrated in parcel.

Lot	Concession	Landowner	Parcel	Comment
		J. Mahoney	Northern parcel	No structures illustrated.
34	7	Thos Duncan	Southern parcel	No structures illustrated.
		Thos Baskerville	Northern parcel	No structures illustrated.
35	7	John Patton	Southern parcel	No structures illustrated.
		Jas Dunn	Northern parcel	No structures illustrated.
36	7	N. Wilson	Southwestern parcel	No structures illustrated.
		T. Burns	Southeastern parcel	No structures illustrated.
		William Johnstone	Northern parcel	No structures illustrated.

A portion of the 1875 map of Beverly Township (Page & Smith 1875) is illustrated in Figure 5. Table 2 provides a summary of historical land tenure information from the 1875 map applicable to the study area.

Table 2: Summary of Applicable Landowner Information – 1875 Map of Beverly Township

Lot	Concession	Landowner	Parcel	Comment
25	7	R. McCormick	Southern parcel	Structure with orchard/garden, fronting Valens Road North. Structure is illustrated within the study area on Figure 4; however, aerial imagery confirms the former structure was situated south of study area.
		Jno. Patterson	Central parcel	Orchard/garden illustrated north of study area.
		Wm Lapsley	Northern parcel	Structure with orchard/garden, fronting Valens Road North.
26	7	W. Thompson	Southern parcel	Structure with orchard/garden, fronting Safari Road.
		Jno. Patterson	Northern parcel	Structure with orchard/garden, fronting Concession 8 West. Northern portion of parcel illustrated as swamp.
27	7	Wm Patterson	Entire parcel	Structure with orchard/garden, fronting Safari Road. Northern portion of lot illustrated as swamp.
28	7	Geo. Archer	Entire parcel	Two structures with orchards/gardens, fronting Safari Road. Northern portion of lot illustrated as swamp.
29	7	M. Gilmore	Southern parcel	Structure with orchard/garden, fronting Safari Road.
		P. Woods	Northwestern parcel	No structures illustrated. Entire parcel is illustrated as swamp.
		D. Connor	Northeastern parcel	No structures illustrated. Northern portion of parcel is illustrated as swamp.

Lot	Concession	Landowner	Parcel	Comment
30	7	M. Gilmore	Southern parcel	Structure illustrated in southeast corner of lot, likely fronting Safari Road. Two structures illustrated at northern end of parcel, fronting Westover Road.
		Jas Law	Northern parcel	Structure with orchard/garden, fronting Westover Road. Portion of northern section illustrated as swamp.
31	7	Jno Jameson	Southern parcel	Structure with orchard/garden, likely fronting Westover Road.
		J. McDonnough	Central parcel	No structures illustrated.
		Jno Smith	Northern parcel	No structures illustrated. Portion of northern section illustrated as swamp.
32	7	Walter Robertson	Southern parcel	Structure with orchard/garden illustrated, likely fronting Safari Road.
		Jno Smith	Northern parcel	Structure with orchard/garden illustrated, likely fronting Concession 8 West. Portion of northern section illustrated as swamp.
33	7	Robt Galbraith	Southern parcel	Structure with orchard/garden illustrated, fronting Safari Road.
		J. Mahoney	Northern parcel	Structure with orchard/garden illustrated, likely fronting Concession 8 West. Portion of northern section illustrated as swamp.
34	7	Jno Jameson	Southern parcel	No structures illustrated.
		T. Baskerville	Northern parcel	Structure with orchard/garden illustrated, fronting Concession 8 West.
35	7	A. Patton	Southern parcel	Structure with orchard/garden illustrated, fronting Safari Road.
		Jas Dunn	Northern parcel	Single structure illustrated, fronting Concession 8 West.
36	7	R. Hamilton	Southwestern parcel	Single structure illustrated, fronting Safari Road.
		A. Patton	Southeastern parcel	Single structure illustrated, fronting Safari Road.
		B. Johnson	Northwestern parcel	No structures illustrated
		Wm Johnson	Northeastern parcel	Structure with orchard/garden illustrated, fronting Middletown Road.

During the 20th century, the study area in the Township of Beverly continued to be part of a rural landscape, surrounded, primarily, by agricultural lands. The hamlets and villages in the township witnessed a decline in the early 20th century, influenced by the nearby larger markets and industries in Hamilton and Toronto. In 1974, with the creation of the Regional Municipality of Hamilton-Wentworth, the Township of Beverly was amalgamated with the Townships of West and East Flamborough, to form the

Town of Flamborough. Later, in 2001, the Town of Flamborough was amalgamated into the new City of Hamilton (Hamilton Public Library 2017b).

1.2.2.3 Township of West Flamborough

The Township of West Flamborough was surveyed by Augustus Jones in 1793 using a single-front system. The township survey, similar to the Township of Beverly, was laid out in relation to the survey of the Governor's Road. The township was named after a small east coast village in Yorkshire, England. It was surveyed into west and east portions that remained administratively joined until 1854 (Hamilton Public Library 2017b). The west portion was laid out in the shape of a triangle with the Governor's Road serving as the base. It has 11 concessions running west to east that were numbered north from Governor's Road (Burkholder 1950). Each concession was composed of long and narrow lots that were approximately 200 acres in size. However, some lot sizes in the township are irregular, due to its triangular shape and Cootes Paradise along the southeast portion (Green *et al*. 2003:2).

As part of the survey of the township, Simcoe ordered that a 60-acre plot be set aside for the creation of a town plot. The town was surveyed in 1801 by Deputy Surveyor John Stegman and named Cootes Paradise (now Dundas) after Captain Thomas Cootes, a British Naval Officer who hunted waterfowl in the area in the 1780s (Royal Botanical Gardens n.d.). The town plot was laid out on a portion of Lot 17, Concession 1, in the Township of West Flamborough and a portion of Lot 53, Concession 1, in the Township of Ancaster (Page & Smith 1875:ix).

The first European settlers in the township were Ann Morden and her family, United Empire Loyalists who came to the township in 1787. When Jones surveyed the township, he noted the Morden family as squatters in the Dundas Valley (Woodhouse 1965:10). Other early European settlers prior to 1800 included Andrew Vanevery, John Purbus, Isaac Durham, William Chrysler, David Vanevery, Frederick Schram, John Rosebrough, Peter Vanevery, Isaac Smith, John Showers, Michael Showers, William Frances, Harcar Lyons, and James Durand (Woodhouse 1965:12).

One of West Flamborough Township's main features is Spencer Creek. In the early 19th century, the water flow of the creek was sufficiently strong to power several mills, particularly in the Greensville area, where the Honourable James Crooks established several mills of various types. The industrial and residential community came to be known as Crook's Hollow and included sawmills, grist mills, flour mills, and one of the first large-scale paper mills in Upper Canada at the time. Spencer Creek, as it flows through West Flamborough Township, provides the water for two of the region's most scenic waterfalls, Webster's Falls and Tew's Falls. Both waterfalls are located along the edge of the Niagara Escarpment, just downstream from the historic village of Bullock's Corners, location of the West Flamborough Township Hall.

Settlement in the Township of West Flamborough developed primarily along the waterways and road intersections. South of the study area, Edward Peer purchased 30 acres on Spencer Creek in 1801 and built the first mill in Dundas, known as Dundas Mills (Woodhouse 1965:14). Other mills developed along watercourses in the township and by 1823 the township had 11 grist mills and eight saw mills in operation (Page & Smith 1875:iii). The community of Dundas flourished in the 19th century as it was located at the

junction of large roadways and on the shoreline of Coote's Paradise Marsh. The town developed into a trading and transportation centre in the township (Freeman 2001:21). The town received the first post office in the township in 1814 and was given the name Dundas after the main thoroughfare in the settlement, Dundas Street (Conservation Hamilton n.d.).

Growth within the township accelerated with the construction of the Desjardins Canal between 1826 and 1837. The canal was constructed along the mouth of Spencer Creek to connect Dundas with Burlington Bay. Dundas served as the location for company headquarters and offices, as well as a community for workers (Page & Smith 1875:ix). Following the construction of the Desjardins Canal, Dundas became a busy port on Lake Ontario (Freeman 2001:37). In the northern portion of the township, the opening of the Guelph to Dundas Road began in 1827, following the founding of the Town of Guelph by John Galt, north of the study area. Galt instigated the development of a roadway through the Township of Puslinch towards the Township of West Flamborough. The Guelph to Dundas Road, also known as Aboukir Road, was laid out following an Indigenous trail. Although it was an open route, the Guelph to Dundas Road remained a trail until the mid-19th century. In 1846, the Guelph and Dundas Road Company was established by a group of Guelph businessmen to further open the roadway. By 1850, the roadway was nearly completed, running through the eastern portion of the study area (Clark 2016). The roadway is depicted as an open road on the 1859 map of Wentworth County forming the boundary between the townships of West and East Flamborough before heading south through the villages of Freelton and Strabane (see Figure 4).

Dundas was incorporated as a town on July 28, 1847 (Page & Smith 1875:ix). With the construction of the GWR in 1854, Dundas witnessed a shift from canal shipments to utilization of the railway for the transportation of goods. By the end of the 19th century, the Town of Dundas had become one of the major manufacturing towns in the province, with industries producing such goods as flour, cotton, clothing, agricultural implements, and furniture (Page & Smith 1875:ix).

In relation to the study area, the closest early settlement in the township was Strabane, which developed at the intersection of Brock Road and Concession Road 8 West. It was first settled by Matthew Peebles in 1842 (Mitchell 1866:352). A post office was established at the intersection in 1851 with Peebles as the first postmaster (Library and Archives Canada 2014). By 1866, the village had a population of about 100, and included a hotel, two sawmills, a school, a church, and a boot and shoemaker (Mitchell 1866:352-353). Strabane remained a small community throughout the late 19th century, with a population in 1898 of only about 50 (Vernon 1898:149). A portion of the 1859 map of West Flamborough Township (Surtees 1859) is illustrated in Figure 4. Table 3 provides a summary of historical land tenure information from the 1859 map applicable to the study area.

Table 3: Summary of Applicable Landowner Information – 1859 Map of West Flamborough Township

Lot	Concession	Landowner	Parcel	Comment
1	7	W. Hamilton	Southern parcel	No structures illustrated.
		Patk Hamilton	Northwestern parcel	No structures illustrated.
		Robt Hamilton	Northeastern parcel	No structures illustrated.
2	7	Thos Nickle	Southern parcel	No structures illustrated.
		W. Beryman	Northern parcel	No structures illustrated.
3	7	Geo Watson	Southern parcel	No structures illustrated.
		Wm Bullock	Northern parcel	No structures illustrated.
4	7	Alexr Finley	Western parcel	No structures illustrated.
		John Ferrier	Eastern parcel	No structures illustrated.
5	7	Robt & Joseph Dixon	Entire lot	No structures illustrated.
6	7	Andw Miller	Southern parcel	No structures illustrated.
		Mathew Peebles	Central and northwestern parcel	Structure illustrated, likely fronting Concession 8 West.
		Holt Estates	Northeastern parcel	Structure illustrated at northeast corner of parcel at intersection of Brock Road and Concession 8 West – “S.S.M”.
7	7	J. Peebles	Southern parcel	No structures illustrated.
		M. Peebes	Southcentral parcel	Structure illustrated, fronting Brock Road – Strabane Post Office.
		R. Peebles	Central parcel	No structures illustrated.
		W. Brenan	Northcentral parcel	No structures illustrated.
		M. Peebles	Northern parcel	Structure illustrated, fronting Concession 8 West – “W.S.M”.
8	7	John Fulton	Southern parcel	No structures illustrated.
		Jas Fulton	Central parcel	No structures illustrated.
		Mrs J Fraser	Northern parcel	No structures illustrated.
9	7	Andw Gertley	Southern parcel	No structures illustrated.
		Geo Murray	Western parcel	No structures illustrated.
		Alfred Millard	Eastern parcel	No structures illustrated.
10	7	Dennis Balfe	Southwestern parcel	No structures illustrated.
		James Dunden	Southcentral parcel	No structures illustrated.
		Alexr & James Robertson	Southeastern parcel	No structures illustrated.
		Daniel Cole	Western parcel	No structures illustrated.
		John Cole	Eastern parcel	No structures illustrated.

Lot	Concession	Landowner	Parcel	Comment
11	7	John & Wm Pegg	Southern parcel	No structures illustrated.
		Gilbert Alexander	Northern parcel	Tributary of Twelve Mile Creek within parcel.

A portion of the 1875 map of West Flamborough Township (Page & Smith 1875) is illustrated in Figure 5. Table 4 provides a summary of historical land tenure information from the 1875 map applicable to the study area.

Table 4: Summary of Applicable Landowner Information – 1875 Map of West Flamborough Township

Lot	Concession	Landowner	Parcel	Comment
1	7	W. Hamilton	Southern parcel	Structure with orchard/garden illustrated, likely fronting Safari Road.
		Pat^{k} Hamilton	Western parcel	Structure with orchard/garden illustrated, fronting Middletown Road.
		Robt Hamilton	Eastern parcel	Structure with orchard/garden illustrated, fronting Middletown Road.
2	7	Jas. Porter	Southern parcel	Structure with orchard/garden illustrated, likely fronting Safari Road.
		And^{w} Waddel, Hrs.	Northern parcel	Two structures illustrated, fronting Concession 8 West.
3	7	Wm Bullock	Southern parcel	Single structure illustrated, fronting Safari Road
		Mich^{l} Brennan	Northern parcel	No structures illustrated.
4	7	Alex Finley	Western parcel	Structure with orchard/garden illustrated, likely fronting Safari Road.
		Jno. Ferriers, Hrs.	Eastern parcel	Structure with orchard/garden illustrated, likely fronting Safari Road.
5	7	Jno. Featherstone	Southern parcel	Structure with orchard/garden illustrated, likely fronting Safari Road.
		Jas Robertson	Northern parcel	No structures illustrated.
6	7	Wm Miller	Southern parcel	Structure with orchard/garden illustrated, likely fronting Brock Road.
		Mathew Peebles	Northern parcel	Single structure illustrated, fronting Concession 8 West.
7	7	Jas Peebles	Southern parcel	Structure with orchard/garden illustrated, fronting Brock Road.
		Mathew Peebles	Southcentral parcel	Three structures illustrated, fronting Brock Road, including the Strabane Post Office.
		Jas Fulton	Central parcel	Two structures illustrated fronting Brock Road.
		Jno Brennan	Northcentral parcel	Structure with orchard/garden illustrated, fronting Brock Road.

Lot	Concession	Landowner	Parcel	Comment
		Mathew Peebles	Northern parcel	Various structures illustrated, fronting Brock Road, including two mills.
8	7	Jno Fulton	Southern parcel	Two structures illustrated, fronting Safari Road.
		Jas Fulton	Central parcel	Two structures illustrated, likely fronting Safari Road.
		Angus Fraser	Northern parcel	Three structures illustrated, fronting Concession 8 West, including a mill.
9	7	And^{w} Gartley	Southwestern parcel	Structure with orchard/garden illustrated, fronting Safari Road.
		Alex Gartley	Southeastern parcel	Structure with orchard/garden illustrated, fronting Safari Road.
		Geo Murray	Northwestern parcel	Single structure illustrated, fronting Concession 8 West.
		Alf^{d} Millard, Heirs	Northeastern parcel	Structure with orchard/garden illustrated, fronting Concession 8 West.
10	7	Ew^{d} Balf	Southwestern parcel	Single structure illustrated, fronting Safari Road.
		T.J. Newman	Southcentral parcel	Structure with orchard/garden illustrated, fronting Safari Road.
		Alex Robertson	Southeastern parcel	Single structure illustrated, fronting Safari Road.
		Daniel Cole	Northwestern parcel	Structure with orchard/garden illustrated, fronting Concession 8 West.
		And^{w} Simmon's Heirs	Northeastern parcel	Structure with orchard/garden illustrated, fronting Concession 8 West.
11	7	Jno & Willm Pegg	Southern parcel	Structure with orchard/garden illustrated, fronting Safari Road.
		Henry Carson	Northern parcel	Structure with orchard/garden illustrated, fronting Highway 6 North.

At the turn of the 20th century, the Town of Dundas witnessed a change in settlement patterns as retired farmers began to move into the town from the surrounding township. The proximity of Dundas to the City of Hamilton also created the possibility for many town residents to work in Hamilton while maintaining their home in Dundas (Meyers 1954:42). Traffic between Dundas and Hamilton increased with the development of better roads and highways beginning in the 1920s. In 1920, the Department of Public Highways Ontario assumed roads from Hamilton to Owen Sound and established King's Highway 6 (Bevers 2020). The highway, situated within the study area, is now a busy commuter route in the City of Hamilton, with connections to Highways 401 and 403. In January 2001, the Towns of Flamborough and Dundas amalgamated with the City of Hamilton (Hamilton Public Library 2017a). Dundas remains a small suburban community within the City with a population of 24,710 in 2006 (Social Planning & Research Council of Hamilton 2008).

1.2.2.4 Township of East Flamborough

The Township of East Flamborough was surveyed in 1793 by Augustus Jones using a single-front system. Like the Township of West Flamborough, the Township of East Flamborough was laid out in relation to the Governor's Road. The Township of East Flamborough has 14 concessions running south to north, with a broken front along Burlington Bay. Lots in the township are numbered east to west. Laid out using the single-front system, each concession comprises long and narrow lots that are approximately 200 acres in size.

The Township of East Flamborough was named after the Town of Flamborough in East Yorkshire, England. The first European settler to the Township of East Flamborough was David Fonger who arrived in 1783; he was followed by William Applegarth in 1791 (Green *et al*. 1997:5). Land grants were given beginning in 1796 in the lower portions of the township. One of the first grants was given to Alexander McDonnelll in 1796, which included 800 acres along Grindstone Creek (Waterdown East Flamborough Centennial Committee [WEFCC] 1967:12).

Settlement in the Township of East Flamborough developed primarily at road intersections and along the waterways, which acted as a source of power for mills. The first mill in the township was constructed on Grindstone Creek by William and John Applegarth (Green *et al*. 1997:5), followed in the early 1800s by a sawmill on the creek near the Great Falls. The settlement of Waterdown developed around Brown's mill, at the crossroads of Dundas Street and Mill Street (Green *et al*. 1997:18) and became the largest village in the township throughout the 19th century.

The southern portion of the township was first settled in the early 19th century, while the remaining portions of the township remained heavily wooded until the 1820s and 1830s. By 1846, 25,537 acres in the township had been taken up, with 8,750 acres under cultivation. By this time the township had two grist mills and nine sawmills (Smith 1846:59). In 1854, the Township of East Flamborough was incorporated as a separate township from West Flamborough (Hamilton Public Library 2017b).

In relation to the study area, the closest early settlement in the township is Carlisle, which was established to the east in 1828 by John Eaton. Eaton and his wife Catherine settled on 400 acres of land in Lots 8 and 9, Concession 8, in the Township of East Flamborough in 1828 (Lake and Reynolds Genealogy 2017). A small village plot, originally known as Eaton, was laid out on Eaton's property by his son Anson Eaton, along with Andrew Patton and George Abery (Mitchell 1866:335). Early European settlers to this hamlet included the Fords, Pattons, Kievels, Hamiltons, McColls, Crookers, Gunbys, Mordens, Adamsons, Binkleys, Hunts, Greens, Mills, and Bennetts (WEFCC 1967:35). A post office was established in the hamlet in 1851, with G.R. Lister as the first postmaster (Library and Archives Canada 2014). In 1853, the hamlet was renamed to Carlisle (WEFCC 1967:35) and the Hamilton, Waterdown, and Carlisle Road was constructed beyween Hamilton and Carlisle. In 1866, Carlisle had a population of 150, with two general stores, several sawmills, two schools, and two churches (Mitchell 1866:335).

By 1867, all the lots in the township had been taken up by residents or land speculators (Green *et al*. 1997:3). In 1883, the township reached a population of 2,377 and included the villages of Aldershot, Carlisle, Clappison, Flamboro Centre, Mountsberg, and Waterdown (Irwin & Co. 1883:54). The largest

village was Waterdown, with a population of about 700, while Carlie had a population of 150 (Irwin & Co. 1883). A portion of the 1859 map of East Flamborough Township (Surtees 1859) is illustrated in Figure 4. Table 5 provides a summary of historical land tenure information from the 1859 map applicable to the study area

Table 5: Summary of Applicable Landowner Information – 1859 Map of East Flamborough Township

Lot	Concession	Landowner	Parcel	Comment
13	9	Jas Lafferty	Southern parcel	No structures illustrated. Portion of a tributary of Twelve Mile Creek within parcel.
		John Cummings	Northern parcel	No structures illustrated. Portion of a tributary of Twelve Mile Creek within parcel.
12	9	John Hutchinson	Southern parcel	No structures illustrated. Portion of a tributary of Twelve Mile Creek within parcel.
		Loami Sutton	Central parcel	No structures illustrated.
		T. Lambier	Northern parcel	No structures illustrated.

A portion of the 1875 map of East Flamborough Township (Page & Smith 1875) is illustrated in Figure 5. Table 6 provides a summary of historical land tenure information from the 1875 map applicable to the study area.

Table 6: Summary of Applicable Landowner Information – 1875 Map of East Flamborough Township

Lot	Concession	Landowner	Parcel	Comment
13	9	James Lafferty	Southern parcel	No structures illustrated.
		D. Cummins	Northern parcel	Single structure illustrated, likely fronting Concession 10 East.
12	9	John Walker	Southern parcel	Structure with orchard/garden illustrated, fronting Carlisle Road.
		John Lambier	Northwestern parcel	Structure with orchard/garden illustrated, fronting Concession 10 East.
		Louise Sutton	Northeastern parcel	Structure with orchard/garden illustrated, fronting Concession 10 East.

At the beginning of the 20th century, the study area remained within a rural portion of the Township of East Flamborough, just west of the hamlet of Carlisle, and was surrounded by agricultural lands. Carlisle received a small period of growth with the construction in 1911 of the Canadian Pacific Railway (C.P.R.) between Hamilton and Guelph. Traffic surrounding the study area increased with the development of better roads and highways beginning in the 1920s. The Township of East Flamborough was similarly influenced by the development of Highway 6, which influenced the development of subdivisions in Carlisle following the Second World War (WEFCC 1967:37). In January 1974, the Township of East Flamborough became part of the Regional Municipality of Hamilton-Wentworth. In January 2001, the township was

amalgamated into the new City of Hamilton (Hamilton Public Library 2017b). Carlisle remains a small community within the City, with a population in 2016 of 1,869 (Statistics Canada 2016).

1.2.2.5 Summary

As illustrated above, the historical context of the study area for the Project includes numerous examples of early Euro-Canadian resources. In discussing the late 19th century historical mapping, it must be remembered that historical county atlases were produced primarily to identify factories, offices, residences, and landholdings of subscribers and were funded by subscription fees. Landowners who did not subscribe were not always listed on the maps (Caston 1997:100). As such, structures were not necessarily depicted or placed accurately (Gentilcore and Head 1984). Further, review of historical mapping, including treaty maps, also has inherent accuracy difficulties due to potential error in geo-referencing. Geo-referencing is conducted by assigning spatial coordinates to fixed locations and using these points to spatially reference the remainder of the map. Due to changes in "fixed" locations over time (e.g., road intersections, road alignments, watercourses, etc.), errors/difficulties of scale and the relative idealism of the historical cartography, historical maps may not translate accurately into real space points. This may provide obvious inconsistencies during the historical map review. For example, structures depicted on historical mapping may appear to lie within the study area when, in fact, they are located outside of the study area.

Nonetheless, the majority of the study area has been subject to European-style agricultural practices for over 100 years, having been densely populated by Euro-Canadian farmers by the late 19th century. Portions of the study area have been cleared of woodlot and have had extensive drainage systems installed to reclaim swamp and marshland as agricultural field. Even with modern drainage systems, many of the fields included in the study area contain high rock content and are not suitable for cash cropping. Rather, they are untilled fields used for livestock pens and pasture lands.

1.3 ARCHAEOLOGICAL CONTEXT

1.3.1 The Natural Environment

The study area for the Project lies within the Flamborough Plain physiographic region. The Flamborough Plain physiographic region consists of:

> *An isolated tract of shallow drift on the Niagara cuesta…It is an area of about 150 square miles, bounded on the northwest by the Galt Moraine, and on the south by the silts and sands of glacial Lake Warren. A few drumlins are found scattered over this limestone plain and swamps are plentiful. The limestone has been swept bare in places…what little overburden there is on the bedrock, apart from the drumlins, is either bouldery glacial till or sand and gravel…Good soil is not plentiful in the little region: the soil is either wet or stony and shallow.*
>
> (Chapman and Putnam 1984:129-130)

Generally, two watersheds, i.e., Spencer Creek and small tributaries of Bronte Creek (identified as Twelve Mile Creek on historical mapping), serve to drain the Flamborough Plains physiographic region. Portions of these two watersheds traverse the study area. Additional unnamed secondary and tertiary creeks and streams from these primary sources are noted within the study area. Moreover, additional ancient and/or relic tributaries of water sources may have existed but are not identifiable today and are not indicated on historic mapping.

Soils within the region are generally of poor quality as they are often wet or stony and shallow (Chapman and Putnam 1984:130). With modern agricultural tiling, these soils, while not ideal, would become suitable for agricultural practices. However, in many areas within the study area, bedrock is close to the surface and, in other areas, soils exhibit a high degree of rock content. In these areas, ploughing has not been feasible, and the lands are limited to use as livestock pens and pastures.

1.3.2 Pre-contact Indigenous Resources

It has been demonstrated that Indigenous people began occupying southern Ontario as the Laurentide glacier receded, as early as 9000 BCE (Ellis and Ferris 1990:13). Much of what is understood about the lifeways of these Indigenous peoples is derived from archaeological evidence and ethnographic analogy. In Ontario, Indigenous culture prior to the period of contact with European peoples has been distinguished into cultural periods based on observed changes in material culture. These cultural periods are largely based on observed changes to formal lithic tools, and separated into the Early Paleo-Indian, Late Paleo-Indian, Early Archaic, Middle Archaic, Late Archaic and Terminal Archaic periods. Following the advent of ceramic technology in the Indigenous archaeological record, cultural periods are separated into the Early Woodland, Middle Woodland, and Late Woodland periods, based primarily on observed changes in formal ceramic decoration. It should be noted that these cultural periods do not necessarily represent specific cultural identities but are a useful paradigm for understanding changes in Indigenous culture through time. The current understanding of Indigenous archaeological culture is summarized in Table 7, based on Ellis and Ferris (1990). The provided time periods are based on the “Common Era” calendar notation system, i.e., Before Common Era (BCE) and Common Era (CE).

Table 7: Generalized Cultural Chronology of the Study Area

Period	Characteristics	Time Period	Comments
Early Paleo-Indian	Fluted Projectiles	9000 – 8400 BCE	Spruce parkland, caribou hunters
Late Paleo-Indian	Hi-Lo Projectiles	8400 – 8000 BCE	Smaller but more numerous sites
Early Archaic	Kirk and Bifurcate Base Points	8000 – 6000 BCE	Slow population growth
Middle Archaic	Brewerton-like points	6000 – 2500 BCE	Environment similar to present
Late Archaic	Narrow Points	2500 – 1800 BCE	Increasing site size
	Broad Points	1800 – 1500 BCE	Large chipped lithic tools
	Small Points	1500 – 1100 BCE	Introduction of bow hunting
Terminal Archaic	Hind Points	1100 - 950 BCE	Emergence of true cemeteries
Early Woodland	Meadowood Points	950 - 400 BCE	Introduction of pottery

Period	Characteristics	Time Period	Comments
Middle Woodland	Dentate/Pseudo-Scallop Pottery	400 BCE – 500 CE	Increased sedentism
	Princess Point	550 – 900 CE	Introduction of corn
Late Woodland	Early Ontario Iroquoian	900 – 1300 CE	Emergence of agricultural villages
	Middle Ontario Iroquoian	1300 – 1400 CE	Long longhouses (100+ metres)
	Late Ontario Iroquoian	1400 – 1650 CE	Tribal warfare and displacement
Contact Indigenous	Various Algonkian Groups	1650 – 1875 CE	Early written records and treaties
Late Historic	Euro-Canadian	1796 CE – present	European settlement

Between 9000 and 8000 BCE, Indigenous populations were sustained by hunting, fishing, and foraging and lived a relatively mobile existence across an extensive geographic territory. Despite these wide territories, social ties were maintained between groups. One method of maintaining social ties was through gift exchange, evident through exotic lithic material documented on many sites (Ellis 2013:35-40).

By approximately 8000 BCE, evidence exists and becomes more common for the production of ground-stone tools such as axes, chisels, and adzes. These tools themselves are believed to be indicative specifically of woodworking. This evidence can be extended to indicate an increase in craft production and arguably craft specialization. This latter statement is also supported by evidence, dating to approximately 7000 BCE of ornately carved stone objects which would be laborious to produce and have explicit aesthetic qualities (Ellis 2013:41). This is indirectly indicative of changes in social organization which permitted individuals to devote time and effort to craft specialization. Since 8000 BCE, the Great Lakes basin experienced a low-water phase, with shorelines significantly below modern lake levels (Stewart 2013: Figure1.1.C). It is presumed that the majority of human settlements would have been focused along these former shorelines. At approximately 6500 BCE the climate had warmed considerably since the recession of the glaciers and the environment had grown more similar to the present day. By approximately 4500 BCE, evidence exists from southern Ontario for the utilization of native copper (naturally occurring pure copper metal) (Ellis 2013:42). The known origin of this material along the north shore of Lake Superior indicates the existence of extensive exchange networks across the Great Lakes basin.

At approximately 3500 BCE, the isostatic rebound of the North American plate following the melt of the Laurentide glacier had reached a point which significantly affected the watershed of the Great Lakes basin. Prior to this, the Upper Great Lakes had drained down the Ottawa Valley via the French-Mattawa river valleys. Following this shift in the watershed, the drainage course of the Great Lakes basin had changed to its present course. This also prompted a significant increase in water-level to approximately modern levels (with a brief high-water period); this change in water levels is believed to have occurred catastrophically (Stewart 2013:28-30). This change in geography coincides with the earliest evidence for cemeteries (Ellis 2013:46). By 2500 BCE, the earliest evidence exists for the construction of fishing weirs (Ellis *et al.* 1990: Figure 4.1). Construction of these weirs would have required a large amount of communal labour and are indicative of the continued development of social organization and communal identity. The large-scale procurement of food at a single location also has significant implications for

permanence of settlement within the landscape. This period is also marked by further population increase and by 1500 BCE evidence exists for substantial permanent structures (Ellis 2013:45-46).

By approximately 950 BCE, the earliest evidence exists for populations using ceramics. Populations are understood to have continued to seasonally exploit natural resources. This advent of ceramic technology correlated, however, with the intensive exploitation of seed foods such as goosefoot and knotweed as well as mast such as nuts (Williamson 2013:48). The use of ceramics implies changes in the social organization of food storage as well as in the cooking of food and changes in diet. Fish also continued to be an important facet of the economy at this time. Evidence continues to exist for the expansion of social organization (including hierarchy), group identity, ceremonialism (particularly in burial), interregional exchange throughout the Great Lakes basin and beyond, and craft production (Williamson 2013:48-54).

By approximately 550 CE, evidence emergences for the introduction of maize into southern Ontario. This crop would have initially only supplemented Indigenous people's diet and economy (Birch and Williamson 2013:13-14). Maize-based agriculture gradually became more important to societies and by approximately 900 CE permanent communities emerge which are primarily focused on agriculture and the storage of crops, with satellite locations oriented toward the procurement of other resources such as hunting, fishing, and foraging. By approximately 1250 CE, evidence exists for the common cultivation of historic Indigenous cultigens, including maize, beans, squash, sunflower and tobacco. The cultural affiliation of populations within the region of the study area at this time period is debated, whether they may have spoken a form of Iroquoian language or Algonquian (Murphy and Ferris 1990). The extant archaeological record demonstrates many cultural traits similar to historical Indigenous nations (Williamson 2013:55).

1.3.3 Registered Archaeological Sites and Surveys

In Canada, archaeological sites are registered within the Borden system, a national grid system designed by Charles Borden in 1952 (Borden 1952). The grid covers the entire surface area of Canada and is divided into major units containing an area that is two degrees in latitude by four degrees in longitude. Major units are designated by upper case letters. Each major unit is subdivided into 288 basic unit areas, each containing an area of 10 minutes in latitude by 10 minutes in longitude. The width of basic units reduces as one moves north due to the curvature of the earth. In southern Ontario, each basic unit measures approximately 13.5 kilometres east-west by 18.5 kilometres north-south. In northern Ontario, adjacent to Hudson Bay, each basic unit measures approximately 10.2 kilometres east-west by 18.5 kilometres north-south. Basic units are designated by lower case letters. Individual sites are assigned a unique, sequential number as they are registered. These sequential numbers are issued by the MHSTCI who maintain the *Ontario Archaeological Sites Database*. The study area is located within Borden blocks AiHa and AiGx, and Borden block AhHa is located immediately to the south.

Information concerning specific site locations is protected by provincial policy and is not fully subject to the *Freedom of Information and Protection of Privacy Act* (Government of Ontario 1990b). The release of such information in the past has led to looting or various forms of illegally conducted site destruction. Confidentiality extends to media capable of conveying location, including maps, drawings, or textual descriptions of a site location. The MHSTCI will provide information concerning site location to the party

or an agent of the party holding title to a property, or to a licensed archaeologist with relevant cultural resource management interests.

An examination of the *Ontario Archaeological Sites Database* has shown that there are 17 registered archaeological sites within one kilometre of the study area (Government of Ontario 2020a). None of the registered archaeological sites are located within 50 metres of the study area. Table 8 provides a summary of the registered archaeological sites.

Table 8: Registered Archaeological Sites

Borden #	Site Name	Site Type	Generalized Cultural Affiliation
AiHa-1	Shaver Hill Ossuary	Ossuary	Indigenous
AiHa-2	Christianson	Village	Indigenous
AiHa-3	Dwyer Ossuary	Ossuary	Indigenous
AiHa-5	Hamilton / Hunter-Beaton	Village	Indigenous
AiHa-7	Hood	Village / Burial	Indigenous
AiHa-8	Mills	Village	Indigenous
AiHa-9	MacDonald	Village	Indigenous
AiHa-10	Bogle I	Hamlet	Indigenous
AiHa-11	Bogle II	Hamlet	Indigenous
AiHa-12	Robertson	Village	Indigenous
AiHa-14	Freelton / Kynast	Village	Indigenous
AiHa-18	Kralt	Hamlet	Indigenous
AiHa-23	UG Kirkwall 1	Lithic scatter	Indigenous
AiHa-29	Groen	Camp	Indigenous
AiHa-36	Rutherford	Homestead	19th century Euro-Canadian
AiGx-70	Gamble	Indeterminate	Indigenous
AhHa-379	Tract 39, Location 1	Homestead	19th century Euro-Canadian

A query of the *Ontario Public Register of Archaeological Reports* identified three previous archaeological assessments which may document work within 50 metres of the study area (Government of Ontario 2020b). Based on an examination of the queried reports, none document registered archaeological sites within 50 metres of the study area. Additional reports in the *Ontario Public Register of Archaeological Reports* suggest previous work has been completed in the general vicinity of the study area. However, many of these reports represent archaeological assessments from the 1970s and 1980s when mapping and artifact recording standards were less precise than today's standards. Stantec's Stage 1 archaeological assessment report for the Project (Stantec 2019) provides an overview of the earlier and possibly related archaeological reports. Table 9 provides a summary of the previous archaeological reports relevant to the Stage 2 study area.

Table 9: Previous Archaeological Assessments

Year	Report	Author	Project Information Form (PIF) Number
2007	*The 2005-2006 Stage 2-4 Archaeological Investigations of the NPS 48 Hamilton to Milton Loop, Hamilton Take-off to Milton Tie-In Project, Hamilton-Wentworth Regional Municipality & Halton Regional Municipality Ontario*	D.R. Poulton & Associates Inc. (DPA)	P116-051-2005; P116-172-2006
2016a	*Stage 2 Archaeological Assessment: Dawn Parkway System Expansion, Hamilton to Milton Section, Union Gas Limited, Parts of Lots 1 to 13, Concession 9, Geographic Township of East Flamborough, former Wentworth County, now City of Hamilton, and parts of Lot 10, Concessions 1 to 3, Geographic Township of Nelson, former Halton County, now City of Burlington, Regional Municipality of Halton, Ontario*	Stantec	P256-0383-2015
2016b	*Stage 1-2 Archaeological Assessment: Hamilton Valve Site Access Road Widening, Part of Lot 13, Concession 9, Geographic Township of East Flamborough, now City of Hamilton, Ontario*	Stantec	P083-0261-2015
2019	*Stage 1 Archaeological Assessment: Kirkwall – Hamilton Pipeline Project, Parts of Various Lots and Concessions, Geographic Townships of Beverly, West Flamborough, and East Flamborough, former Wentworth County, now City of Hamilton, Ontario*	Stantec	P256-0564-2019

As part of the Stage 2 assessment for the NPS 48 Hamilton to Milton Loop, Hamilton Take-off to Milton Tie-In Project, a portion of DPA's (2007) survey area overlaps with the current study area around the existing Hamilton Valve Site. No archaeological resources were identified in this area, or in the 50 metres surrounding this area, by DPA (2007).

In 2015, Stantec completed the Stage 2 assessment of the Dawn Parkway System Expansion, Hamilton to Milton Section project (Stantec 2016a). A portion of the Stantec (2016a) study area overlaps with the current study area, as well as a portion of DPA's (2007) study area, around the existing Hamilton Valve Site. No archaeological resources were identified in this area, or in the 50 metres surrounding this area, by Stantec (2016a).

To facilitate the widening of the access road leading to Enbridge's existing Hamilton Valve Site, Stantec (2016b) completed a Stage 1-2 archaeological assessment. The study area for Stantec (2016b) is situated adjacent and to the south of the current study area for the Project. No archaeological resources were identified by Stantec during the assessment (Stantec 2016b).

In 2019, Stantec completed a Stage 1 archaeological assessment for the Project. The study area for the Stage 1 assessment of the Project was large, comprising approximately 6,400 hectares, and designed to capture a broad and generalized geographic area associated with the Project since the final routing of the pipeline was not known at that time. The Stage 1 archaeological assessment determined that the entirety of the study area retains potential for the identification of Indigenous and Euro-Canadian archaeological resources (Stantec 2019). Stantec (2019) determined that Stage 2 archaeological assessment was

required for any portion of the Project's anticipated construction activities which impacted an area of archaeological potential.

1.3.4 Existing Conditions

The Stage 2 study area for the Project comprises approximately 77.6 hectares and includes various lots and concessions, Geographic Townships of Beverly, West Flamborough, and East Flamborough, former Wentworth County, now City of Hamilton, Ontario (see Figure 1). The proposed Project will be constructed between Enbridge's existing Kirkwall valve site, located northeast of the intersection of Safari Road and Valens Road, and Enbridge's existing Hamilton valve site, located east of Highway 6 and north of Carlisle Road, generally paralleling three existing Enbridge pipelines (see Figure 2). Broadly, much of the study area is located within Enbridge's existing pipeline easement which contains other active pipelines. More specifically, the study area comprises agricultural field, woodlot, scrubland and pasture, manicured lawn, areas of previous disturbance, and low and permanently wet areas.

2.0 FIELD METHODS

The Stage 2 archaeological assessment of the study area for the Project was conducted between May 8, 2020 and November 20, 2020 under PIF number P256-0616-2020 issued to Parker Dickson, MA, of Stantec by the MHSTCI. The study area comprises approximately 77.6 hectares. Prior to the start of the Stage 2 archaeological assessment, Enbridge provided AutoCAD files which defined the study area. These files were then geo-referenced by Stantec's Geographic Information Services (GIS) team and a digital file (i.e., a shape file) was created of the Project's anticipated components and study area. The digital file was uploaded to handheld mobile/GPS devices for use in the field. In some areas, the study area was further delineated in the field by wooden stakes installed by Enbridge's third-party geomatics subcontractor.

During the Stage 2 survey, field, weather, and lighting conditions were suitable for the identification and recovery of archaeological resources. At no time was the archaeological assessment conducted when the field, weather, or lighting conditions were detrimental to the recovery of archaeological material (Table 10). Photographic documentation in Section 8.1 of this report confirms that field conditions met the requirements for a Stage 2 archaeological assessment, as per the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Section 7.8.6 Standard 1a.; Government of Ontario 2011). Figure 6 provides an illustration of the Stage 2 assessment methods, as well as photograph locations and directions.

Table 10: Weather and Field Conditions

Date	Field Director	Activity	Weather	Field Conditions
May 8, 2020	Hillary Schwering (R1064)	Test pit survey	Overcast, cool	Soil is dry and friable, screens well.
May 21, 2020	Hillary Schwering (R1064)	Pedestrian and test pit survey	Sunny, mild	Ground visibility is greater than 80%; soil is dry and friable, screens well.
May 22, 2020	Hillary Schwering (R1064)	Pedestrian and test pit survey	Sunny, mild	Ground visibility is greater than 80%; soil is dry and friable, screens well.
May 27, 2020	Darren Kipping (R422)	Pedestrian and test pit survey	Partly sunny, warm	Ground visibility is greater than 80%; soil is dry and friable, screens well.
May 28, 2020	Darren Kipping (R422)	Pedestrian and test pit survey	Partly sunny, warm	Ground visibility is greater than 80%; soil is dry and friable, screens well.
May 29, 2020	Kristen Hahne (R1154)	Test pit survey	Overcast, warm	Soil is dry and friable, screens well.
June 1, 2020	Kristen Hahne (R1154)	Pedestrian and test pit survey	Sunny, warm	Ground visibility is greater than 80%; soil is dry and friable, screens well.
June 2, 2020	Kristen Hahne (R1154)	Pedestrian and test pit survey	Partly cloudy, warm	Ground visibility is greater than 80%; soil is dry and friable, screens well.

Field Methods
March 30, 2021

Date	Field Director	Activity	Weather	Field Conditions
June 3, 2020	Kristen Hahne (R1154)	Pedestrian and test pit survey	Partly cloudy, warm; light rain in morning	Ground visibility is greater than 80%; soil is damp and friable, screens well.
June 4, 2020	Kristen Hahne (R1154)	Test pit survey	Sunny, hot	Soil is dry and friable, screens well.
June 5, 2020	Kristen Hahne (R1154)	Test pit survey	Sunny, hot	Soil is dry and friable, screens well.
June 8, 2020	Kristen Hahne (R1154)	Test pit survey	Sunny, warm	Soil is dry and friable, screens well.
June 9, 2020	Kristen Hahne (R1154)	Test pit survey	Sunny, hot	Soil is dry and friable, screens well.
June 15, 2020	Christian Meier (R1122)	Test pit survey	Sunny, warm	Soil is dry to damp, and friable, screens well.
June 16, 2020	Christian Meier (R1122)	Test pit survey	Sunny, warm	Soil is dry to damp, and friable, screens well.
June 17, 2020	Christian Meier (R1122)	Test pit survey	Sunny, warm	Soil is dry and friable, screens well.
June 18, 2020	Christian Meier (R1122)	Test pit survey	Sunny, warm	Soil is dry and friable, screens well.
June 19, 2020	Christian Meier (R1122)	Test pit survey	Mainly sunny, warm	Soil is dry and friable, screens well.
June 23, 2020	Christian Meier (R1122)	Test pit survey	Overcast, warm; rain in afternoon	Soil is dry and friable, screens well. Work stopped in afternoon due to heavy rains.
June 24, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, mild	Soil is damp and friable, screens well.
June 25, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, warm	Soil is dry and friable, screens well.
June 26, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, warm	Soil is dry and friable, screens well.
June 29, 2020	Christian Meier (R1122)	Test pit survey	Sunny, hot	Soil is dry and friable, screens well.
June 30, 2020	Christian Meier (R1122)	Test pit survey	Sunny, warm	Soil is dry and friable, screens well.
July 2, 2020	Christian Meier (R1122)	Test pit survey	Sunny, hot	Soil is dry and friable, screens well.
July 3, 2020	Christian Meier (R1122)	Test pit survey	Sunny, hot	Soil is dry and friable, screens well.
July 6, 2020	Christian Meier (R1122)	Test pit survey	Sunny, hot	Soil is dry and friable, screens well.
July 7, 2020	Christian Meier (R1122)	Test pit survey	Sunny, hot	Soil is dry and friable, screens well.

Field Methods
March 30, 2021

Date	Field Director	Activity	Weather	Field Conditions
July 8, 2020	Christian Meier (R1122)	Test pit survey	Sunny, warm	Soil is dry and friable, screens well.
July 9, 2020	Christian Meier (R1122)	Test pit survey	Sunny, hot	Soil is dry and friable, screens well.
July 10, 2020	Christian Meier (R1122)	Test pit survey	Sunny, hot	Soil is dry and friable, screens well.
July 13, 2020	Christian Meier (R1122)	Test pit survey	Sunny, warm	Soil is dry and friable, screens well.
July 14, 2020	Christian Meier (R1122)	Test pit survey	Sunny, warm	Soil is dry and friable, screens well.
July 15, 2020	Christian Meier (R1122)	Test pit survey	Sunny, hot	Soil is dry and friable, screens well.
July 16, 2020	Christian Meier (R1122)	Test pit survey	Overcast, warm; rain in afternoon	Soil is dry and friable, screens well. Work stopped in afternoon due to heavy rains.
July 17, 2020	Christian Meier (R1122)	Test pit survey	Sunny, hot	Soil is dry to damp, and friable, screens well.
July 20, 2020	Christian Meier (R1122)	Test pit survey	Sunny, warm	Soil is dry and friable, screens well.
July 21, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, warm	Soil is dry and friable, screens well.
July 22, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, warm	Soil is dry and friable, screens well.
July 23, 2020	Bobbi Sheppard (R1152)	Test pit survey	Sunny, hot	Soil is dry, and friable, screens well.
July 24, 2020	Bobbi Sheppard (R1152)	Test pit survey	Sunny, hot	Soil is dry, and friable, screens well.
July 27, 2020	Christian Meier (R1122)	Test pit survey	Sunny, hot	Soil is dry, and friable, screens well.
July 28, 2020	Christian Meier (R1122)	Test pit survey	Sunny, warm	Soil is dry, and friable, screens well.
July 29, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, warm	Soil is dry and friable, screens well.
July 30, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, warm	Soil is dry and friable, screens well.
July 31, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, warm	Soil is dry and friable, screens well.
August 4, 2020	Christian Meier (R1122)	Test pit survey	Overcast, warm; light rain in morning	Soil is dry to damp, and friable, screens well.
August 5, 2020	Christian Meier (R1122)	Test pit survey	Overcast, warm	Soil is dry, and friable, screens well.

Field Methods
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Date	Field Director	Activity	Weather	Field Conditions
August 6, 2020	Christian Meier (R1122)	Test pit survey	Sunny, warm	Soil is dry, and friable, screens well.
August 7, 2020	Christian Meier (R1122)	Test pit survey	Sunny, warm	Soil is dry, and friable, screens well.
August 10, 2020	Christian Meier (R1122)	Test pit survey	Sunny, hot	Soil is dry, and friable, screens well.
August 11, 2020	Christian Meier (R1122)	Test pit survey	Sunny, warm	Soil is dry, and friable, screens well.
August 12, 2020	Christian Meier (R1122)	Test pit survey	Sunny, warm	Soil is dry, and friable, screens well.
August 13, 2020	Christian Meier (R1122)	Test pit survey	Sunny, warm	Soil is dry, and friable, screens well.
August 14, 2020	Christian Meier (R1122)	Test pit survey	Sunny, warm	Soil is dry, and friable, screens well.
August 17, 2020	Christian Meier (R1122)	Test pit survey	Overcast, warm; rain in afternoon	Soil is dry and friable, screens well. Work stopped in afternoon due to heavy rains.
August 18, 2020	Christian Meier (R1122)	Test pit survey	Sunny, warm	Soil is damp, and friable, screens well.
August 19, 2020	Christian Meier (R1122)	Test pit survey	Sunny, warm	Soil is dry, and friable, screens well.
August 20, 2020	Christian Meier (R1122)	Test pit survey	Sunny, warm	Soil is dry, and friable, screens well.
August 21, 2020	Christian Meier (R1122)	Test pit survey	Sunny, warm	Soil is dry, and friable, screens well.
August 24, 2020	Christian Meier (R1122)	Test pit survey	Sunny, hot	Soil is dry, and friable, screens well.
August 25, 2020	Christian Meier (R1122)	Test pit survey	Sunny, hot	Soil is dry, and friable, screens well.
August 26, 2020	Christian Meier (R1122)	Test pit survey	Mainly sunny, warm	Soil is dry, and friable, screens well.
August 27, 2020	Christian Meier (R1122)	Test pit survey	Mainly sunny, hot	Soil is dry, and friable, screens well.
August 28, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, warm	Soil is dry, and friable, screens well.
August 31, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, warm	Soil is dry, and friable, screens well.
September 1, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, warm	Soil is dry, and friable, screens well.
September 2, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, warm	Soil is dry, and friable, screens well.
September 3, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, warm	Soil is dry, and friable, screens well.

Field Methods
March 30, 2021

Date	Field Director	Activity	Weather	Field Conditions
September 4, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, warm	Soil is dry, and friable, screens well.
September 8, 2020	Kristen Hahne (R1154)	Test pit survey	Overcast, cool	Soil is dry, and friable, screens well.
September 10, 2020	Kristen Hahne (R1154)	Test pit survey	Overcast, warm	Soil is dry, and friable, screens well.
September 11, 2020	Kristen Hahne (R1154)	Test pit survey	Partly sunny, warm	Soil is dry, and friable, screens well.
September 14, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, warm	Soil is dry, and friable, screens well.
September 15, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, warm	Soil is dry, and friable, screens well.
September 16, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, warm	Soil is dry, and friable, screens well.
September 17, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, mild	Soil is dry, and friable, screens well.
September 18, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, mild	Soil is dry, and friable, screens well.
September 21, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, mild	Soil is dry, and friable, screens well.
September 22, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, warm	Soil is dry, and friable, screens well.
September 23, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, warm	Soil is dry, and friable, screens well.
September 24, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, warm	Soil is dry, and friable, screens well.
September 25, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, warm	Soil is dry, and friable, screens well.
September 28, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, warm	Soil is dry, and friable, screens well.
September 29, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, mild	Soil is dry, and friable, screens well.
September 30, 2020	Christian Meier (R1122)	Test pit survey	Overcast, mild; rain in afternoon	Soil is dry and friable, screens well. Work stopped in afternoon due to heavy rains.
October 1, 2020	Christian Meier (R1122)	Test pit survey	Sunny, mild	Soil is dry to damp, and friable, screens well.
October 2, 2020	Christian Meier (R1122)	Test pit survey	Partly cloudy, mild	Soil is dry to damp, and friable, screens well.
October 5, 2020	Christian Meier (R1122)	Test pit survey	Mainly sunny, mild	Soil is dry, and friable, screens well.
October 6, 2020	Christian Meier (R1122)	Test pit survey	Mainly sunny, mild	Soil is dry, and friable, screens well.

Date	Field Director	Activity	Weather	Field Conditions
October 7, 2020	Christian Meier (R1122)	Field conditions check	Overcast, cool; rain	Not applicable; no archaeological work completed.
October 8, 2020	Christian Meier (R1122)	Pedestrian survey; test pit survey	Partly cloudy, mild	Ground visibility is greater than 80%; soil is dry and friable, screens well.
October 9, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, warm	Soil is dry, and friable, screens well.
October 23, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, mild	Soil is dry, and friable, screens well.
November 18, 2020	Christian Meier (R1122)	Test pit survey	Overcast, cool	Soil is dry, and friable, screens well.
November 19, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, mild	Soil is dry, and friable, screens well.
November 20, 2020	Christian Meier (R1122)	Test pit survey	Partly sunny, mild	Soil is dry, and friable, screens well.

Approximately 23.9% of the study area consists of active agricultural field and was subject to pedestrian survey in accordance with Section 2.1.1 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). In some instances, the pedestrian survey interval was reduced to one metre to accommodate staff within narrow survey corridors or where appropriate based on crop conditions in accordance with Section 2.1.1 Guideline 2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). Regardless of the survey interval, ground surface visibility during the pedestrian survey was 80% or more and provided for adequate conditions for the identification of archaeological resources. Photographs illustrating the pedestrian survey of the study area are provided in Section 8.1.

When archaeological resources were identified during the pedestrian survey, the survey transect was decreased to a one-metre interval and spanned a minimal 20 metre radius around identified artifacts. This approach was used to determine if the artifact was an isolated find or part of a larger surface scatter, as per Section 2.1.1 Standard 7 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The identified artifacts were collected, and a Universal Transverse Mercator (UTM) coordinate was taken as per Section 2.1 Standard 4.a of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). In fact, a UTM coordinate was recorded for every identified surface artifact. The Stage 2 surface collection was conducted according to Stage 3 controlled surface pickup (CSP) standards, as allowed by the *Fieldwork: Stage 2 – Frequently Asked Questions* document issued by the MHSTCI (Government of Ontario 2016). Additional UTM coordinates were recorded for each archaeological location in accordance with Section 5.0 Standard 2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

The UTM coordinates were taken using ArcGIS Collector powered by ESRI, customized for archaeological survey and assessment, on a handheld mobile device paired with an R1 Receiver to an accuracy of less than one metre. The UTM coordinates are located in zone 17T and are based upon the

North American Datum 1983 (NAD83). A map illustrating the exact site location and a listing of UTM coordinates recorded during the assessment are provided in the Supplementary Documentation to this report.

Approximately 59.6% of the study area was assessed by test pit survey in accordance with Section 2.1.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The portion of the study area subject to test pit survey included areas inaccessible for ploughing, such as manicured lawn, scrubland and grassland, woodlot, livestock pens, and pasture which did not meet the standards or appropriate conditions for pedestrian survey (Section 2.1.2 Standard 1.f. of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* [Government of Ontario 2011]). Many of the livestock pens, pasture, and scrubland and grassland areas were not viable for ploughing due to high rock content, heavy brush, and/or heavy weed growth. Photographs depicting the general high rock content, heavy brush, and/or heavy week growth were not specifically obtained during the Stage 2 survey. Correspondence between Enbridge and applicable landowners confirming field conditions and the non-viable nature of ploughing is included in the Supplementary Documentation to this report.

The test pits were at least 30 centimetres in diameter and excavated five centimetres into sterile subsoil. The soils and test pits were then examined for stratigraphy, cultural features, or evidence of fill. Soil was screened through six millimetre mesh hardware cloth to facilitate the recovery of small artifacts and then used to backfill the pit. During the test pit survey, evidence of previous construction disturbance was noted within Enbridge's existing pipeline easement, particularly above existing buried infrastructure. However, the test pit survey in these areas remained at a five metre interval. Areas with a high rock content or with exposed bedrock were assessed through test pit survey at a 10 metre interval. Overall, approximately 58.2% of the study area was test pit surveyed at a five metre interval and approximately 1.4% of the study area was test pit surveyed at a 10 metre interval. Photographs illustrating the test pit survey of the study area are provided in Section 8.1.

In accordance with Section 2.1.3 Standard 1 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), when archaeological resources were encountered during the Stage 2 test pit survey, the test pit excavation continued on the survey grid to determine the extent of further positive test pits. When insufficient archaeological resources were identified to meet the criteria to proceed to Stage 3 archaeological assessment, the archaeological location was intensified in accordance with Section 2.1.3 Standard 2 (Option A) of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). UTM coordinates were recorded for positive test pit locations. Additional UTM coordinates were recorded for each archaeological location in accordance with Section 5.0 Standard 2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

Approximately 5.3% of the study area was identified as previously disturbed, including an extensive and artificial berm, extensive grading, paved and gravel laneways, and buried utilities. While these areas were not surveyed, they were photographically documented. Photographs in Section 8.1 confirm that physical features affected the ability to survey portions of the study area in accordance with Section 7.8.6



Standard 1b of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

Approximately 2.2% of the study area was identified as low and permanently wet due to natural watercourses and low-lying areas, intentional landscaping, or municipal drainage projects, and were not surveyed. While these areas were not surveyed, they were photographically documented and photographs in Section 8.1 confirm that physical features affected the ability to survey portions of the study area in accordance with Section 7.8.6 Standard 1.b of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

Approximately 4.2% of the study area had been previously assessed (DPA 2007; Stantec 2016a). Previously assessed portions of the study area were not re-surveyed by Stantec as part of this assessment.

The remaining portion of the study area, approximately 4.9%, was not assessed and retains potential for the identification and documentation of archaeological resources. Access to and appropriate field preparation could not be obtained for these lands during the Stage 2 archaeological assessment. To facilitate the original anticipated construction schedule for the Project, Enbridge requested that these lands be assessed as part of a later and separate archaeological assessment. Thus, while these lands remain a part of the anticipated study area for the Project, they were not assessed or surveyed as part of this Stage 2 archaeological assessment. The lands within the current study area which were not assessed as part of this assessment and report will be documented in a subsequent Stage 2 archaeological assessment.

During the Stage 2 survey, Stantec archaeologists were joined by representatives from the Mississaugas of the Credit First Nation, the Six Nations of the Grand River, and the Haudenosaunee Development Institute. Additional information on the Indigenous Engagement practices conducted during the Stage 2 archaeological assessment is provided in the Record of Indigenous Engagement. The Record of Indigenous Engagement is a separate document submitted to the MHSTCI which may include who was engaged, engagement procedures, dates of engagement, strategies to incorporate community input, and processes for providing results to the community. Similar to sensitive information documented in the Supplementary Documentation (e.g., exact site location, UTM coordinates, etc.), the Record of Indigenous Engagement is provided as a separate document and does not form a part of the *Ontario Public Register of Archaeological Reports.*

3.0 RECORD OF FINDS

The Stage 2 archaeological assessment of the study area was conducted employing the methods described in Section 2.0. An inventory of the documentary record generated by fieldwork is provided in Table 11. Thirty-four new archaeological locations were identified during the Stage 2 survey of the study area. Borden numbers were assigned to identified archaeological locations in accordance with Section 7.12 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). Maps illustrating exact site locations do not form part of this public report; they may be found in the Supplementary Documentation.

Table 11: Inventory of Documentary Record

Document Type	Current Location of Document Type	Additional Comments
223 pages of field notes	Stantec office in London, Ontario	In original field book and scanned in project file
1 digital map and data files	Stantec GIS server in Markham, Ontario	Stored digitally on central GIS server
1 map provided by Enbridge	Stantec office in London, Ontario	Hard and digital copies in project file
354 digital photographs	Stantec office in London, Ontario	Stored digitally in project file

The material culture collected during the Stage 2 archaeological survey of the study area is contained in one Bankers box, labeled by Location number, Borden number, and artifact type. The box will be temporarily housed at the Stantec London office until formal arrangements can be made for a transfer to a MHSTCI collections facility.

Chert type identification was accomplished visually using reference materials located in the Stantec London office. Chert is a naturally occurring mineral found in sedimentary rocks that is a granular crystalline form of quartz, composed of cryptocrystalline and microcrystalline crystals (Eley and von Bitter 1989). Raw material acquisition and procurement strategies have long been theorized in academic literature. Some researchers suggest that raw material choices are purely utilitarian (e.g., Deller 1979; Ellis 1989; Parker 1986), while others suggest non-utilitarian reasons (e.g., Hall 1993; Simmons *et al*. 1984). Regardless of the reason, chert type identification and their respective quantities within a particular assemblage provide an opportunity to evaluate numerous archaeological variables, including group mobility and sedentism, lithic reduction strategy and technique, transportation, trade, and symbolism.

Pieces of chipping detritus recovered during the Stage 2 survey of the study area were subject to morphological analysis following the classification scheme described by Lennox *et al*. (1986) and expanded upon by Fisher (1997). Primary flakes feature dorsal surfaces that are either entirely covered with cortex or have substantial visible cortex present. Secondary flakes can also have a trace of cortex on the dorsal surface. Both varieties, along with shatter, are associated with early stages of lithic reduction as chert cores or flint nodules are converted into blanks or preforms. Tertiary flakes and micro flakes are produced during the further reduction of blanks and preforms into formal tool shapes. They are the result of precise flake removal through pressure flaking, where the maker applies direct pressure onto a specific

part of the tool in order to facilitate flake removal. Pressure flaking generally produces smaller, thinner flakes than does percussion flaking. Broadly, primary, secondary, and shatter flakes indicate early stages of lithic reduction, while tertiary and micro flakes indicate later stages of the reduction sequence.

3.1 LOCATION 1

Location 1 was identified during pedestrian survey of a ploughed agricultural field, comprising four surface finds. A narrow (less than five-metre-wide) grassy strip bisects Location 1. A single positive test pit was identified within the grassy strip and yielded one artifact. Intensification around the positive test pit was completed and included eight cardinal test pits and a test unit. One further artifact was yielded from the test unit.

Overall, Location 1 comprises six Indigenous artifacts from an area of approximately 35 metres (m) by 45 m. The artifact assemblage comprises five pieces of chipping detritus and one utilized flake. All five pieces of recovered chipping detritus from Location 1 are tertiary flakes of Onondaga chert.

One utilized flake of Onondaga chert was recovered from Location 1 during the Stage 2 assessment of Location 1. Utilized flakes, along with other expedient tool types such as retouched flakes, wedges, and perforators, are chipping detritus that show evidence of expedient use and are considered informal tools that were discarded after use.

Table 12 provides the complete catalogue (Cat.) of the Stage 2 artifact assemblage recovered from Location 1. Plate 1 depicts a sample of the artifacts recovered from Location 1.

Table 12: Location 1 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comment
1	Test pit 1	0.29	Chipping detritus	1	Onondaga	Tertiary
2	CSP 2	0.0	Chipping detritus	1	Onondaga	Tertiary
3	CSP 3	0.0	Chipping detritus	1	Onondaga	Tertiary
4	CSP 4	0.0	Utilized flake	1	Onondaga	Use wear on lateral edge, dorsal and ventral sides
5	CSP 1	0.0	Chipping detritus	1	Onondaga	Tertiary
6	Test unit 1	0.32	Chipping detritus	1	Onondaga	Tertiary

3.2 LOCATION 2

Location 2 was identified during the pedestrian survey of a ploughed agricultural field and comprises one Indigenous artifact, a utilized flake of Onondaga chert. Table 13 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 2. The recovered artifact is illustrated on Plate 2 in Section 8.2.



Table 13: Location 2 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	CSP 1	0.0	Utilized flake	1	Onondaga	Burnt, use wear on one lateral edge and distal end, dorsal side

3.3 LOCATION 3

Location 3 was identified during the pedestrian survey of a ploughed agricultural field and comprises one Indigenous artifact, a tertiary flake of Onondaga chert. Table 14 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 3. The recovered artifact is illustrated on Plate 3 in Section 8.2.

Table 14: Location 3 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	CSP 1	0.0	Chipping detritus	1	Onondaga	Tertiary

3.4 LOCATION 4

Location 4 was identified during the pedestrian survey of a ploughed agricultural field and comprises one Indigenous artifact, an end scraper of indeterminate chert. Scrapers are formal lithic tools that exhibit intentional flaking along one or more margins to produce a high-angle use wear edge. The scraper from Location 4 measures 17.3 millimetres (mm) in length, 17.7 mm in width, and 7.5 mm in thickness. Table 15 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 4. The recovered artifact is illustrated on Plate 4 in Section 8.2.

Table 15: Location 4 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	CSP 1	0.0	Scraper	1	Indeterminate	End scraper; length (L) = 17.3 mm, width (W) = 17.7 mm, thickness (TH) = 7.5 mm

3.5 LOCATION 5

Location 5 was identified during the pedestrian survey of a ploughed agricultural field and comprises three Indigenous artifacts: two primary flakes of Onondaga chert and one tertiary flake of Onondaga chert. The artifacts were identified in an area measuring approximately five m by 15 m. Table 16 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 5. A sample of the recovered artifacts from Location 5 is illustrated on Plate 5 in Section 8.2.

Table 16: Location 5 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	CSP 1	0.0	Chipping detritus	1	Onondaga	Primary
2	CSP 2	0.0	Chipping detritus	1	Onondaga	Primary
3	CSP 3	0.0	Chipping detritus	1	Onondaga	Tertiary

3.6 LOCATION 6

Location 6 was identified during the pedestrian survey of a ploughed agricultural field and comprises one Indigenous artifact, a secondary flake of Onondaga chert. Table 17 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 6. The recovered artifact is illustrated on Plate 6 in Section 8.2.

Table 17: Location 6 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	CSP 1	0.0	Chipping detritus	1	Onondaga	Secondary

3.7 LOCATION 7

Location 7 was identified during the pedestrian survey of a ploughed agricultural field and comprises one Indigenous artifact, a biface fragment manufactured from Onondaga chert. Bifaces are formal lithic artifacts which exhibit intentional flaking on both surfaces and flaking along the margins to create a preform or blank. Bifaces are the most common form of Indigenous lithic tool and can be manufactured into a variety of tools with different functions. Due to the long span of use of this tool type, bifaces cannot be used to determine the cultural affiliation or time period of the occupation of a site. Table 18 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 7. The recovered artifact is illustrated on Plate 7 in Section 8.2.

Table 18: Location 7 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	CSP 1	0.0	Biface	1	Onondaga	Fragment; L=17.9mm*, W=21.1mm*, TH=9.5mm*

* measurement taken on an incomplete specimen

3.8 LOCATION 8

Location 8 was identified during test pit survey and comprises one Indigenous artifact, an exhausted T-based drill fragment manufactured from Onondaga chert. Intensification around the positive test pit, including eight cardinal test pits and a test unit, yielded no further archaeological resources. Table 19

provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 8. The recovered artifact is illustrated on Plate 8 in Section 8.2.

Table 19: Location 8 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	Test pit 1	0.52	Drill	1	Onondaga	Fragment of T-base drill; L=17.7*mm, W=18.0*mm, TH=6.0*mm

* measurement taken on an incomplete specimen

3.9 LOCATION 9

Location 9 was identified during test pit survey and comprises two Indigenous artifacts, two tertiary flakes of Onondaga chert. Intensification around the positive test pit, including eight cardinal test pits and a test unit, yielded no further archaeological resources. Table 20 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 9. The recovered artifacts are illustrated on Plate 9 in Section 8.2.

Table 20: Location 9 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	Test pit 1	0.57	Chipping detritus	1	Onondaga	Tertiary
2	Test pit 1	0.57	Chipping detritus	1	Onondaga	Tertiary

3.10 LOCATION 10

Location 10 was identified during the pedestrian survey of a ploughed agricultural field and comprises one Indigenous artifact, a tertiary flake of Onondaga chert. Table 21 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 10. The recovered artifact is illustrated on Plate 10 in Section 8.2.

Table 21: Location 10 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	CSP 1	0.0	Chipping detritus	1	Onondaga	Tertiary

3.11 LOCATION 11

Location 11 was identified during test pit survey and comprises two Indigenous artifacts: one utilized flake of Onondaga chert and one retouched flake of Onondaga chert. Location 11 is represented by two positive test pits located approximately 22 m apart. Intensification around each positive test pit, including eight cardinal test pits and a test unit, was completed and yielded no further archaeological resources.

Table 22 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 11. The recovered artifacts are illustrated on Plate 11 in Section 8.2.

Table 22: Location 11 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	Test pit 1	0.41	Retouched flake	1	Onondaga	Retouch on both lateral edge, dorsal side
2	Test pit 2	0.64	Utilized flake	1	Onondaga	Use wear on lateral edge, ventral side

3.12 LOCATION 12 (AiHa-60)

Location 12 (AiHa-60) was identified during the test pit survey of an area of nursery stock associated with an existing retail/commercial landscaping company. It is represented by eight positive test pits from an area measuring approximately 15 m by 45 m and yielded nine Indigenous artifacts: four tertiary flakes of Onondaga chert, three broken flakes of an indeterminate burnt chert, one broken flake of Onondaga chert, and one utilized flake of Onondaga chert. Further intensification around the positive test pits was not conducted. In addition, two tertiary flakes of Onondaga chert were identified and collected from the ground surface at Location 12 (AiHa-60). Table 23 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 12 (AiHa-60). A sample of the recovered artifacts is illustrated on Plate 12 in Section 8.2.

Table 23: Location 12 (AiHa-60) Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	Test pit 1	0.65	Chipping detritus	1	Onondaga	Tertiary
2	Test pit 2	0.72	Chipping detritus	1	Burnt	Broken
3	Test pit 3	0.82	Chipping detritus	1	Burnt	Broken
4	Test pit 3	0.82	Chipping detritus	1	Onondaga	Broken
5	Test pit 4	0.98	Chipping detritus	1	Burnt	Broken
6	Test pit 5	0.53	Utilized flake	1	Onondaga	Use wear on lateral edge, ventral side
7	Test pit 6	0.66	Chipping detritus	1	Onondaga	Tertiary
8	Test pit 7	0.79	Chipping detritus	1	Onondaga	Tertiary
9	Test pit 8	0.85	Chipping detritus	1	Onondaga	Tertiary
10	CSP 1	0.0	Chipping detritus	1	Onondaga	Tertiary
11	CSP 2	0.0	Chipping detritus	1	Onondaga	Tertiary

3.13 LOCATION 13 (AiHa-61)

Location 13 (AiHa-61) was identified during test pit survey and comprises six Indigenous artifacts: five tertiary flakes of Onondaga chert and one tertiary flake of indeterminate chert. The site is represented by four positive test pits from an area measuring approximately 10 m by 10 m. Further intensification around the positive test pits was not conducted. Table 24 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 13 (AiHa-61). A sample of the recovered artifacts are illustrated on Plate 13 in Section 8.2.

Table 24: Location 13 (AiHa-61) Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comment
1	Test pit 1	0.36	Chipping detritus	2	Onondaga	Tertiary
2	Test pit 2	0.45	Chipping detritus	1	Onondaga	Tertiary
3	Test pit 3	0.47	Chipping detritus	1	Onondaga	Tertiary
4	Test pit 4	0.51	Chipping detritus	1	Onondaga	Tertiary
5	Test pit 4	0.51	Chipping detritus	1	Indeterminate	Tertiary

3.14 LOCATION 14

Location 14 was identified during test pit survey and comprises one Indigenous artifact, a utilized flake of Onondaga chert. Intensification around the positive test pit, including eight cardinal test pits and a test unit, yielded no further archaeological resources. Table 25 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 14. The recovered artifact is illustrated on Plate 14 in Section 8.2.

Table 25: Location 14 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	Test pit 1	0.43	Utilized flake	1	Onondaga	Use wear on one lateral edge, dorsal side

3.15 LOCATION 15

Location 15 was identified during test pit survey and comprises two Indigenous artifacts: one tertiary flake of Onondaga chert and one broken flake of indeterminate chert. Intensification around the positive test pit, including eight cardinal test pits and a test unit, yielded one archaeological resource (the broken flake of indeterminate chert). Table 26 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 15. The recovered artifacts are illustrated on Plate 15 in Section 8.2.

Table 26: Location 15 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	Test pit 1	0.40	Chipping detritus	1	Onondaga	Tertiary
2	Test pit 1 – southeast cardinal	0.38	Chipping detritus	1	Indeterminate	Broken

3.16 LOCATION 16

Location 16 was identified during test pit survey and comprises two Indigenous artifacts: one secondary flake of Onondaga chert and one retouched flake of Onondaga chert. Location 16 is represented by two positive test pits located approximately five m apart. Intensification around each positive test pit, including eight cardinal test pits and a test unit, was completed and yielded no further archaeological resources. Table 27 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 16. The recovered artifacts are illustrated on Plate 16 in Section 8.2.

Table 27: Location 16 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	Test pit 1	0.37	Chipping detritus	1	Onondaga	Secondary
1	Test pit 2	0.41	Retouched flake	1	Onondaga	Retouch on one lateral edge, dorsal side, and opposite lateral edge, ventral side

3.17 LOCATION 17

Location 17 was identified during test pit survey and comprises one Indigenous artifact, a tertiary flake of indeterminate chert. Intensification around the positive test pit, including eight cardinal test pits and a test unit, yielded no further archaeological resources. Table 28 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 17. The recovered artifact is illustrated on Plate 17 in Section 8.2.

Table 28: Location 17 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	Test pit 1	0.84	Chipping detritus	1	Indeterminate	Tertiary

3.18 LOCATION 18

Location 18 was identified during test pit survey and comprises two Indigenous artifacts: one tertiary flake of Onondaga chert and one broken flake of indeterminate chert. Intensification around the positive test pit, including eight cardinal test pits and a test unit, yielded no further archaeological resources. Table 29 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 18. The recovered artifact is illustrated on Plate 18 in Section 8.2.

Table 29: Location 18 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	Test pit 1	0.82	Chipping detritus	1	Onondaga	Tertiary
2	Test pit 1	0.82	Chipping detritus	1	Indeterminate	Broken

3.19 LOCATION 19

Location 19 was identified during test pit survey and is represented by two positive test pits approximately 10 m apart. Each positive test pit yielded a broken flake of Onondaga chert. Further intensification around the positive test pits yielded one tertiary flake of Onondaga from the west cardinal of test pit 1 and one tertiary flake of Onondaga from the test unit excavated at test pit 2. Table 30 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 19. A sample of the recovered artifacts is illustrated on Plate 19 in Section 8.2.

Table 30: Location 19 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comment
1	Test pit 1	0.38	Chipping detritus	1	Onondaga	Broken
2	Test pit 2	0.41	Chipping detritus	1	Onondaga	Broken
3	Test pit 1 – west cardinal	0.37	Chipping detritus	1	Onondaga	Tertiary
4	Test unit 2	0.43	Chipping detritus	1	Onondaga	Tertiary

3.20 LOCATION 20 (AiHa-62)

Location 20 (AiHa-62) was identified during test pit survey and is represented by two positive test pits approximately five m apart. Test pit 1 yielded a broken projectile point of Onondaga chert and test pit 2 yielded a tertiary flake of Onondaga chert. Further intensification around the positive test pits was not conducted.

Overall, the projectile point measures 25.7 mm in length, 19.5 mm in width, and 5.3 mm in thickness. It has a base width of 13.3 mm, a neck width of 8.6 mm, and a haft length of 5.9 mm. The edges of the

blade appear to be serrated. Given the above characteristics, the point has been identified as a Nettling type projectile point, typical of the Early Archaic, *circa* 8000 – 6000 BCE (Ellis *et al*. 1990).

Table 30 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 20 (AiHa-62). The recovered artifacts are illustrated on Plate 20 in Section 8.2.

Table 31: Location 20 (AiHa-62) Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	Test pit 1	0.51	Projectile point	1	Onondaga	Nettling point. Missing tip and partial midsection. Length=25.7*mm, Width=19.5mm, Thickness=5.3mm, base width=13.3mm, Neck Width=8.6mm, Haft Length=5.9mm
2	Test pit 2	0.43	Chipping detritus	1	Onondaga	Tertiary

* measurement taken on an incomplete specimen

3.21 LOCATION 21 (AiHa-63)

Location 21 (AiHa-63) was identified during test pit survey and comprises two Indigenous artifacts: one broken flake of Onondaga chert and one fragmentary sherd of pottery. Further intensification around the positive test pit was not conducted. Table 32 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 21 (AiHa-63). The recovered artifacts are illustrated on Plate 21 in Section 8.2.

Table 32: Location 21 (AiHa-63) Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	Test pit 1	0.45	Chipping detritus	1	Onondaga	Broken
2	Test pit 1	0.45	Fragmentary sherd	1	Not applicable	None

3.22 LOCATION 22

Location 22 was identified during test pit survey and comprises one Indigenous artifact, a broken flake of Onondaga chert. Intensification around the positive test pit, including eight cardinal test pits and a test unit, yielded no further archaeological resources. Table 33 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 22. The recovered artifact is illustrated on Plate 22 in Section 8.2.

Table 33: Location 22 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	Test pit 1	0.67	Chipping detritus	1	Onondaga	Broken

3.23 LOCATION 23

Location 23 was identified during test pit survey and comprises one Indigenous artifact, a broken flake of Onondaga chert. Intensification around the positive test pit, including eight cardinal test pits and a test unit, yielded no further archaeological resources. Table 34 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 23. The recovered artifact is illustrated on Plate 23 in Section 8.2.

Table 34: Location 23 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	Test pit 1	0.91	Chipping detritus	1	Onondaga	Broken

3.24 LOCATION 24

Location 24 was identified during test pit survey and comprises one Indigenous artifact, a tertiary flake of Onondaga chert. Intensification around the positive test pit, including eight cardinal test pits and a test unit, yielded no further archaeological resources. Table 35 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 24. The recovered artifact is illustrated on Plate 24 in Section 8.2.

Table 35: Location 24 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	Test pit 1	1.07	Chipping detritus	1	Onondaga	Tertiary

3.25 LOCATION 25

Location 25 was identified during test pit survey and comprises one Indigenous artifact, a tertiary flake of Onondaga chert. Intensification around the positive test pit, including eight cardinal test pits and a test unit, yielded no further archaeological resources. Table 36 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 25. The recovered artifact is illustrated on Plate 25 in Section 8.2.

Table 36: Location 25 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	Test pit 1	1.02	Chipping detritus	1	Onondaga	Tertiary

3.26 LOCATION 26 (AiHa-64)

Location 26 (AiHa-64) was identified during test pit survey and comprises three Indigenous artifacts, each a fragmentary sherd of pottery. Further intensification around the positive test pit was not conducted. Table 37 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 26 (AiHa-64). A sample of the recovered artifacts is illustrated on Plate 26 in Section 8.2.

Table 37: Location 26 (AiHa-64) Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	Test pit 1	0.49	Fragmentary sherd	3	Not applicable	None

3.27 LOCATION 27

Location 27 was identified during test pit survey and comprises three Indigenous artifacts: two broken flakes of Onondaga chert and one tertiary flake of Onondaga chert. Intensification around the positive test pit, including eight cardinal test pits and a test unit, yielded two artifacts from the test unit (the two broken flakes of Onondaga chert). Table 38 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 27. A sample of the recovered artifacts is illustrated on Plate 27 in Section 8.2.

Table 38: Location 27 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	Test pit 1	0.24	Chipping detritus	1	Onondaga	Tertiary
2	Test unit 1	0.28	Chipping detritus	2	Onondaga	Broken

3.28 LOCATION 28 (AiHa-65)

Location 28 (AiHa-65) was identified during test pit survey and comprises seven Indigenous artifacts: three tertiary flakes of Onondaga chert, three tertiary flakes of indeterminate chert, and one broken flake of Onondaga chert exhibiting thermal alteration. The site is represented by four positive test pits from an area measuring approximately 10 m by 25 m. Further intensification around the positive test pits was not conducted. Table 39 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 28 (AiHa-65). A sample of the recovered artifacts are illustrated on Plate 28 in Section 8.2.

Table 39: Location 28 (AiHa-65) Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	Test pit 1	0.39	Chipping detritus	1	Onondaga	Tertiary
2	Test pit 1	0.39	Chipping detritus	1	Indeterminate	Tertiary
3	Test pit 2	0.50	Chipping detritus	1	Onondaga	Tertiary
4	Test pit 2	0.50	Chipping detritus	1	Indeterminate	Tertiary
5	Test pit 3	0.48	Chipping detritus	1	Onondaga	Tertiary

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
6	Test pit 4	0.34	Chipping detritus	1	Onondaga	Broken; burnt
7	Test pit 4	0.34	Chipping detritus	1	Indeterminate	Tertiary

3.29 LOCATION 29

Location 29 was identified during test pit survey and comprises one Indigenous artifact, a tertiary flake of Onondaga chert. Intensification around the positive test pit, including eight cardinal test pits and a test unit, yielded no further archaeological resources. Table 40 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 29. The recovered artifact is illustrated on Plate 29 in Section 8.2.

Table 40: Location 29 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	Test pit 1	0.41	Chipping detritus	1	Onondaga	Tertiary

3.30 LOCATION 30

Location 30 was identified during test pit survey and comprises one Indigenous artifact, a tertiary flake of Onondaga chert. Intensification around the positive test pit, including eight cardinal test pits and a test unit, yielded no further archaeological resources. Table 41 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 30. The recovered artifact is illustrated on Plate 30 in Section 8.2.

Table 41: Location 30 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	Test pit 1	0.28	Chipping detritus	1	Onondaga	Tertiary

3.31 LOCATION 31 (AiHa-66)

Location 31 (AiHa-66) was identified during test pit survey and comprises 23 Indigenous artifacts: 15 tertiary flakes of Onondaga chert, 7 broken flakes of Onondaga chert, and 1 tertiary flake of an indeterminate chert. The site was initially identified from a single positive test pit containing one tertiary flake. Intensification around the positive test pit included excavation of only five cardinal test pits. The remaining three cardinal test pits were not excavated as the limits of the study area prevented further westerly expansion from the original positive test pit. A test unit was excavated as part of the intensification efforts at Location 31 (AiHa-66) and yielded an additional 22 artifacts. Table 42 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 31 (AiHa-66). A sample of the recovered artifacts is illustrated on Plate 31 in Section 8.2.



Table 42: Location 31 (AiHa-66) Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	Test pit 1	0.30	Chipping detritus	1	Onondaga	Tertiary
2	Test unit 1	0.32	Chipping detritus	14	Onondaga	Tertiary
3	Test unit 1	0.32	Chipping detritus	7	Onondaga	Broken
4	Test unit 1	0.32	Chipping detritus	1	Burnt	Tertiary

3.32 LOCATION 32

Location 32 was identified during test pit survey and comprises one Indigenous artifact, a broken flake of Onondaga chert. Intensification around the positive test pit, including eight cardinal test pits and a test unit, yielded no further archaeological resources. Table 43 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 32. The recovered artifact is illustrated on Plate 32 in Section 8.2.

Table 43: Location 32 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	Test pit 1	0.36	Chipping detritus	1	Onondaga	Broken

3.33 LOCATION 33

Location 32 was identified during test pit survey and comprises five pieces of turtle shell. Intensification around the positive test pit, including eight cardinal test pits and a test unit, yielded no further archaeological resources. Table 44 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 33. A sample of the recovered artifacts is illustrated on Plate 33 in Section 8.2.

Table 44: Location 33 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	Test pit 1	0.57	Faunal remains	5	Not applicable	Turtle shell fragments

3.34 LOCATION 34

Location 34 was identified during test pit survey and comprises one Indigenous artifact, a tertiary flake of Onondaga chert. Intensification around the positive test pit, including eight cardinal test pits and a test unit, yielded no further archaeological resources. Table 45 provides the complete catalogue of the Stage 2 artifact assemblage recovered from Location 34. The recovered artifact is illustrated on Plate 34 in Section 8.2.

Table 45: Location 34 Artifact Catalogue

Cat. #	Context	Depth (m)	Artifact	Quantity	Chert	Comments
1	Test pit 1	0.82	Chipping detritus	1	Onondaga	Tertiary

4.0 ANALYSIS AND CONCLUSIONS

Stantec was retained by Enbridge to conduct a Stage 2 archaeological assessment for the study area associated with the Project. The Stage 2 archaeological assessment was conducted between May 8, 2020 and November 20, 2020. During the Stage 2 survey, 34 new archaeological locations were identified.

4.1 LOCATION 1

Location 1 was identified during pedestrian survey of a ploughed agricultural field and comprises six Indigenous artifacts from an area of approximately 35 m by 45 m. The artifact assemblage comprises five pieces of chipping detritus and one utilized flake. All five pieces of recovered chipping detritus from Location 1 are tertiary flakes of Onondaga chert. Chipping detritus is the waste product from the production of lithic tools and is the most often recovered artifact on Indigenous archaeological sites in southern Ontario. Chipping detritus and expedient tools, such as utilized flakes, are generally considered to be temporally non-diagnostic other than being produced by Indigenous peoples and cannot help place an archaeological site within a specific time period or cultural group. Given the temporally non-diagnostic nature of the recovered artifacts, the cultural heritage value or interest of Location 1 is judged to be sufficiently documented in accordance with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.2 LOCATION 2

Location 2 was identified during the pedestrian survey of a ploughed agricultural field and comprises one Indigenous artifact, a utilized flake of Onondaga chert. Chipping detritus is the waste product from the production of lithic tools and is the most often recovered artifact on Indigenous archaeological sites in southern Ontario. Chipping detritus is generally considered to be temporally non-diagnostic other than being produced by Indigenous peoples and cannot help place an archaeological site within a specific time period or cultural group. Given the temporally non-diagnostic nature of the recovered artifact, the cultural heritage value or interest of Location 2 is judged to be sufficiently documented in accordance with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.3 LOCATION 3

Location 3 was identified during the pedestrian survey of a ploughed agricultural field and comprises one Indigenous artifact, a tertiary flake of Onondaga chert. Chipping detritus is the waste product from the production of lithic tools and is the most often recovered artifact on Indigenous archaeological sites in southern Ontario. Chipping detritus is generally considered to be temporally non-diagnostic other than being produced by Indigenous peoples and cannot help place an archaeological site within a specific time period or cultural group. Given the temporally non-diagnostic nature of the recovered artifact, the cultural

heritage value or interest of Location 3 is judged to be sufficiently documented in accordance with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.4 LOCATION 4

Location 4 was identified during the pedestrian survey of a ploughed agricultural field and comprises one Indigenous artifact, an end scraper of indeterminate chert. Though the end scraper is recognized as a formal lithic tool it is generally considered to be temporally non-diagnostic other than being produced by Indigenous peoples and cannot help place an archaeological site within a specific time period or cultural group. Given the temporally non-diagnostic nature of the recovered artifact, the cultural heritage value or interest of Location 4 is judged to be sufficiently documented in accordance with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.5 LOCATION 5

Location 5 was identified during the pedestrian survey of a ploughed agricultural field and comprises three Indigenous artifacts: two primary flakes of Onondaga and one tertiary flake of Onondaga. The artifacts were identified in an area measuring approximately five m by 15 m. Chipping detritus is generally considered to be temporally non-diagnostic other than being produced by Indigenous peoples and cannot help place an archaeological site within a specific time period or cultural group. Given the temporally non-diagnostic nature of the recovered artifacts, the cultural heritage value or interest of Location 5 is judged to be sufficiently documented in accordance with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.6 LOCATION 6

Location 6 was identified during the pedestrian survey of a ploughed agricultural field and comprises one Indigenous artifact, a secondary flake of Onondaga chert. Chipping detritus is generally considered to be temporally non-diagnostic other than being produced by Indigenous peoples and cannot help place an archaeological site within a specific time period or cultural group. Given the temporally non-diagnostic nature of the recovered artifact, the cultural heritage value or interest of Location 6 is judged to be sufficiently documented in accordance with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.7 LOCATION 7

Location 7 was identified during the pedestrian survey of a ploughed agricultural field and comprises one Indigenous artifact, a biface fragment manufactured from Onondaga chert. Bifaces are the most common form of Indigenous lithic tool and can be manufactured into a variety of tools with different functions. Due to the long span of use of this tool type, bifaces cannot be used to determine the cultural affiliation or time period of the occupation of a site. Given the temporally non-diagnostic nature of the recovered artifact, the cultural heritage value or interest of Location 7 is judged to be sufficiently documented in accordance

with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.8 LOCATION 8

Location 8 was identified during test pit survey and comprises one Indigenous artifact, an exhausted T-based drill fragment manufactured from Onondaga chert. Though the drill is recognized as a formal lithic tool, it is generally considered to be temporally non-diagnostic other than being produced by Indigenous peoples and cannot help place an archaeological site within a specific time period or cultural group. Given the temporally non-diagnostic nature of the recovered artifact, the cultural heritage value or interest of Location 8 is judged to be sufficiently documented in accordance with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.9 LOCATION 9

Location 9 was identified during test pit survey and comprises two Indigenous artifacts, two tertiary flakes of Onondaga chert. Chipping detritus is generally considered to be temporally non-diagnostic other than being produced by Indigenous peoples and cannot help place an archaeological site within a specific time period or cultural group. Given the temporally non-diagnostic nature of the recovered artifacts, the cultural heritage value or interest of Location 9 is judged to be sufficiently documented in accordance with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.10 LOCATION 10

Location 10 was identified during the pedestrian survey of a ploughed agricultural field and comprises one Indigenous artifact, a tertiary flake of Onondaga chert. Chipping detritus is generally considered to be temporally non-diagnostic other than being produced by Indigenous peoples and cannot help place an archaeological site within a specific time period or cultural group. Given the temporally non-diagnostic nature of the recovered artifact, the cultural heritage value or interest of Location 10 is judged to be sufficiently documented in accordance with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.11 LOCATION 11

Location 11 was identified during test pit survey and comprises two Indigenous artifacts: one utilized flake of Onondaga chert and one retouched flake of Onondaga chert. Location 11 is represented by two positive test pits located approximately 22 m apart. Chipping detritus is the waste product from the production of lithic tools and is the most often recovered artifact on Indigenous archaeological sites in southern Ontario. Expedient tools, such as utilized flakes and retouched flakes, are generally considered to be temporally non-diagnostic other than being produced by Indigenous peoples and cannot help place an archaeological site within a specific time period or cultural group. Given the temporally non-diagnostic nature of the recovered artifacts, the cultural heritage value or interest of Location 11 is judged to be



sufficiently documented in accordance with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.12 LOCATION 12 (AiHa-60)

Location 12 (AiHa-60) was identified during test pit survey of an area of nursery stock associated with an existing retail/commercial landscaping company. It is represented by eight positive test pits from an area measuring approximately 15 m by 45 m and yielded nine Indigenous artifacts: four tertiary flakes of Onondaga chert, three broken flakes of an indeterminate burnt chert, one broken flake of Onondaga chert, and one utilized flake of Onondaga chert. Based on the above, Location 12 (AiHa-60) is judged to retain further cultural heritage value or interest and fulfills the criteria for Stage 3 archaeological assessment as per Section 2.2 Standard 1.a.ii.(2) and Section 2.2 Guideline 2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.13 LOCATION 13 (AiHa-61)

Location 13 (AiHa-61) was identified during test pit survey and comprises six Indigenous artifacts: five tertiary flakes of Onondaga chert and one tertiary flake of indeterminate chert. The site is represented by four positive test pits from an area measuring approximately 10 m by 10 m. Based on the above, Location 13 (AiHa-61) is judged to retain further cultural heritage value or interest and fulfills the criteria for Stage 3 archaeological assessment as per Section 2.2 Standard 1.a.ii.(2) of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.14 LOCATION 14

Location 14 was identified during test pit survey and comprises one Indigenous artifact, a utilized flake of Onondaga chert. Expedient tools, such as utilized flakes, are generally considered to be temporally non-diagnostic other than being produced by Indigenous peoples and cannot help place an archaeological site within a specific time period or cultural group. Given the temporally non-diagnostic nature of the recovered artifact, the cultural heritage value or interest of Location 14 is judged to be sufficiently documented in accordance with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.15 LOCATION 15

Location 15 was identified during test pit survey and comprises two Indigenous artifacts: one tertiary flake of Onondaga chert and one broken flake of indeterminate chert. Chipping detritus is generally considered to be temporally non-diagnostic other than being produced by Indigenous peoples and cannot help place an archaeological site within a specific time period or cultural group. Given the temporally non-diagnostic nature of the recovered artifacts, the cultural heritage value or interest of Location 15 is judged to be sufficiently documented in accordance with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.16 LOCATION 16

Location 16 was identified during test pit survey and comprises two Indigenous artifacts: one secondary flake of Onondaga chert and one retouched flake of Onondaga chert. Location 16 is represented by two positive test pits located approximately five m apart. Chipping detritus and expedient tools, such as retouched flakes, are generally considered to be temporally non-diagnostic other than being produced by Indigenous peoples and cannot help place an archaeological site within a specific time period or cultural group. Given the temporally non-diagnostic nature of the recovered artifacts, the cultural heritage value or interest of Location 16 is judged to be sufficiently documented in accordance with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.17 LOCATION 17

Location 17 was identified during test pit survey and comprises one Indigenous artifact, a tertiary flake of indeterminate chert. Chipping detritus is generally considered to be temporally non-diagnostic other than being produced by Indigenous peoples and cannot help place an archaeological site within a specific time period or cultural group. Given the temporally non-diagnostic nature of the recovered artifact, the cultural heritage value or interest of Location 17 is judged to be sufficiently documented in accordance with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.18 LOCATION 18

Location 18 was identified during test pit survey and comprises two Indigenous artifacts: one tertiary flake of Onondaga chert and one broken flake of indeterminate chert. Chipping detritus is generally considered to be temporally non-diagnostic other than being produced by Indigenous peoples and cannot help place an archaeological site within a specific time period or cultural group. Given the temporally non-diagnostic nature of the recovered artifacts, the cultural heritage value or interest of Location 18 is judged to be sufficiently documented in accordance with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.19 LOCATION 19

Location 19 was identified during test pit survey and is represented by two positive test pits approximately 10 m apart. Each positive test pit yielded a broken flake of Onondaga chert. Chipping detritus is generally considered to be temporally non-diagnostic other than being produced by Indigenous peoples and cannot help place an archaeological site within a specific time period or cultural group. Given the temporally non-diagnostic nature of the recovered artifacts, the cultural heritage value or interest of Location 19 is judged to be sufficiently documented in accordance with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.20 LOCATION 20 (AiHa-62)

Location 20 (AiHa-62) was identified during test pit survey and is represented by two positive test pits approximately five m apart. Test pit 1 yielded a broken projectile point of Onondaga chert and test pit 2 yielded a tertiary flake of Onondaga chert. The point has been identified as Nettling projectile point, typical of the Early Archaic, *circa* 8000 – 6000 BCE (Ellis *et al*. 1990). Based on the above, Location 20 (AiHa-62) is judged to retain further cultural heritage value or interest and fulfills the criteria for Stage 3 archaeological assessment as per Section 2.2 Standard 1.a.ii.(1) and Standard 1.b.iii of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.21 LOCATION 21 (AiHa-63)

Location 21 (AiHa-63) was identified during test pit survey and comprises two Indigenous artifacts: one broken flake of Onondaga chert and one fragmentary sherd of pottery. Based on the above, Location 21 (AiHa-63) is judged to retain further cultural heritage value or interest and fulfills the criteria for Stage 3 archaeological assessment as per Section 2.2 Standard 1.b.i of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.22 LOCATION 22

Location 22 was identified during test pit survey and comprises one Indigenous artifact, a broken flake of Onondaga chert. Chipping detritus is generally considered to be temporally non-diagnostic other than being produced by Indigenous peoples and cannot help place an archaeological site within a specific time period or cultural group. Given the temporally non-diagnostic nature of the recovered artifact, the cultural heritage value or interest of Location 22 is judged to be sufficiently documented in accordance with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.23 LOCATION 23

Location 23 was identified during test pit survey and comprises one Indigenous artifact, a broken flake of Onondaga chert. Chipping detritus is generally considered to be temporally non-diagnostic other than being produced by Indigenous peoples and cannot help place an archaeological site within a specific time period or cultural group. Given the temporally non-diagnostic nature of the recovered artifact, the cultural heritage value or interest of Location 23 is judged to be sufficiently documented in accordance with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.24 LOCATION 24

Location 24 was identified during test pit survey and comprises one Indigenous artifact, a tertiary flake of Onondaga chert. Chipping detritus is generally considered to be temporally non-diagnostic other than being produced by Indigenous peoples and cannot help place an archaeological site within a specific time

period or cultural group. Given the temporally non-diagnostic nature of the recovered artifact, the cultural heritage value or interest of Location 24 is judged to be sufficiently documented in accordance with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.25 LOCATION 25

Location 25 was identified during test pit survey and comprises one Indigenous artifact, a tertiary flake of Onondaga chert. Chipping detritus is generally considered to be temporally non-diagnostic other than being produced by Indigenous peoples and cannot help place an archaeological site within a specific time period or cultural group. Given the temporally non-diagnostic nature of the recovered artifact, the cultural heritage value or interest of Location 25 is judged to be sufficiently documented in accordance with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.26 LOCATION 26 (AiHa-64)

Location 26 (AiHa-64) was identified during test pit survey and comprises three fragmentary sherds of Indigenous pottery. Based on the above, Location 26 (AiHa-64) is judged to retain further cultural heritage value or interest and fulfills the criteria for Stage 3 archaeological assessment as per Section 2.2 Standard 1.b.i of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.27 LOCATION 27

Location 27 was identified during test pit survey and comprises three Indigenous artifacts: two broken flakes of Onondaga chert and one tertiary flake of Onondaga chert. Chipping detritus is generally considered to be temporally non-diagnostic other than being produced by Indigenous peoples and cannot help place an archaeological site within a specific time period or cultural group. Given the temporally non-diagnostic nature of the recovered artifacts, the cultural heritage value or interest of Location 27 is judged to be sufficiently documented in accordance with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.28 LOCATION 28 (AiHa-65)

Location 28 (AiHa-65) was identified during test pit survey and comprises seven Indigenous artifacts: three tertiary flakes of Onondaga chert, three tertiary flakes of indeterminate chert, and one broken flake of Onondaga chert exhibiting thermal alteration. The site is represented by four positive test pits from an area measuring approximately 10 m by 25 m. Based on the above, Location 28 (AiHa-65) is judged to retain further cultural heritage value or interest and fulfills the criteria for Stage 3 archaeological assessment as per Section 2.2 Standard 1.a.ii.(2) and Section 2.2 Guideline 2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.29 LOCATION 29

Location 29 was identified during test pit survey and comprises one Indigenous artifact, a tertiary flake of Onondaga chert. Chipping detritus is generally considered to be temporally non-diagnostic other than being produced by Indigenous peoples and cannot help place an archaeological site within a specific time period or cultural group. Given the temporally non-diagnostic nature of the recovered artifact, the cultural heritage value or interest of Location 29 is judged to be sufficiently documented in accordance with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.30 LOCATION 30

Location 30 was identified during test pit survey and comprises one Indigenous artifact, a tertiary flake of Onondaga chert. Chipping detritus is generally considered to be temporally non-diagnostic other than being produced by Indigenous peoples and cannot help place an archaeological site within a specific time period or cultural group. Given the temporally non-diagnostic nature of the recovered artifact, the cultural heritage value or interest of Location 30 is judged to be sufficiently documented in accordance with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.31 LOCATION 31 (AiHa-66)

Location 31 (AiHa-66) was identified during test pit survey and comprises 23 Indigenous artifacts: 15 tertiary flakes of Onondaga chert, 7 broken flakes of Onondaga chert, and 1 tertiary flake of an indeterminate chert. The site was initially identified from a single positive test pit containing one tertiary flake. A test unit was excavated as part of the intensification efforts at Location 31 (AiHa-66) and yielded the additional 22 archaeological resources. Based on the above, Location 31 (AiHa-66) is judged to retain further cultural heritage value or interest and fulfills the criteria for Stage 3 archaeological assessment as per Section 2.2 Standard 1.a.ii.(2) of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.32 LOCATION 32

Location 32 was identified during test pit survey and comprises one Indigenous artifact, a broken flake of Onondaga chert. Chipping detritus is generally considered to be temporally non-diagnostic other than being produced by Indigenous peoples and cannot help place an archaeological site within a specific time period or cultural group. Given the temporally non-diagnostic nature of the recovered artifact, the cultural heritage value or interest of Location 32 is judged to be sufficiently documented in accordance with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.33 LOCATION 33

Location 32 was identified during test pit survey and comprises five pieces of turtle shell. Location 32 is located approximately 10 m west of Spencer Creek. The pieces of turtle shell may represent natural deposition. Given the temporally non-diagnostic nature of the recovered artifacts, the cultural heritage value or interest of Location 33 is judged to be sufficiently documented in accordance with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.34 LOCATION 34

Location 34 was identified during test pit survey and comprises one Indigenous artifact, a tertiary flake of Onondaga chert. Chipping detritus is generally considered to be temporally non-diagnostic other than being produced by Indigenous peoples and cannot help place an archaeological site within a specific time period or cultural group. Given the temporally non-diagnostic nature of the recovered artifact, the cultural heritage value or interest of Location 32 is judged to be sufficiently documented in accordance with Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.35 PRELIMINARY INDICATION OF SITES REQUIRING STAGE 4 MITIGAITON

This preliminary indication of whether any site could be eventually recommended for Stage 4 archaeological mitigation is required under as per Section 7.8.3 Standard 2.c of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). No firm recommendation for or against Stage 4 mitigation will be made until the Stage 3 archaeological assessment has been completed at each applicable site, whether as part of the Project or at a later date. Possible Stage 4 recommendations along with a reason are provided in Table 46.

Table 46: Possible Stage 4 Mitigation of Impacts Recommendations

Location Number	Borden Number	Cultural Affiliation	Possible Stage 4?	Reason
12	AiHa-60	Indigenous	Maybe	Artifact yields from Stage 3 test units may require mitigation of impacts in accordance with Section 3.4.1 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).
13	AiHa-61	Indigenous	Maybe	Artifact yields from Stage 3 test units may require mitigation of impacts in accordance with Section 3.4.1 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).
20	AiHa-62	Indigenous, Early Archaic	Yes	The cultural heritage value or interest of the site is likely to meet the criteria as a rare archaeological site as per Section 3.4 Standard 1.b of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of

Location Number	Borden Number	Cultural Affiliation	Possible Stage 4?	Reason
				Ontario 2011). Further, artifact yields from Stage 3 test units may require mitigation of impacts in accordance with Section 3.4.1 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).
21	AiHa-63	Indigenous	Yes	The cultural heritage value or interest of the site is likely to meet the criteria as a Woodland period archaeological site as per Section 3.4 Standard 1.e of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). Further, artifact yields from Stage 3 test units may require mitigation of impacts in accordance with Section 3.4.1 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).
26	AiHa-64	Indigenous	Yes	The cultural heritage value or interest of the site is likely to meet the criteria as a Woodland period archaeological site as per Section 3.4 Standard 1.e of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). Further, artifact yields from Stage 3 test units may require mitigation of impacts in accordance with Section 3.4.1 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).
28	AiHa-65	Indigenous	Maybe	Artifact yields from Stage 3 test units may require mitigation of impacts in accordance with Section 3.4.1 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).
31	AiHa-66	Indigenous	Yes	Artifact yields from Stage 3 test units is likely to require mitigation of impacts in accordance with Section 3.4.1 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

4.36 ADDITIONAL CONCLUSIONS

In all other portions of the study area which had been subject to Stage 2 survey as part of this assessment, no archaeological resources were identified.

However, as noted in Section 2.0, a portion of the study area (approximately 4.9%), was not subject to Stage 2 assessment and retains potential for the identification and documentation of archaeological resources. In accordance with Section 1.3.1 and Section 7.7.4 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), and following Stantec's original recommendations (Stantec 2019), these areas retain archaeological potential and Stage 2 assessment is required.

5.0 RECOMMENDATIONS

5.1 LOCATION 1

Location 1 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 1 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 1**.

5.2 LOCATION 2

Location 2 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 2 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 2**.

5.3 LOCATION 3

Location 3 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 3 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 3**.

5.4 LOCATION 4

Location 4 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 4 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 4**.

5.5 LOCATION 5

Location 5 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 5 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 5**.

5.6 LOCATION 6

Location 6 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 6 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 6**.

5.7 LOCATION 7

Location 7 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 7 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 7**.

5.8 LOCATION 8

Location 8 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 8 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 8**.

5.9 LOCATION 9

Location 9 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 9 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 9**.

5.10 LOCATION 10

Location 10 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 10 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 10**.

5.11 LOCATION 11

Location 11 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 11 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 11**.

5.12 LOCATION 12 (AiHa-60)

Location 12 (AiHa-60) retains further cultural heritage value or interest and fulfills the criteria for Stage 3 archaeological assessment as per Section 2.2 Standard 1.a.ii.(2) and Section 2.2 Guideline 2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). Therefore, **Stage 3 archaeological assessment is recommended for Location 12 (AiHa-60) to further evaluate the site's cultural heritage value or interest**.

The Stage 3 archaeological assessment of Location 12 (AiHa-60) will be conducted according to the procedures outlined in the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The Stage 3 archaeological assessment will include the hand excavation of one-metre by one-metre test units every five metres in systematic levels and into the first five centimetres of subsoil. A controlled surface pickup (CSP) is not required as the site is located in an area inaccessible for ploughing. Additional one-metre test units, amounting to 20% of the grid total, will be placed in areas of interest within the site extent. Excavated soil will be screened through six millimetre mesh and recovered artifacts will be recorded and catalogued by the corresponding grid unit designation. If a subsurface cultural feature is encountered, the plan of the exposed feature will be recorded, and geotextile fabric will be placed over the unit before backfilling the unit.

Further, in accordance with Section 3.4 Standard 2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), Indigenous communities must be engaged during Stage 3 activities when assessing the cultural heritage value or interest of an Indigenous archaeological site. Early engagement will help to formulate a strategy to effectively mitigate the impacts to the archaeological site through avoidance and protection or excavation, if viable for the Project.

5.13 LOCATION 13 (AiHa-61)

Location 13 (AiHa-61) retains further cultural heritage value or interest and fulfills the criteria for Stage 3 archaeological assessment as per Section 2.2 Standard 1.a.ii.(2) of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). Therefore, **Stage 3 archaeological assessment is recommended for Location 13 (AiHa-61) to further evaluate the site's cultural heritage value or interest**.

The Stage 3 archaeological assessment of Location 13 (AiHa-61) will be conducted according to the procedures outlined in the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The Stage 3 archaeological assessment will include the hand excavation of one-metre by one-metre test units every five metres in systematic levels and into the first five centimetres of subsoil. A CSP is not required as the site is located in an area inaccessible for ploughing. Additional one-metre test units, amounting to 20% of the grid total, will be placed in areas of interest within the site extent. Excavated soil will be screened through six millimetre mesh and recovered artifacts will be recorded and catalogued by the corresponding grid unit designation. If a subsurface cultural feature is encountered, the plan of the exposed feature will be recorded, and geotextile fabric will be placed over the unit before backfilling the unit.

Further, in accordance with Section 3.4 Standard 2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), Indigenous communities must be engaged during Stage 3 activities when assessing the cultural heritage value or interest of an Indigenous archaeological site. Early engagement will help to formulate a strategy to effectively mitigate the impacts to the archaeological site through avoidance and protection or excavation, if viable for the Project.

5.14 LOCATION 14

Location 14 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 14 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 14**.

5.15 LOCATION 15

Location 15 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 15 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 15**.

5.16 LOCATION 16

Location 16 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 16 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 16**.

5.17 LOCATION 17

Location 17 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 17 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 17**.

5.18 LOCATION 18

Location 18 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 18 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 18**.

5.19 LOCATION 19

Location 19 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 19 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 19**.

5.20 LOCATION 20 (AiHa-62)

Location 20 (AiHa-62) retains further cultural heritage value or interest and fulfills the criteria for Stage 3 archaeological assessment as per Section 2.2 Standard 1.a.ii.(1) and Standard 1.b.iii of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). Therefore, **Stage 3 archaeological assessment is recommended for Location 20 (AiHa-62) to further evaluate the site's cultural heritage value or interest**.

The Stage 3 archaeological assessment of Location 20 (AiHa-62) will be conducted according to the procedures outlined in the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The Stage 3 archaeological assessment will include the hand excavation of one-metre by one-metre test units every five metres in systematic levels and into the first five centimetres of subsoil. A CSP is not required as the site is located in an area inaccessible for ploughing. Additional one-metre test units, amounting to 20% of the grid total, will be placed in areas of interest within the site extent. Excavated soil will be screened through six millimetre mesh and recovered artifacts will be recorded and catalogued by the corresponding grid unit designation. As the site includes an Early Archaic component, a sample of the soil from the test units will be screened through three millimetre mesh in accordance with Section 3.2.2 Standard 7 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). If a subsurface cultural feature is encountered, the plan of the exposed feature will be recorded, and geotextile fabric will be placed over the unit before backfilling the unit.

Further, in accordance with Section 3.4 Standard 2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), Indigenous communities must be engaged during Stage 3 activities when assessing the cultural heritage value or interest of an Indigenous archaeological site. Early engagement will help to formulate a strategy to effectively mitigate the impacts to the archaeological site through avoidance and protection or excavation, if viable for the Project.

5.21 LOCATION 21 (AiHa-63)

Location 21 (AiHa-63) retains further cultural heritage value or interest and fulfills the criteria for Stage 3 archaeological assessment as per Section 2.2 Standard 1.b.i of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). Therefore, **Stage 3 archaeological assessment is recommended for Location 21 (AiHa-63) to further evaluate the site's cultural heritage value or interest**.

The Stage 3 archaeological assessment of Location 21 (AiHa-63) will be conducted according to the procedures outlined in the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The Stage 3 archaeological assessment will include the hand excavation of one-metre by one-metre test units every five metres in systematic levels and into the first five centimetres of subsoil. A CSP is not required as the site is located in an area inaccessible for ploughing. Additional one-metre test units, amounting to 20% of the grid total, will be placed in areas of interest within the site extent. Excavated soil will be screened through six millimetre mesh and recovered artifacts

will be recorded and catalogued by the corresponding grid unit designation. If a subsurface cultural feature is encountered, the plan of the exposed feature will be recorded, and geotextile fabric will be placed over the unit before backfilling the unit.

Further, in accordance with Section 3.4 Standard 2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), Indigenous communities must be engaged during Stage 3 activities when assessing the cultural heritage value or interest of an Indigenous archaeological site. Early engagement will help to formulate a strategy to effectively mitigate the impacts to the archaeological site through avoidance and protection or excavation, if viable for the Project.

5.22 LOCATION 22

Location 22 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 22 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 22**.

5.23 LOCATION 23

Location 23 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 23 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 23**.

5.24 LOCATION 24

Location 24 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 24 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 24**.

5.25 LOCATION 25

Location 25 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 25 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 25**.

5.26 LOCATION 26 (AiHa-64)

Location 26 (AiHa-64) retains further cultural heritage value or interest and fulfills the criteria for Stage 3 archaeological assessment as per Section 2.2 Standard 1.b.i of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). Therefore, **Stage 3**

archaeological assessment is recommended for Location 26 (AiHa-64) to further evaluate the site's cultural heritage value or interest.

The Stage 3 archaeological assessment of Location 26 (AiHa-64) will be conducted according to the procedures outlined in the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The Stage 3 archaeological assessment will include the hand excavation of one-metre by one-metre test units every five metres in systematic levels and into the first five centimetres of subsoil. A CSP is not required as the site is located in an area inaccessible for ploughing. Additional one-metre test units, amounting to 20% of the grid total, will be placed in areas of interest within the site extent. Excavated soil will be screened through six millimetre mesh and recovered artifacts will be recorded and catalogued by the corresponding grid unit designation. If a subsurface cultural feature is encountered, the plan of the exposed feature will be recorded, and geotextile fabric will be placed over the unit before backfilling the unit.

Further, in accordance with Section 3.4 Standard 2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), Indigenous communities must be engaged during Stage 3 activities when assessing the cultural heritage value or interest of an Indigenous archaeological site. Early engagement will help to formulate a strategy to effectively mitigate the impacts to the archaeological site through avoidance and protection or excavation, if viable for the Project.

5.27 LOCATION 27

Location 27 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 27 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 27**.

5.28 LOCATION 28 (AiHa-65)

Location 28 (AiHa-65) retains further cultural heritage value or interest and fulfills the criteria for Stage 3 archaeological assessment as per Section 2.2 Standard 1.a.ii.(2) and Section 2.2 Guideline 2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). Therefore, **Stage 3 archaeological assessment is recommended for Location 28 (AiHa-65) to further evaluate the site's cultural heritage value or interest**.

The Stage 3 archaeological assessment of Location 28 (AiHa-65) will be conducted according to the procedures outlined in the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The Stage 3 archaeological assessment will include the hand excavation of one-metre by one-metre test units every five metres in systematic levels and into the first five centimetres of subsoil. A CSP is not required as the site is located in an area inaccessible for ploughing. Additional one-metre test units, amounting to 20% of the grid total, will be placed in areas of interest within the site extent. Excavated soil will be screened through six millimetre mesh and recovered artifacts will be recorded and catalogued by the corresponding grid unit designation. If a subsurface cultural

feature is encountered, the plan of the exposed feature will be recorded, and geotextile fabric will be placed over the unit before backfilling the unit.

Further, in accordance with Section 3.4 Standard 2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), Indigenous communities must be engaged during Stage 3 activities when assessing the cultural heritage value or interest of an Indigenous archaeological site. Early engagement will help to formulate a strategy to effectively mitigate the impacts to the archaeological site through avoidance and protection or excavation, if viable for the Project.

5.29 LOCATION 29

Location 29 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 29 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 29**.

5.30 LOCATION 30

Location 30 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 30 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 30**.

5.31 LOCATION 31 (AiHa-66)

Location 31 (AiHa-66) retains further cultural heritage value or interest and fulfills the criteria for Stage 3 archaeological assessment as per Section 2.2 Standard 1.a.ii.(2) of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). Therefore, **Stage 3 archaeological assessment is recommended for Location 31 (AiHa-66) to further evaluate the site's cultural heritage value or interest**.

The Stage 3 archaeological assessment of Location 31 (AiHa-66) will be conducted according to the procedures outlined in the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The Stage 3 archaeological assessment will include the hand excavation of one-metre by one-metre test units every five metres in systematic levels and into the first five centimetres of subsoil. A CSP is not required as the site is located in an area inaccessible for ploughing. Additional one-metre test units, amounting to 20% of the grid total, will be placed in areas of interest within the site extent. Excavated soil will be screened through six millimetre mesh and recovered artifacts will be recorded and catalogued by the corresponding grid unit designation. If a subsurface cultural feature is encountered, the plan of the exposed feature will be recorded, and geotextile fabric will be placed over the unit before backfilling the unit.



Further, in accordance with Section 3.4 Standard 2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), Indigenous communities must be engaged during Stage 3 activities when assessing the cultural heritage value or interest of an Indigenous archaeological site. Early engagement will help to formulate a strategy to effectively mitigate the impacts to the archaeological site through avoidance and protection or excavation, if viable for the Project.

5.32 LOCATION 32

Location 32 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 32 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 32**.

5.33 LOCATION 33

Location 33 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 33 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 33**.

5.34 LOCATION 34

Location 34 does not fulfill the criteria for a Stage 3 archaeological assessment as per Section 2.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The cultural heritage value or interest of Location 34 has been sufficiently documented. Therefore, **no further archaeological assessment is recommended for Location 34**.

5.35 ADDITIONAL STAGE 2 ASSESSMENT

Approximately 4.9% of the study area comprises lands that were not surveyed during the Stage 2 assessment and which retain potential for the identification and documentation of archaeological resources. In accordance with Section 1.3.1 and Section 7.7.4 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), **Stage 2 archaeological assessment is required for any portion of the Project's anticipated construction activities which impacts an area of archaeological potential (Figure 6).**

The objective of the Stage 2 archaeological assessment will be to document any archaeological resources within the study area and to determine whether these archaeological resources require further assessment. The Stage 2 archaeological assessment will include the systematic walking of open ploughed fields as outlined in Section 2.1.1 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The MHSTCI standards further require that agricultural land, both active and inactive, be recently ploughed and sufficiently weathered to improve the

visibility of archaeological resources. Ploughing must be deep enough to provide total topsoil exposure, but not deeper than previous ploughing, and must provide at least 80% ground surface visibility.

Moreover, for areas inaccessible for ploughing, the Stage 2 archaeological assessment will include a test pit survey as outlined in Section 2.1.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). The MHSTCI standards require that each test pit be at least 30 centimetres in diameter, excavated to at least five centimetres into subsoil, and have all soil screened through six millimetre hardware cloth to facilitate the recovery of any cultural material that may be present. Prior to backfilling, each test pit will be examined for stratigraphy, cultural features, and evidence of fill.

If the archaeological field team determines any lands to be low and wet, steeply sloped, or disturbed during the course of the Stage 2 field work, those areas will not require survey, but will be photographically documented in accordance with Section 2.1 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

The MHSTCI is asked to review the results presented and to accept this report into the *Ontario Public Register of Archaeological Reports*.

6.0 ADVICE ON COMPLIANCE WITH LEGISLATION

This report is submitted to the Minister of Heritage, Sport, Tourism and Culture Industries as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c. O.18 (Government of Ontario 1990a). The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Heritage, Sport, Tourism and Culture Industries, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* (Government of Ontario 1990a) for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeological Reports referred to in Section 65.1 of the *Ontario Heritage Act* (Government of Ontario 1990a).

Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the *Ontario Heritage Act* (Government of Ontario 1990a). The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48(1) of the *Ontario Heritage Act* (Government of Ontario 1990a).

The *Funeral, Burial and Cremation Services Act,* 2002, S.O. 2002, c. 33 (Government of Ontario 2002), requires that any person discovering or having knowledge of a burial site shall immediately notify the police or coroner. It is recommended that the Registrar of Cemeteries at the Ministry of Government and Consumer Services is also immediately notified.

Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48(1) of the *Ontario Heritage Act* (Government of Ontario 1990a) and may not be altered, or have artifacts removed, except by a person holding an archaeological license.

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8.0 IMAGES

8.1 PHOTOGRAPHS

Photo 1: Test pit survey of the study area, facing southeast



Photo 2: Disturbed area (extensive grading) within the study area, facing northwest



Photo 3: Test pit survey of the study area, facing south



Photo 4: Disturbed area (artificial berm) within the study area, facing north



Photo 5: Disturbed area (extensive grading) within the study area, facing northeast



Photo 6: View of the study area illustrating rocky conditions and bedrock at surface, facing northwest



Photo 7: Test pit survey of the study area, facing east



Photo 8: View of the study area illustrating rocky conditions and bedrock at surface, facing east



Photo 9: View of the study area, facing west



Photo 10: Pedestrian survey of the study area, facing southwest



Photo 11: Pedestrian survey of the study area, facing south



Photo 12: Test pit survey of the study area, facing northeast



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Photo 13: Test pit survey of the study area, facing northeast



Photo 14: Pedestrian survey of the study area, facing south



Photo 15: Test pit survey of the study area, facing northeast



Photo 16: Test pit survey of the study area, facing south



Photo 17: Test pit survey of the study area, facing northeast



Photo 18: Pedestrian survey of the study area, facing northeast



Photo 19: View of the study area, facing south



Photo 20: Low and permanently wet area within the study area, facing northeast



Photo 21: Low and permanently wet area within the study area, facing northwest



Photo 22: Disturbed area (extensive grading and Spencer Creek bridge) within the study area, facing southwest



Photo 23: Test pit survey of the study area, facing southwest



Photo 24: Test pit survey of the study area, facing west



Photo 25 Disturbed area (extensive grading) within the study area, facing southeast



Photo 26 Disturbed area (extensive grading and existing road) within the study area, facing east



Photo 27 Disturbed area (existing paved road) within the study area, facing south



Photo 28 Disturbed area (existing paved road) within the study area, facing south



Photo 29: View of the study area, facing southwest



Photo 30: Disturbed area (existing gravel road) within the study area, facing east



Photo 31: Test pit survey of the study area, facing southwest



Photo 32: Disturbed area (extensive grading and paved area) within the study area, facing west



Photo 33: Disturbed area (existing gravel road) within the study area, facing east



Photo 34: Test pit survey of the study area, facing west



Photo 35: View of the study area, facing southeast



Photo 36: Test pit survey of the study area, facing southwest



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Photo 37: Test pit survey of the study area, facing east



Photo 38: View of the study area, facing northeast



Photo 39: Test pit survey of the study area, facing southeast



Photo 40: Test pit survey of the study area, facing west



Photo 41: Test pit survey of the study area, facing north



Photo 42: Disturbed area (extensive grading) within the study area, facing west



Photo 43: Test pit survey of the study area, facing east



Photo 44: Test pit survey of the study area, facing north



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Photo 45: Test pit survey of the study area, facing south



Photo 46: Pedestrian survey of the study area, facing east



Photo 47: Pedestrian survey of the study area, facing west



Photo 48: Test pit survey of the study area, facing south



Photo 49: View of the study area, facing northeast



Photo 50: Test pit survey of the study area, facing north



Photo 51: View of the study area, facing east



Photo 52: Low and permanently wet area within the study area, facing southeast



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Photo 53: Test pit survey of the study area, facing northeast



Photo 54: Test pit survey of the study area, facing west



Photo 55: Pedestrian survey of the study area, facing northeast



Photo 56: Pedestrian survey of the study area, facing northeast



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Photo 57: Test pit survey of the study area, facing northwest



Photo 58: Low and permanently wet area within the study area, facing northwest



Photo 59: Test pit survey of the study area, facing southeast



Photo 60: Disturbed area (existing gravel laneway) within the study area, facing north



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Photo 61: Test pit survey of the study area, facing northwest



Photo 62: Test pit survey of the study area, facing north



Photo 63: Test pit survey of the study area, facing east



Photo 64: Low and permanently wet area within the study area, facing south



Photo 65: Disturbed area (existing gravel laneway) within the study area, facing southeast



Photo 66: Low and permanently wet area within the study area, facing west



Photo 67: Test pit survey of the study area, facing east



Photo 68 Disturbed area (existing gravel laneway and buried utilities) within the study area, facing north



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Photo 69: View of the study area, facing northeast



Photo 70: View of the study area, facing west



Photo 71: Low and permanently wet area within the study area, facing west



Photo 72: View of the study area, facing east



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Photo 73: Test pit survey of the study area, facing north



Photo 74: Test pit survey of the study area, facing northwest



Photo 75: Test pit survey of the study area, facing southeast



Photo 76: Test pit survey of the study area, facing north



Photo 77: Test pit survey of the study area, facing west



Photo 78: Test pit survey of the study area, facing west



Photo 79: Test pit survey of the study area, facing east



Photo 80: Disturbed area (existing gravel laneway) within the study area, facing northwest



Photo 81: Disturbed area (existing gravel laneway) within the study area, facing north



Photo 82: Disturbed area (existing paved road) within the study area, facing southeast



Photo 83: Test pit survey of the study area, facing east



Photo 84: Test pit survey of the study area, facing southwest



Photo 85: Disturbed area (existing gravel laneway) within the study area, facing north



Photo 86: Disturbed area (existing gravel laneway and bridge) within the study area, facing north



Photo 87: Disturbed area (existing paved laneway) within the study area, facing southwest



Photo 88: Test pit survey of the study area, facing southwest



Photo 89: Test pit survey of the study area, facing east



Photo 90: Disturbed area (existing paved laneway) within the study area, facing northwest



Photo 91: Test pit survey of the study area, facing north



Photo 92: View of the study area, facing east



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Photo 93: Test pit survey of the study area, facing northeast



Photo 94: Test pit survey of the study area, facing southwest



Photo 95: View of the study area, facing southeast



Photo 96: View of the study area, facing northeast



Photo 97: Low and permanently wet area within study area, facing north



Photo 98: Low and permanently wet area within study area, facing southwest



Photo 99: Test pit survey of the study area, facing southwest



Photo 100: Disturbed area (existing gravel laneway) within the study area, facing southeast



8.2 PLATES

Plate 1: Sample of artifacts from Location 1

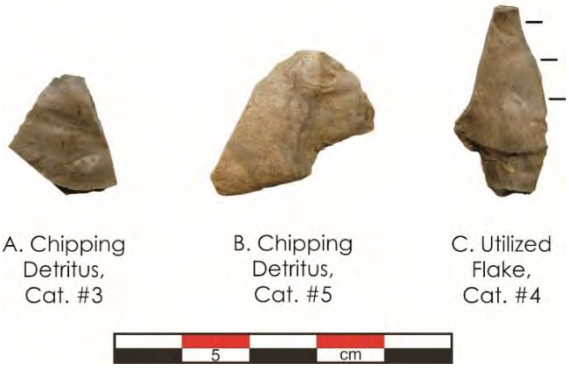

Plate 2: Artifact from Location 2



Plate 3: Artifact from Location 3



Plate 4: Artifact from Location 4

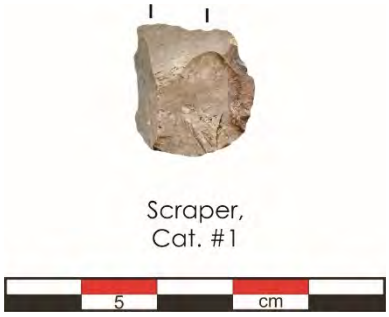

Plate 5: Sample of artifacts from Location 5

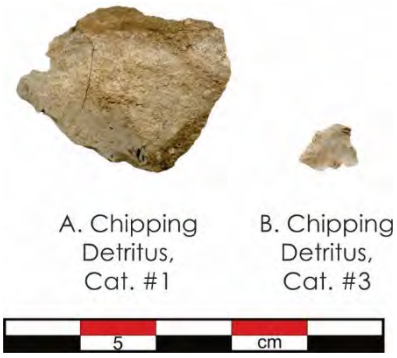

Plate 6: Artifact from Location 6

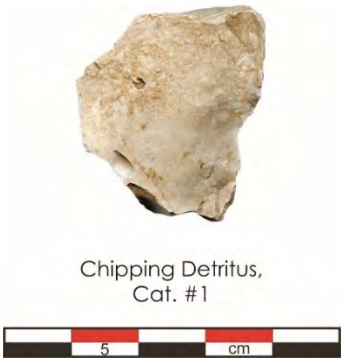

Plate 7: Artifact from Location 7

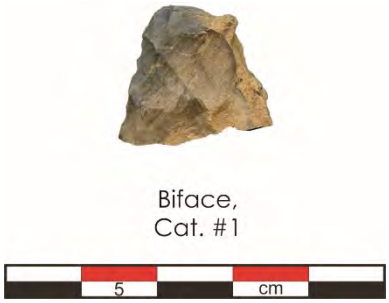

Plate 8: Artifact from Location 8



Plate 9: Artifacts from Location 9

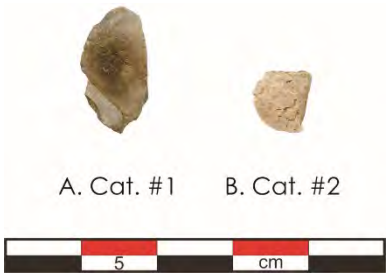

Plate 10: Artifact from Location 10



Plate 11: Artifacts from Location 11

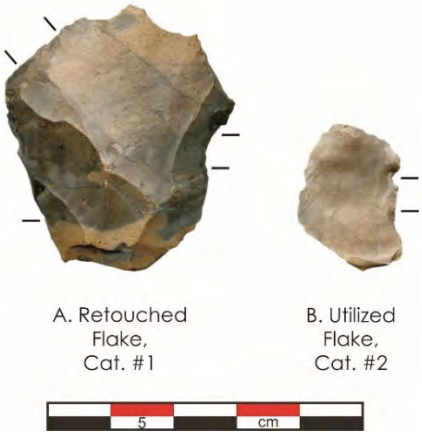

Plate 12: Sample of artifacts from Location 12 (AiHa-60)

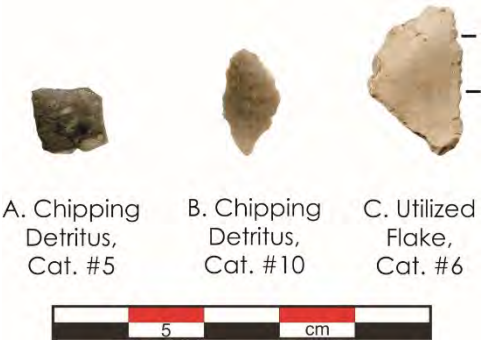

Plate 13: Sample of artifacts from Location 13 (AiHa-61)

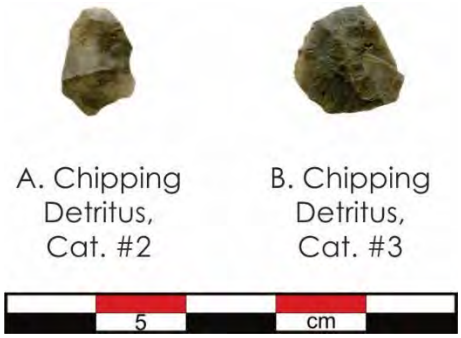

Plate 14: Artifact from Location 14

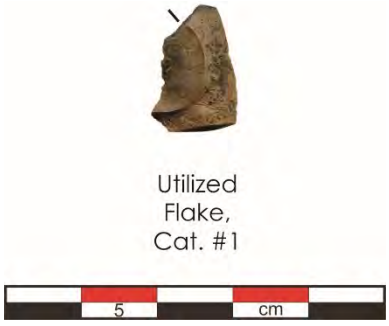

Plate 15: Artifacts from Location 15

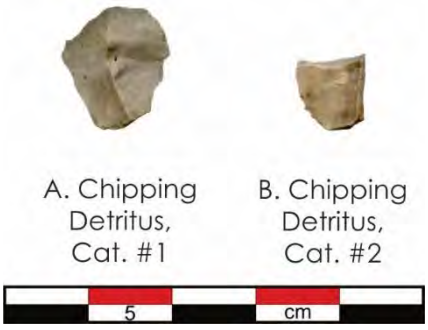

Plate 16: Artifacts from Location 16

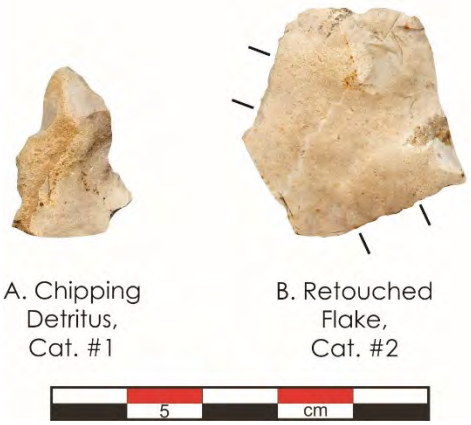

Plate 17: Artifact from Location 17



Plate 18: Artifacts from Location 18

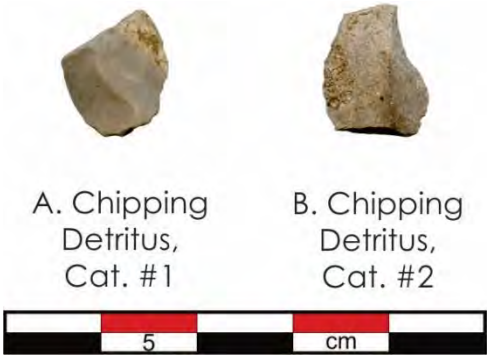

Plate 19: Sample of artifacts from Location 19

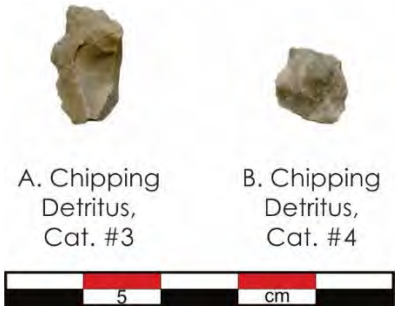

Plate 20: Artifacts from Location 20 (AiHa-62)

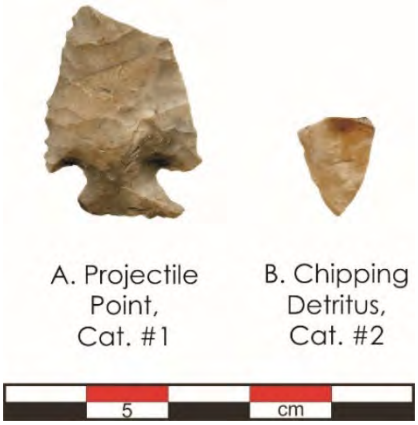

Plate 21: Artifacts from Location 21 (AiHa-63)

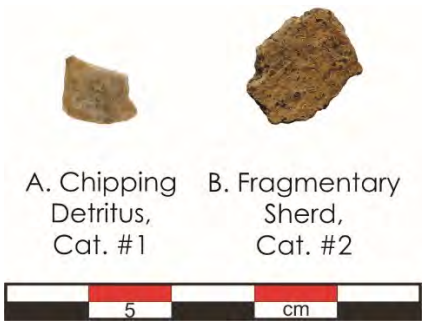

Plate 22: Artifact from Location 22



Plate 23: Artifact from Location 23



Plate 24: Artifact from Location 24



Plate 25: Artifact from Location 25

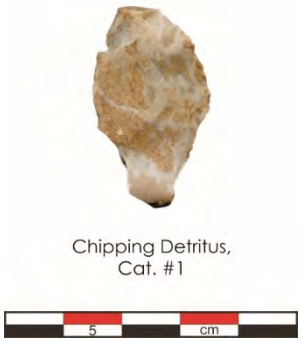

Plate 26: Sample of artifacts from Location 26 (AiHa-64)

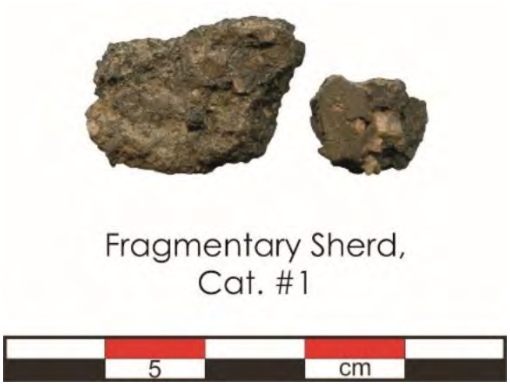

Plate 27: Sample of artifacts from Location 27

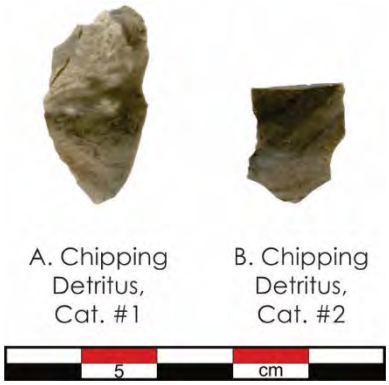

Plate 28: Sample of artifacts from Location 28 (AiHa-65)

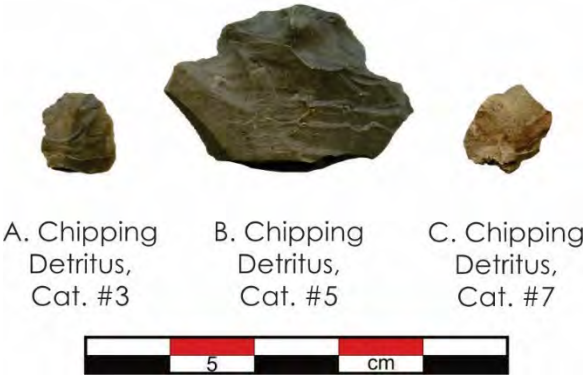

Plate 29: Artifact from Location 29



Plate 30: Artifact from Location 30



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Plate 31: Sample of artifacts from Location 31 (AiHa-66)

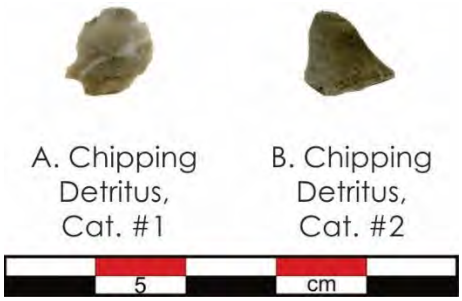


Plate 32: Artifact from Location 32



Plate 33: Sample of artifacts from Location 33

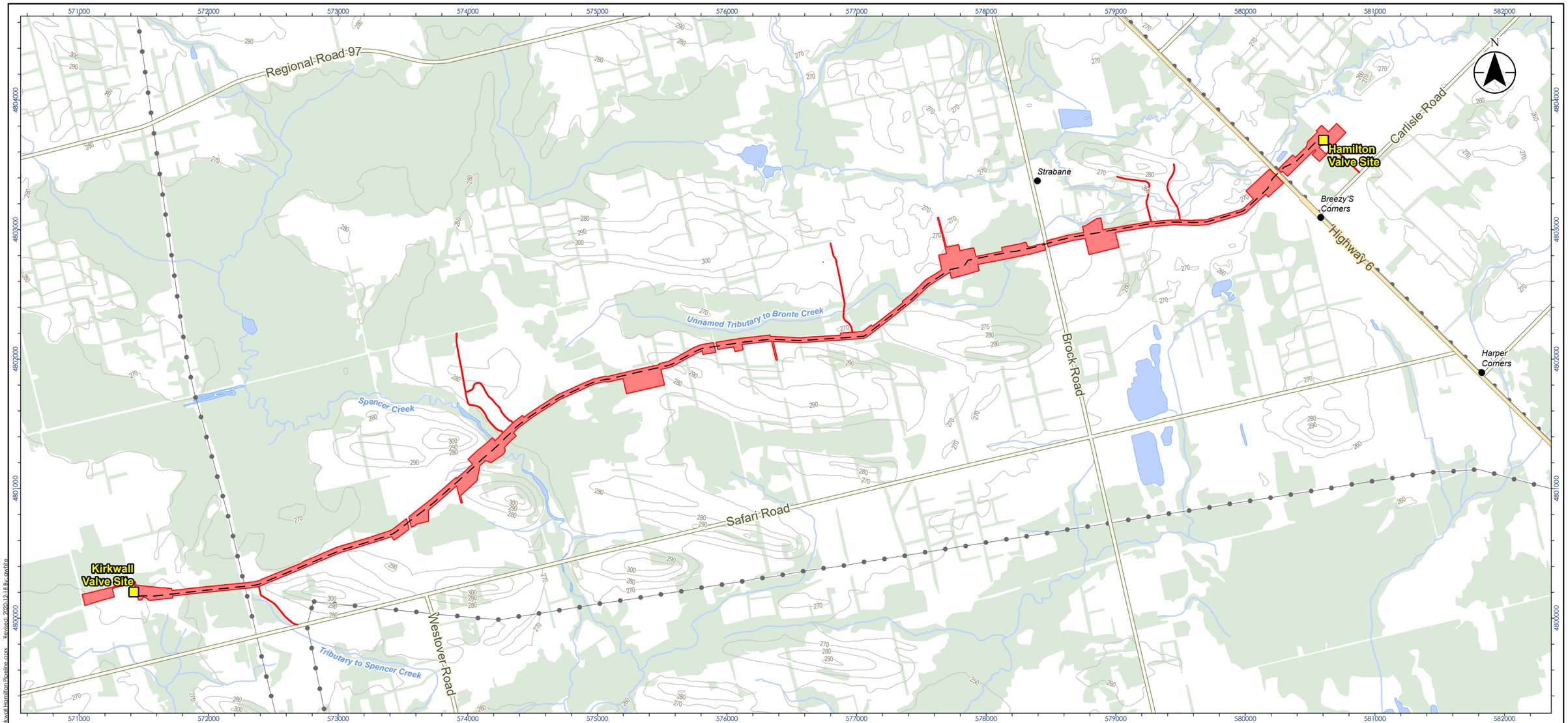


Plate 34: Artifact from Location 34



9.0 MAPS

General maps of the Project and archaeological assessment will follow on succeeding pages. Maps illustrating exact site locations do not form part of this public report; they may be found in the Supplementary Documentation.





Legend

- Archaeology Study Area
- Existing Enbridge Station
- Proposed Route
- Municipal Boundary, Lower
- Highway
- Major Road
- Minor Road
- Minor Road
- Hydro Line
- Watercourse
- Contour (10 m Interval)
- Waterbody
- Wooded Area

0 0.5 1 km

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

Notes

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Stantec

Project Location
City of Hamilton

160961299
Prepared by AW on 2020-12-18

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT
STAGE 2 ARCHAEOLOGICAL ASSESSMENT

Figure No.
1

Title
Location of the Project

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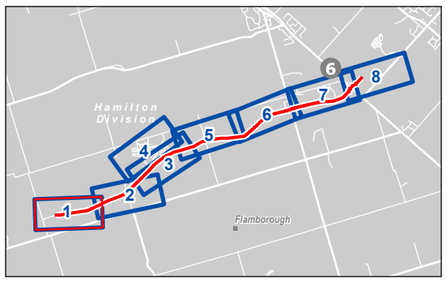

Legend

- Archaeology Study Area
- Proposed Route
- Existing Enbridge Station
- Existing Pipeline
- Hydro Line
- Watercourse
- Property Boundary

0 100 200 m

1:5,000 (At original document size of 11x17)

Notes

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City of Hamilton

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Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT
STAGE 2 ARCHAEOLOGICAL ASSESSMENT

Figure No.
2.1

Title
Location of the Study Area

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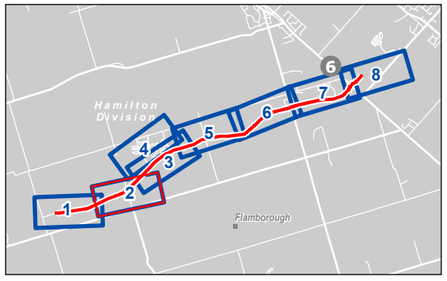
\\ca1stc\wa\160961299\GIS_drawings\gis_mxd\Arch\160961299_Kirkwall-Hamilton Pipeline\160961299_Kirkwall-Hamilton Pipeline.mxd Revised: 2020-12-18 By: awhite





Legend

- Archaeology Study Area
- Proposed Route
- Existing Pipeline
- Hydro Line
- Waterbody
- Watercourse
- Property Boundary

0 100 200 m

1:5,000 (At original document size of 11x17)

Notes

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Project Location
City of Hamilton

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Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT
STAGE 2 ARCHAEOLOGICAL ASSESSMENT

Figure No.
2.2

Title
Location of the Study Area

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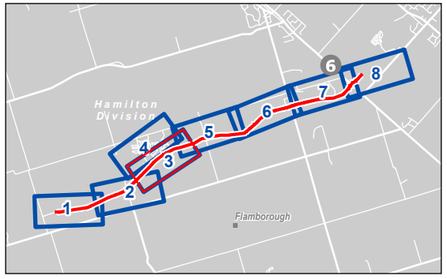

Legend

- Archaeology Study Area
- Proposed Route
- Existing Pipeline
- Waterbody
- Watercourse
- Property Boundary

0 100 200 m

1:5,000 (At original document size of 11x17)

Notes

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City of Hamilton

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Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT
STAGE 2 ARCHAEOLOGICAL ASSESSMENT

Figure No.
2.3

Title
Location of the Study Area

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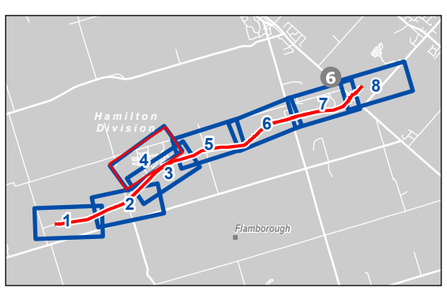

Legend

- Archaeology Study Area
- Existing Pipeline
- Waterbody
- Watercourse
- Property Boundary

0 100 200 m

1:5,000 (At original document size of 11x17)

Notes

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City of Hamilton

160961299
Prepared by AW on 2020-12-18

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT
STAGE 2 ARCHAEOLOGICAL ASSESSMENT

Figure No.
2.4

Title
Location of the Study Area

W:\active\160961299\06_drawings\gis_cad\arcgis\160961299 Kirkwall Hamilton Pipeline\160961299 Kirkwall Hamilton Pipeline.aprx Revised: 2020-12-18 By: awhite

575000

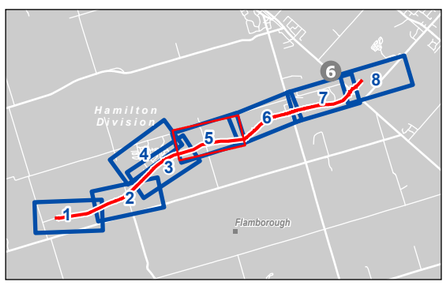
575000

Concession 8 West

Unnamed Tributary to Bronte Creek

Middletown Road

N



Legend

- Archaeology Study Area
- Proposed Route
- Existing Pipeline
- Watercourse
- Property Boundary

0 100 200 m

1:5,000 (At original document size of 11x17)

Stantec

Project Location
City of Hamilton

160961299
Prepared by AW on 2020-12-18

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT
STAGE 2 ARCHAEOLOGICAL ASSESSMENT

Figure No.
2.5

Title
Location of the Study Area

Notes

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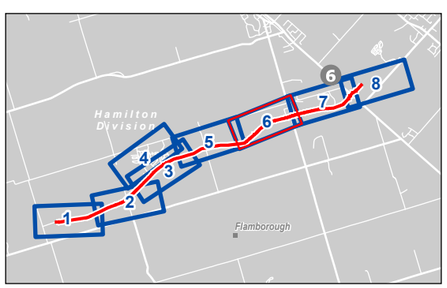

Legend

- Archaeology Study Area
- Proposed Route
- Existing Pipeline
- Watercourse
- Property Boundary

0 100 200 m

1:5,000 (At original document size of 11x17)

Notes

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Project Location
City of Hamilton

160961299
Prepared by AW on 2020-12-18

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT
STAGE 2 ARCHAEOLOGICAL ASSESSMENT

Figure No.
2.6

Title
Location of the Study Area

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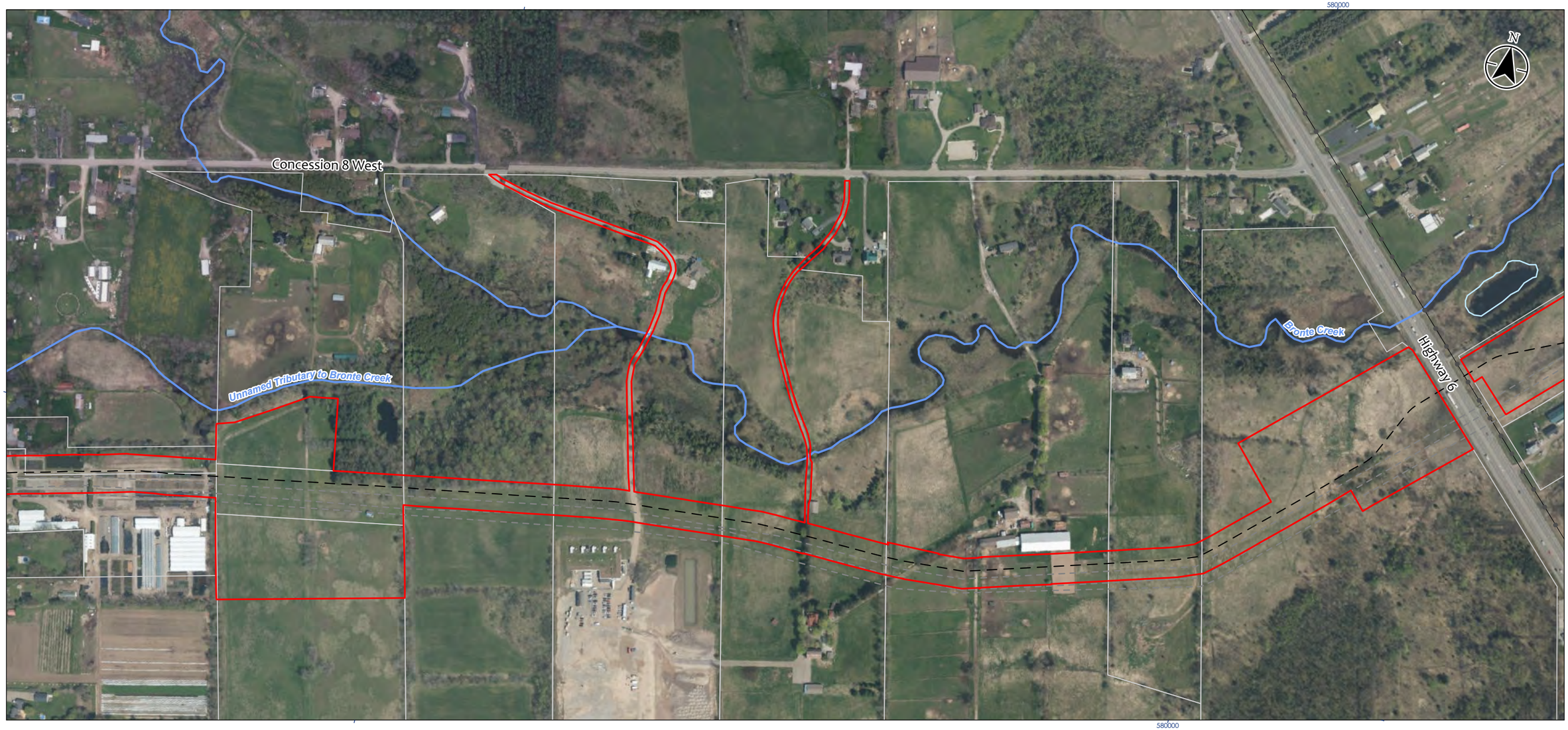

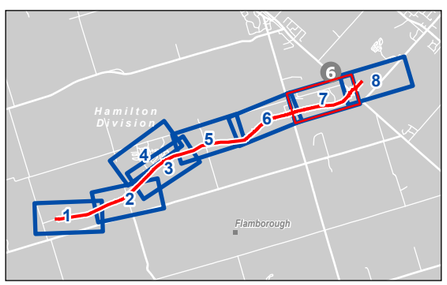

Legend

- Archaeology Study Area
- Proposed Route
- Existing Pipeline
- Hydro Line
- Waterbody
- Watercourse
- Property Boundary

0 100 200 m

1:5,000 (At original document size of 11x17)

Notes

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Project Location
City of Hamilton

160961299
Prepared by AW on 2020-12-18

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT
STAGE 2 ARCHAEOLOGICAL ASSESSMENT

Figure No.
2.7

Title
Location of the Study Area

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580000

580000

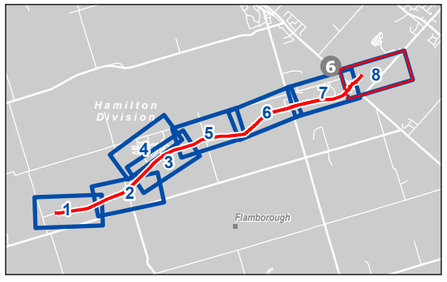
Bronte Creek

Hamilton Valve Site

Highway 6

Carlisle Road

N



Legend

- Archaeology Study Area
- Proposed Route
- Existing Enbridge Station
- Existing Pipeline
- Hydro Line
- Waterbody
- Watercourse
- Property Boundary

0 100 200 m

1:5,000 (At original document size of 11x17)

Notes

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City of Hamilton

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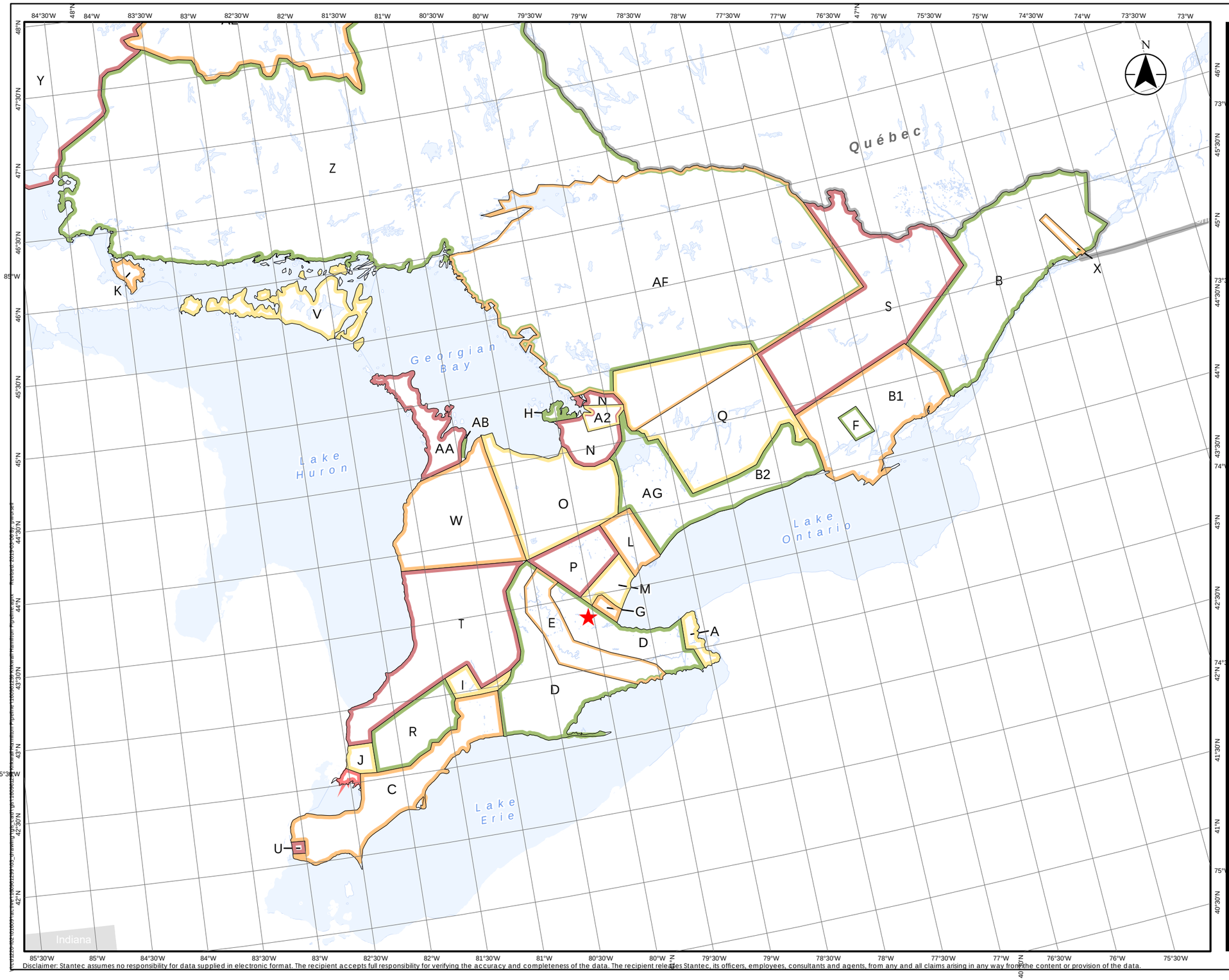
Prepared by AW on 2020-12-18

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT
STAGE 2 ARCHAEOLOGICAL ASSESSMENT

Figure No.
2.8

Title
Location of the Study Area

\\ca.stantec.com\dfs\Projects\160961299\GIS_drawings\mxds_cad\mxds\160961299 Kirkwall Hamilton Pipeline\160961299 Kirkwall Hamilton Pipeline.aprx Revised: 2020-12-18 By: rowhite



Stantec

Legend

★ Project Location

A Treaty No. 381, May 9th, 1781 (Mississauga and Chippewa)
AA Treaty No. 72, October 30th, 1854 (Chippewa)
AB Treaty No. 82, February 9th, 1857 (Chippewa)
AE Treaty No. 9, James Bay 1905, 1906 (Ojibway and Cree)
AG Williams Treaty, October 31st, 1923 (Chippewa)
A2 John Collins' Purchase, 1785 (Chippewa)
B Crawford's Purchase, October 9th, 1783 (Algonquin and Iroquois)
B1 Crawford's Purchase, October 9th, 1783 (Mississauga)
B2 Crawford's Purchase, 1783, 1787, 1788 (Mississauga)
C Treaty No. 2, May 19th, 1790 (Odawa, Chippewa, Pottawatomi, and Huron)
D Treaty No. 3, December 2nd, 1792 (Mississauga)
E Haldimand Tract: from the Crown to the Mohawk, 1793
F Tyendinaga: from the Crown to the Mohawk, 1793
G Treaty No. 3 3/4: from the Crown to Joseph Brant, October 24th, 1795
H Treaty No. 5, May 22nd, 1798 (Chippewa)
I Treaty No. 6, September 7th, 1796 (Chippewa)
J Treaty No. 7, September 7th, 1796 (Chippewa)
K Treaty No. 11, June 30th, 1798 (Chippewa)
L Treaty No. 13, August 1st, 1805 (Mississauga)
M Treaty No. 13A, August 2nd, 1805 (Mississauga)
N Treaty No. 16, November 18th, 1815 (Chippewa)
O Treaty No. 18, October 17th, 1818 (Chippewa)
P Treaty No. 19, October 28th 1818 (Chippewa)
Q Treaty No. 20, November 5th, 1818 (Chippewa)
R Treaty No. 21, March 9th, 1819 (Chippewa)
S Treaty No. 27, May 31st, 1819 (Mississauga)
T Treaty No. 27½, April 25th, 1825 (Ojibwa and Chippewa)
U Treaty No. 35, August 13th, 1833 (Wyandot or Huron)
W Treaty No. 45½, August 9th, 1836 (Saugeen)
X Treaty No. 57, June 1st, 1847 (Iroquois of St. Regis)
Y Treaty No. 60, Robinson, Superior, September 7th, 1850 (Ojibwa)
Z Treaty No. 61, Robinson, Huron, September 9th, 1850 (Ojibwa)

0 50 100 km
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Notes
1. Coordinate System: NAD 1983 Statistics Canada Lambert
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2019.
3. Treaty boundaries adapted from Morris 1943 (1964 reprint). For cartographic representation only.

Project Location 160961299
City of Hamilton Prepared by PW on 2019-03-06

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT
STAGE 2 ARCHAEOLOGICAL ASSESSMENT

Figure No.
3

Title
Treaties and Purchases (Adapted from Morris 1943)

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580000

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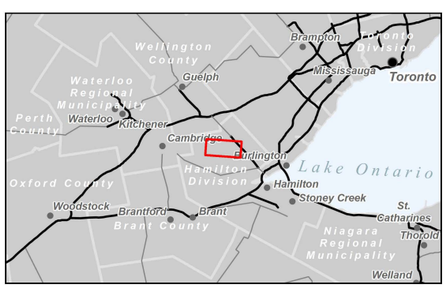

Legend

Archaeology Study Area (approximate)

Notes

1. Map is not to scale.
2. Historic map source:

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Project Location
City of Hamilton

160961299
Prepared by AW on 2020-12-18

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENT

Figure No.
4

Title
Portion of the 1859 County of Wentworth Map

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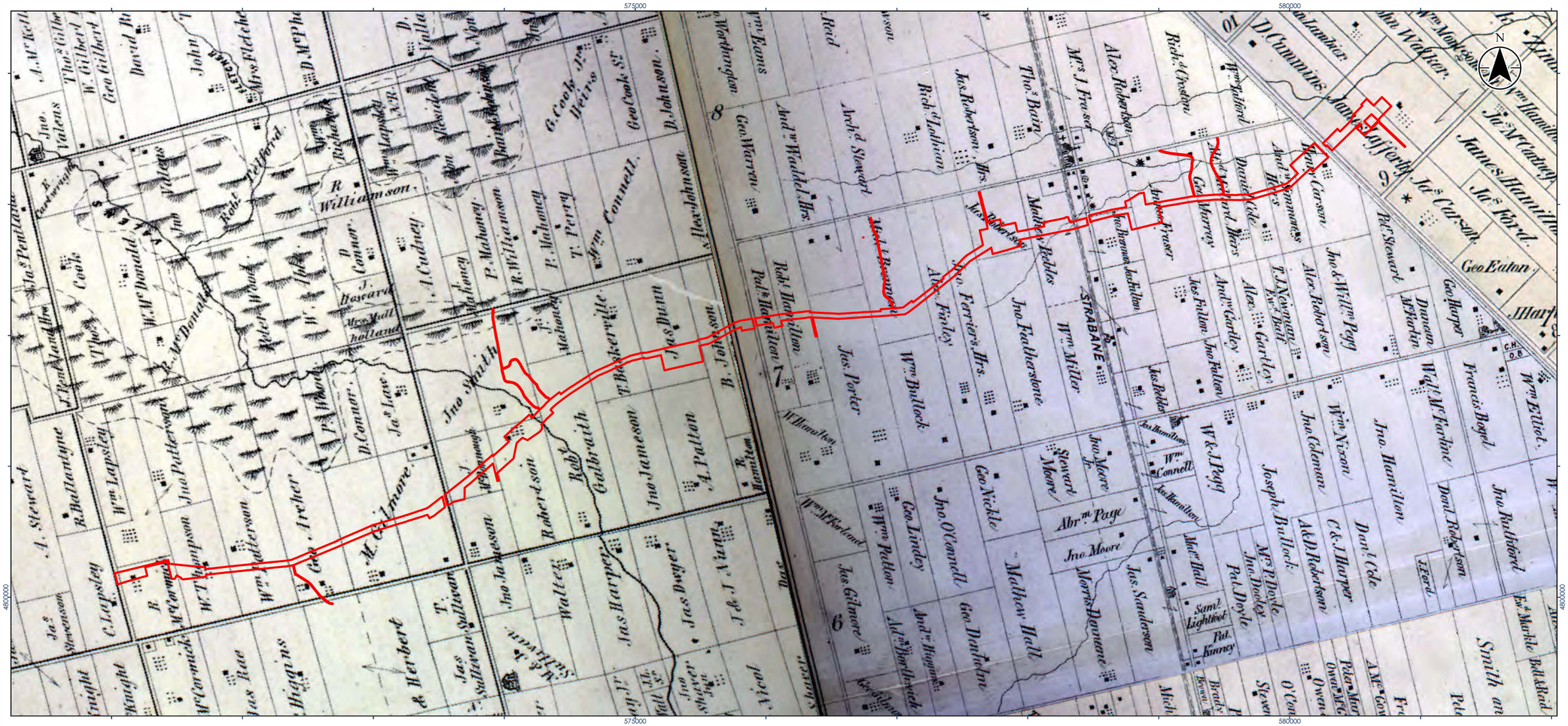

Legend

Archaeology Study Area (approximate)

Notes

1. Map is not to scale.
2. Historic map source:

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Project Location
City of Hamilton

160961299
Prepared by AW on 2020-12-18

Client/Project
ENBRIDGE GAS INC.
KIRKWALL-HAMILTON PIPELINE PROJECT
STAGE 2 ARCHAEOLOGICAL ASSESSMENT

Figure No.
5

Title
Portion of the 1875 County of Wentworth Map

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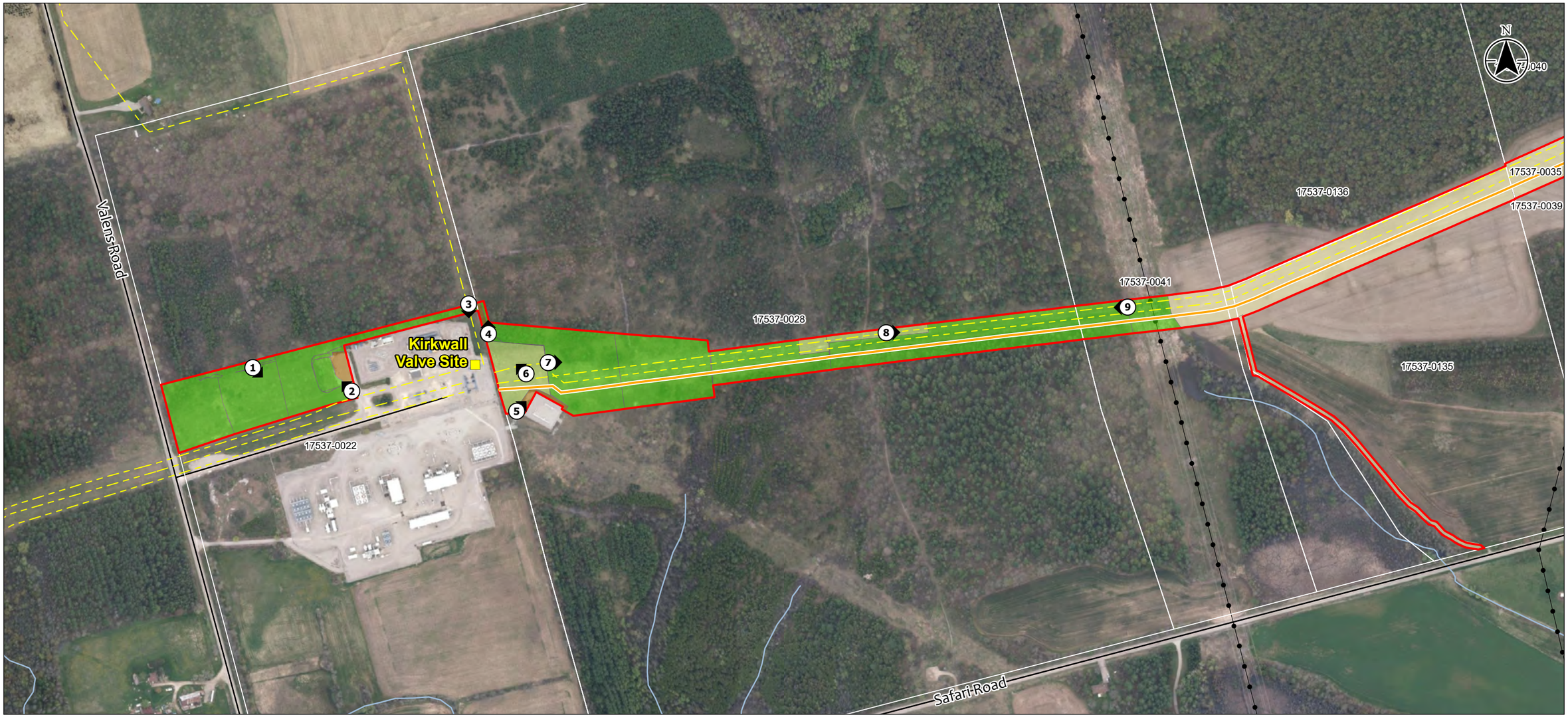

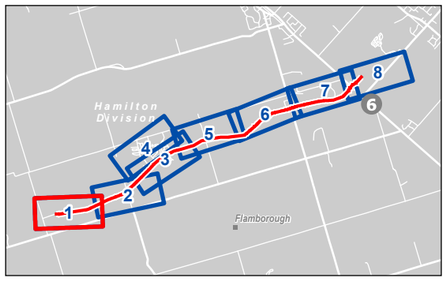

Legend

- Archaeology Study Area
- Archaeology Photo Log
- Previously Disturbed, Low to No Archaeological Potential - No Further Archaeological Work Required
- Pedestrian Survey, 5 m Intervals
- Test Pit Survey, 5 m Intervals
- Test Pit Survey, 10 m Intervals
- Existing Station
- Preferred Route
- Existing Enbridge Pipeline
- Road
- Hydro Line
- Watercourse

Notes

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0 100 200 m

1:5,000 (At original document size of 11x17)

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Project Location
City of Hamilton

160961299
Prepared by AW on 2020-12-22

Client/Project
ENBRIDGE GAS INC.
KIRKWALL TO HAMILTON PIPELINE PROJECT
STAGE 2 ARCHAEOLOGICAL ASSESSMENT

Figure No.
6.1

Title
Stage 2 Methods and Results

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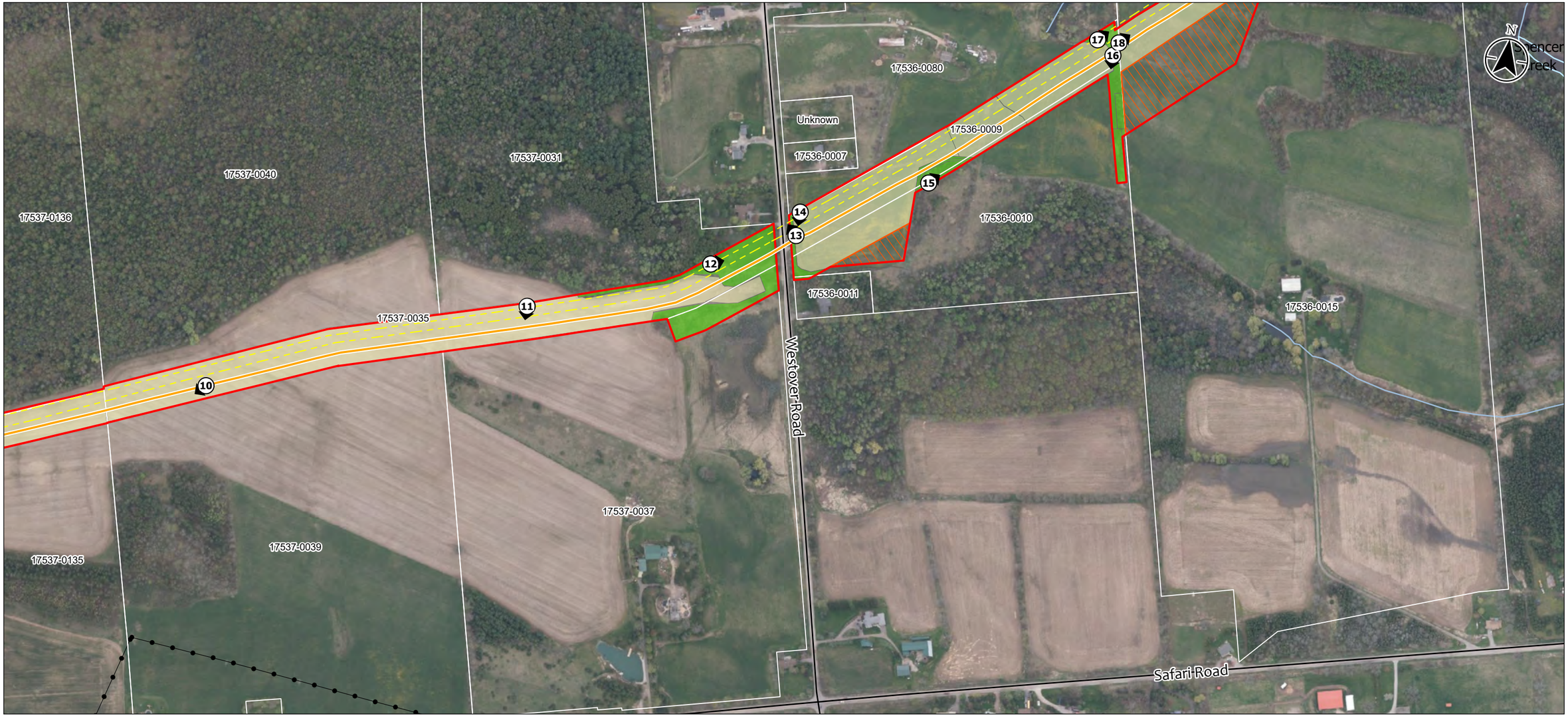

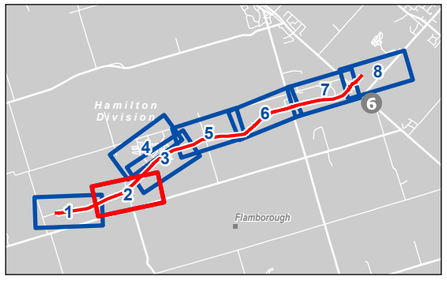

Legend

- Archaeology Study Area
- Archaeology Photo Log
- Pedestrian Survey, 5 m Intervals
- Test Pit Survey, 5 m Intervals
- Retains Archaeological Potential - Stage 2 Required
- Preferred Route
- Existing Enbridge Pipeline
- Road
- Hydro Line
- Watercourse
- Waterbody

Notes

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0 100 200 m

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Prepared by AW on 2020-12-22

Client/Project
ENBRIDGE GAS INC.
KIRKWALL TO HAMILTON PIPELINE PROJECT
STAGE 2 ARCHAEOLOGICAL ASSESSMENT

Figure No.
6.2

Title
Stage 2 Methods and Results

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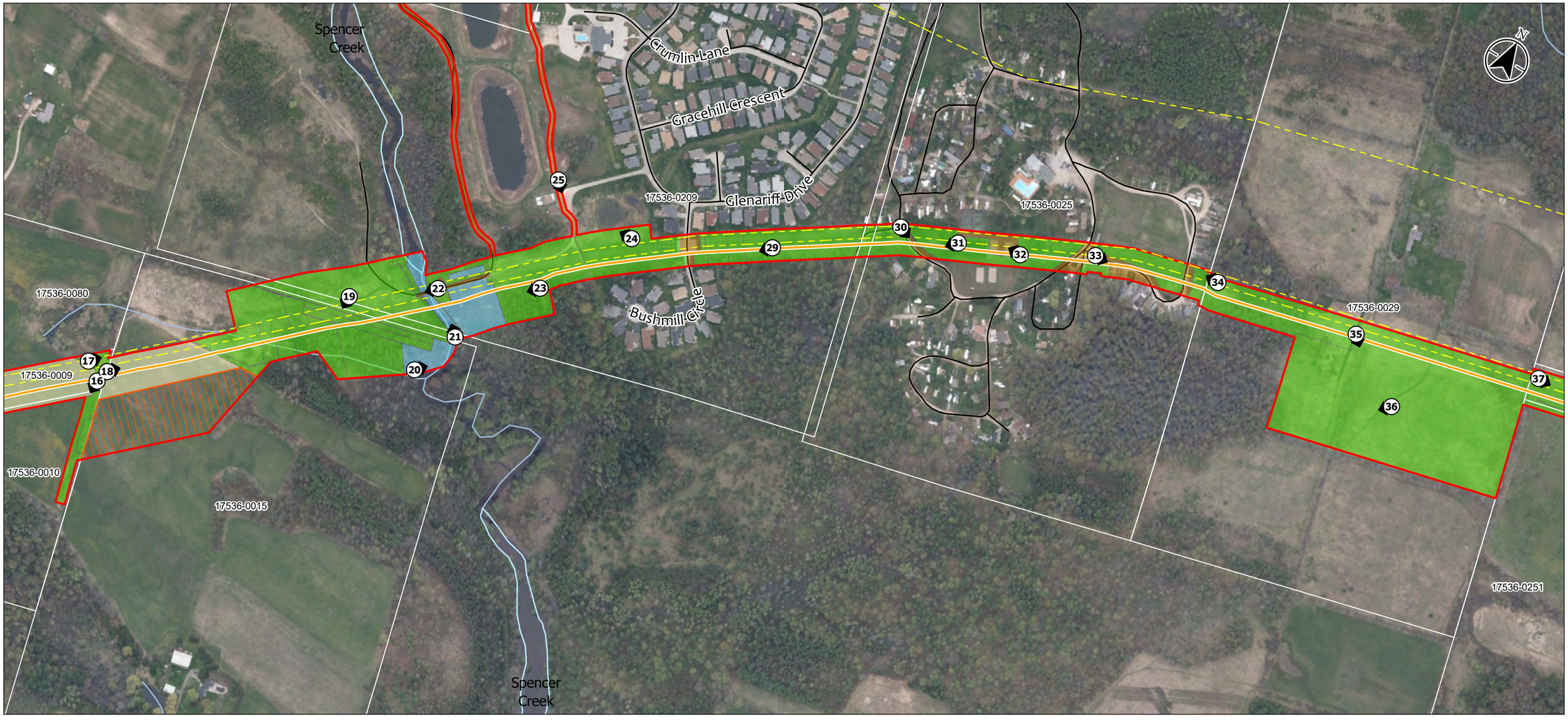

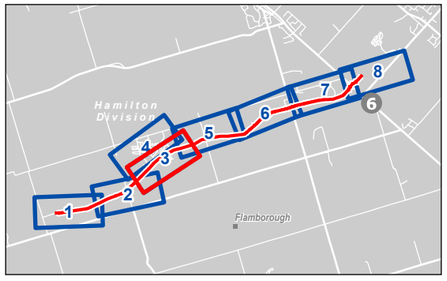

Legend

- Archaeology Study Area
- Archaeology Photo Log
- Low and Permanently Wet Area, Low to No Archaeological Potential - No Further Archaeological Work Required
- Previously Disturbed, Low to No Archaeological Potential - No Further Archaeological Work Required
- Pedestrian Survey, 5 m Intervals
- Test Pit Survey, 5 m Intervals
- Retains Archaeological Potential - Stage 2 Required
- Preferred Route
- Existing Enbridge Pipeline
- Road
- Watercourse
- Waterbody

Notes

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Project Location
City of Hamilton

160961299
Prepared by AW on 2020-12-22

Client/Project
ENBRIDGE GAS INC.
KIRKWALL TO HAMILTON PIPELINE PROJECT
STAGE 2 ARCHAEOLOGICAL ASSESSMENT

Figure No.
6.3

Title
Stage 2 Methods and Results

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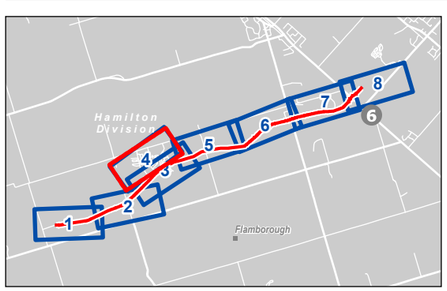

Legend

- Archaeology Study Area
- Archaeology Photo Log
- Previously Disturbed, Low to No Archaeological Potential - No Further Archaeological Work Required
- Existing Enbridge Pipeline
- Road
- Watercourse
- Waterbody

Notes

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ENBRIDGE GAS INC.
KIRKWALL TO HAMILTON PIPELINE PROJECT
STAGE 2 ARCHAEOLOGICAL ASSESSMENT

Figure No.
6.4

Title
Stage 2 Methods and Results

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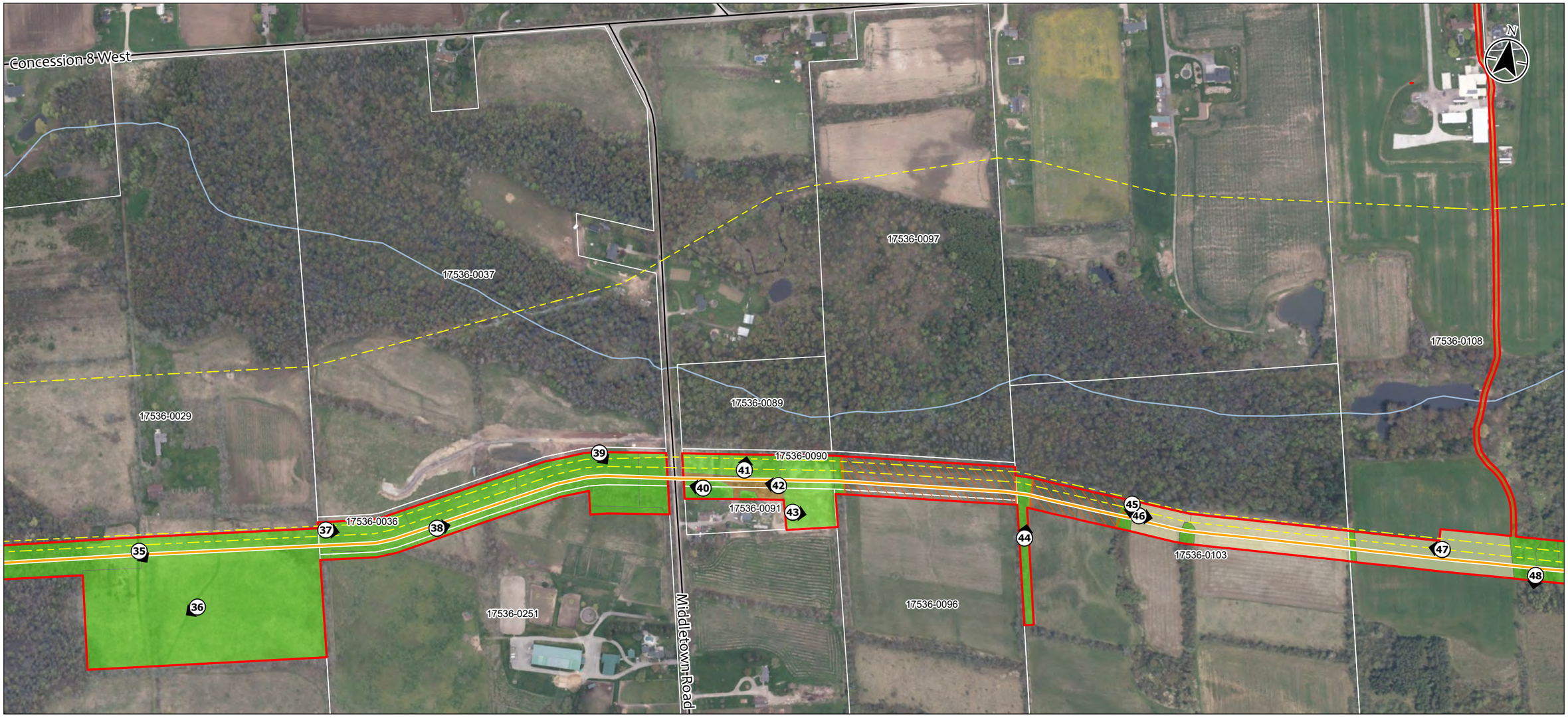

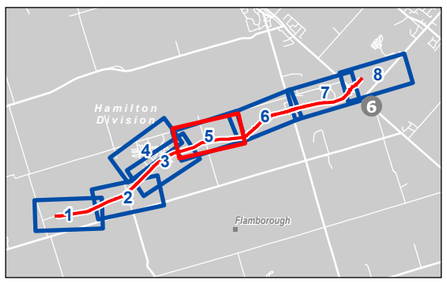

Legend

- Archaeology Study Area
- Archaeology Photo Log
- Previously Disturbed, Low to No Archaeological Potential - No Further Archaeological Work Required
- Pedestrian Survey, 5 m Intervals
- Test Pit Survey, 5 m Intervals
- Retains Archaeological Potential - Stage 2 Required
- Preferred Route
- Existing Enbridge Pipeline
- Road
- Watercourse

Notes

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Client/Project
ENBRIDGE GAS INC.
KIRKWALL TO HAMILTON PIPELINE PROJECT
STAGE 2 ARCHAEOLOGICAL ASSESSMENT

Figure No.
6.5

Title
Stage 2 Methods and Results

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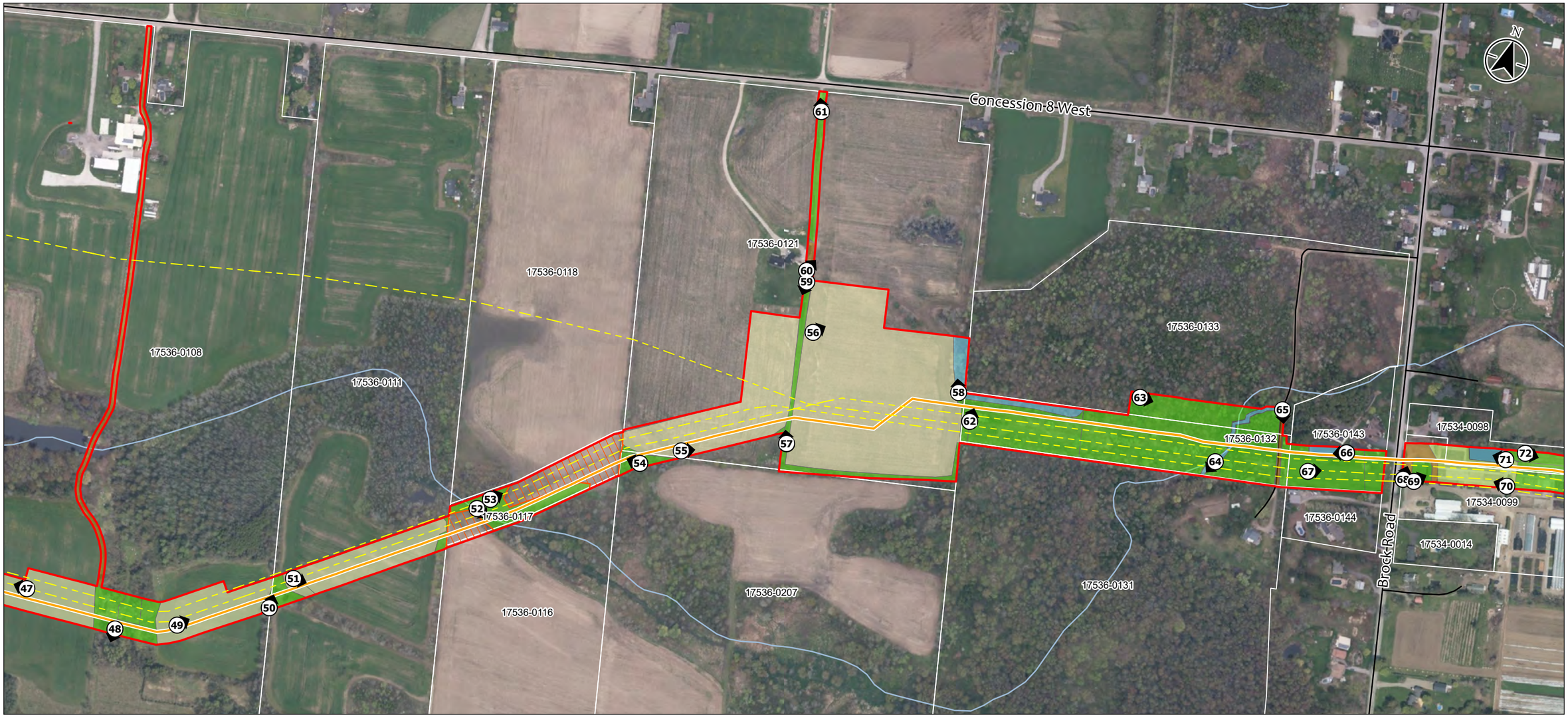

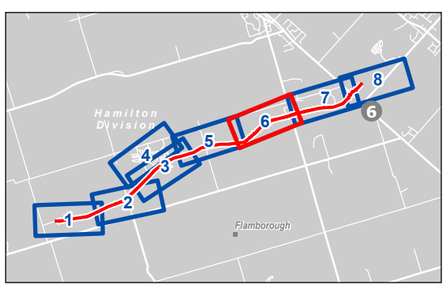

Legend

- Archaeology Study Area
- Archaeology Photo Log
- Low and Permanently Wet Area, Low to No Archaeological Potential - No Further Archaeological Work Required
- Previously Disturbed, Low to No Archaeological Potential - No Further Archaeological Work Required
- Pedestrian Survey, 5 m Intervals
- Test Pit Survey, 5 m Intervals
- Test Pit Survey, 10 m Intervals
- Retains Archaeological Potential - Stage 2 Required
- Preferred Route
- Existing Enbridge Pipeline
- Road
- Watercourse

Notes

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Project Location
City of Hamilton

160961299
Prepared by AW on 2020-12-22

Client/Project
ENBRIDGE GAS INC.
KIRKWALL TO HAMILTON PIPELINE PROJECT
STAGE 2 ARCHAEOLOGICAL ASSESSMENT

Figure No.
6.6

Title
Stage 2 Methods and Results

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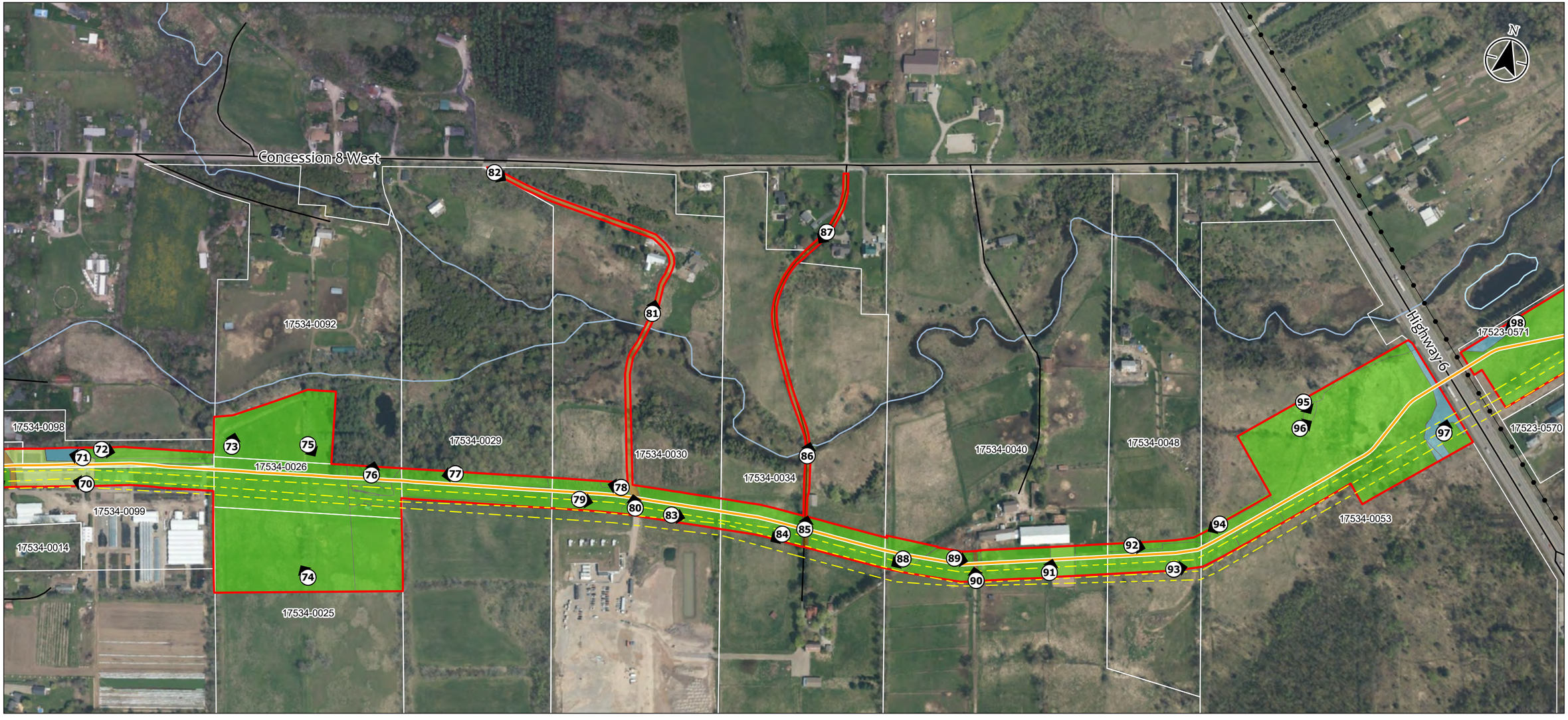

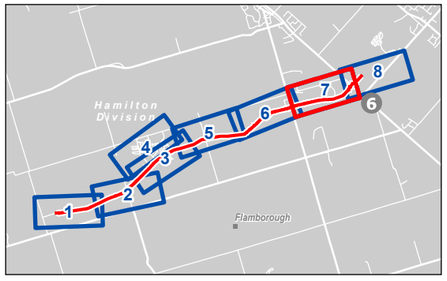

Legend

- Archaeology Study Area
- Archaeology Photo Log
- Low and Permanently Wet Area, Low to No Archaeological Potential - No Further Archaeological Work Required
- Previously Disturbed, Low to No Archaeological Potential - No Further Archaeological Work Required
- Test Pit Survey, 5 m Intervals
- Test Pit Survey, 10 m Intervals
- Preferred Route
- Existing Enbridge Pipeline
- Road
- Hydro Line
- Watercourse
- Waterbody

Notes

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Stantec

Project Location
City of Hamilton

160961299
Prepared by AW on 2020-12-22

Client/Project
ENBRIDGE GAS INC.
KIRKWALL TO HAMILTON PIPELINE PROJECT
STAGE 2 ARCHAEOLOGICAL ASSESSMENT

Figure No.
6.7

Title
Stage 2 Methods and Results

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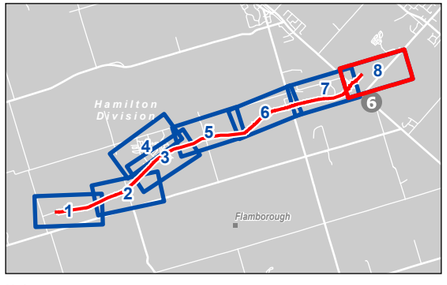

Legend

- Archaeology Study Area
- Archaeology Photo Log
- Low and Permanently Wet Area, Low to No Archaeological Potential - No Further Archaeological Work Required
- Previously Disturbed, Low to No Archaeological Potential - No Further Archaeological Work Required
- Test Pit Survey, 5 m Intervals
- Previously Assessed (DRP 2015; Stantec 2015) - No Further Archaeological Work Required
- Existing Station
- Preferred Route
- Existing Enbridge Pipeline
- Road
- Hydro Line
- Watercourse
- Waterbody

Notes

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Prepared by AW on 2020-12-22

Client/Project
ENBRIDGE GAS INC.
KIRKWALL TO HAMILTON PIPELINE PROJECT
STAGE 2 ARCHAEOLOGICAL ASSESSMENT

Figure No.
6.8

Title
Stage 2 Methods and Results

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10.0 CLOSURE

This report documents work that was performed in accordance with generally accepted professional standards at the time and location in which the services were provided. No other representations, warranties or guarantees are made concerning the accuracy or completeness of the data or conclusions contained within this report, including no assurance that this work has uncovered all potential archaeological resources associated with the identified property.

All information received from the client or third parties in the preparation of this report has been assumed by Stantec to be correct. Stantec assumes no responsibility for any deficiency or inaccuracy in information received from others.

Conclusions made within this report consist of Stantec's professional opinion as of the time of the writing of this report and are based solely on the scope of work described in the report, the limited data available and the results of the work. The conclusions are based on the conditions encountered by Stantec at the time the work was performed. Due to the nature of archaeological assessment, which consists of systematic sampling, Stantec does not warrant against undiscovered environmental liabilities nor that the sampling results are indicative of the condition of the entire property.

This report has been prepared for the exclusive use of the client identified herein and any use by any third party is prohibited. Stantec assumes no responsibility for losses, damages, liabilities, or claims, howsoever arising, from third party use of this report. We trust this report meets your current requirements. Please do not hesitate to contact us should you require further information or have additional questions about any facet of this report.

Quality Review _____ (signature)

Jeffrey Muir – Senior Archaeologist

Independent Review _____ (signature)

Colin Varley – Senior Associate, Senior Archaeologist

Appendix G DFO-Enbridge Gas Generic Watercourse Crossing Drawings

DRAFT

Generic Sediment Control Plan – Horizontal Directional Drill

This Plan is applicable to Enbridge Gas Inc. (EGI) workers and Contractors involved in HDD activities. It establishes best management practices to prevent and/or mitigate an unauthorized death of fish or harmful alteration, disruption or destruction (HADD) of fish and fish habitat or the impairment of water quality from an inadvertent release of drilling fluid or sedimentation in the vicinity of, or beneath, watercourses. **NOTE:** There is a Duty to Notify and Duty to Take Corrective Measures to report death of fish or a HADD of fish habitat to DFO.

Drilling fluid is typically composed of bentonite clay-water mixture, which is considered non-toxic/hazardous, however, if it is released to a watercourse, there is the potential for the drilling fluid to adversely impact fish and invertebrates. EGI recognizes the need to protect downstream water users, as well as aquatic species and their habitat, from sedimentation. As such, extensive planning prior to, and constant vigilance during, construction operations are essential.

Conditions for use

- Work is taking place outside of Critical Habitat including any identified riparian areas
- Work is taking place at least 30m from any watercourse that has aquatic species at risk
- Work is taking place at least 15m from any watercourse

Planning and Pre-Construction

The following precautionary measures should be implemented to minimize the risk of an inadvertent release or sedimentation during HDD activities:

- Select a pipeline route to minimize the number of watercourse crossings;
- If possible, schedule HDD activities during low flow times;
- Ensure watercourse crossing permits and approvals are obtained, reviewed and remain on-site throughout the duration of the project;
- Where necessary, EGI will notify the required regulatory authorities (i.e. Conservation Authority) prior to the watercourse crossing;
- Ensure that all construction personnel are aware of this contingency plan prior to the commencement of drilling activity;
- Conduct a feasibility assessment (i.e. geotechnical assessment) to assess the suitability of subsurface conditions (if required);
- Maximize distance of HDD entry and exit points from the watercourse and ensure they are at least 10 m from a watercourse if aquatic species at risk are not present in 30 m if present; and
- Maximize depth of the drill path beneath the watercourse.

Construction Mitigation Measures

The steps and precautions that follow should be completed when conducting HDD activities beneath, or in the vicinity of, a watercourse:

- Clearly flag the expected drill path prior to commencing any drilling operations, to facilitate monitoring for potential drilling fluid releases.
- Assign personnel to monitor the drill path for inadvertent returns of drilling fluid or sedimentation.
- Fluid volumes, annular pressure and cutting returns will be continuously monitored to ensure potential drilling fluid losses are detected and addressed immediately. Dedicated personnel should be assigned to continuously monitor drilling pressure and fluid volumes.
- Ensure an approved spill kit is on site and readily available, as per the Spill Response Procedure.
- Sediment control measures (i.e. silt fencing, SiltSoxx™, etc.) should be set-up prior to initiating HDD operations to contain potential releases of drilling fluid, sediment-laden groundwater or run-off along the proposed drill path. Sediment control measures shall be installed:
- Around entry and exit pits;
- Around drilling fluid containment pits;
- Surrounding spoil piles;
- Between all HDD operations and watercourse as identified on this drawing;
- Over-excavate the entry and exit pits to create drilling fluid sump pits;
- Drilling fluid must be contained in entry and exit pits (sump pits) and as they are filled, drilling fluids should be promptly removed and/or removed at the completion of HDD operations at an approved location;
- All vehicles, machinery and other equipment shall not enter the water. There must be no fording of any watercourse;
- If possible, refueling of equipment should not occur within a minimum of 30 m from a watercourse, however, if required, secondary containment must be used around the refuelling area to prevent entry into the watercourse; and
- If necessary, ensure dewatering occurs through a 'sediment-bag' and utilizes other erosion and sediment control (ESC) measures, as required, and is released greater than 30 m from the top-of-bank into a vegetated area.

During HDD operations, workers should keep enough spill response material on-site and readily available to contain any inadvertent releases of drilling fluid or release of sediment-laden groundwater, including (but not limited to):

- Sandbags
- Filter cloth (i.e. silt fence)
- T-Posts
- Corrugated culverts
- Numerous 5-gallon pails
- Vacuum trucks
- Straw bales
- Snow fencing
- Sediment control lots (i.e. SiltSoxx™) or equivalent
- Polyethylene sheets
- Shovels

In addition to the above, for larger watercourse crossings, the following materials should also be kept on-site:

- Turbidity curtains
- Floating sediment boom
- Trash pumps complete with sufficient lengths of leak-free hose, suction heads, and fish screens

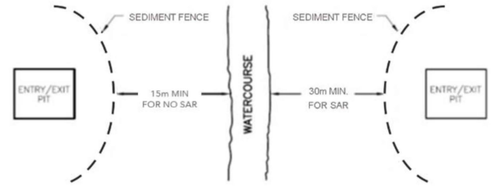
Contingency Plan for Inadvertent Release

Bank and Riparian Zone Areas

The steps that follow should be completed when pipeline installation by HDD is occurring adjacent to a watercourse bank or riparian zone and drilling fluid is identified along the drill path.

- HDD operations should stop immediately and spill containment be established using EGI's approved methods including, but not limited to:
- Straw bales and sediment control fencing;
- Sandbags and polyethylene sheets;
- Containment pits, rings and/or absorbent booms;
- Vacuum trucks; and,
- Site re-grading (berms).
- The EGI Supervisor and Environmental Inspector (if applicable) must be notified of the inadvertent release of drilling fluid or sedimentation.
- The EGI Supervisor must follow the reporting requirements outlined in the Spill Response Procedure and at a minimum, contact, the Environmental Advisor at **1-855-336-2056** to ensure regulatory reporting requirements are met and to ensure clean-up operations are completed.
- If in doubt, report the spill. At a minimum, the following information will be required when reporting to the Environmental Advisor:
  1. Date and time of spill
  2. How the spill occurred
  3. Location of spill
  4. Type of material spilled
  5. Volume of material spilled
  6. Any impacts from the spill
  7. Immediate spill response actions
  8. Photographs
- Contact an approved environmental consultant to support spill cleanup and restoration, if deemed necessary based on the extent and impacts of the release.
- Workers including the EGI Inspector, Environmental Advisor and Contractor and Environmental Inspector (if used) should check for the root cause of release and identify potential solutions including (but not limited to):
- Reducing the pressure of slurry flow (i.e. excavate pressure relief pits);
- Reducing the speed of drill rotation;
- Reducing the speed of drill rod advancement;
- Moving the drill location (laterally, depth, etc.); and,
- Utilizing water to replace the bentonite drilling fluid, if site conditions allow.
- Any substantial deviation (i.e. installation method, crossing location/depth) from approved pipeline construction drawings must be resubmitted to the respective regulatory agencies (i.e. Conservation Authority) prior to resuming work.
- Residual drilling fluid must be removed by shovel or vacuum truck. Clean-up activities must minimize further disruption to the bank and riparian zone area.
- Any damage must be repaired, such as settlement and/or heaving.
- HDD activities may resume when preventative actions have been implemented and all parties are satisfied with the approach (i.e. EGI Supervisor, Environmental Advisor, Environmental Inspector and regulatory authorities [if involved]).

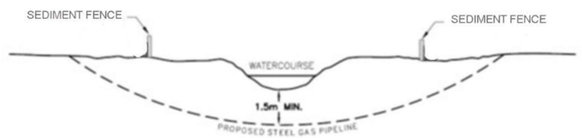
Minimum Horizontal Directional Drill Setback and Depth



PLAN

NOTES

- SEDIMENT FENCE TO BE SET UP A MINIMUM OF 15m FROM A NO SPECIES AT RISK WATERCOURSE AND 30m FOR A SPECIES AT RISK WATERCOURSE.
- HORIZONTAL DIRECTIONAL DRILL TO BE SET UP BEHIND SEDIMENT FENCE.
- MINIMUM OF 1.5m COVER FROM TOP OF PIPE TO BED OF WATERCOURSE.
- ALL DISTURBED AREAS TO BE RESTORED TO PRE-CONSTRUCTION CONDITIONS OR AS CLOSE AS POSSIBLE.



PROFILE

Watercourses

In addition to the above steps and precautions for bank and riparian zone areas, the following should be completed when pipeline installation by HDD is occurring beneath a watercourse and drilling fluid is identified or suspected in the watercourse itself:

- Where leakage of drilling fluids is suspected in a watercourse (i.e. sediment plume) operations should stop immediately and a visual inspection be conducted to verify the presence and extent. All necessary steps should be taken to minimize the impacts.
- Containment and clean-up activities must be initiated as soon as possible, where appropriate.
- Where the release is small with no visible sediment plume it should be allowed to dissipate naturally. Clean-up efforts within the watercourse may potentially be disruptive and cause further suspension of sediment in the water column than if the release were left to dissipate.
- Where the release is large with a visible sediment plume extending beyond the drilling site, the Environmental Advisor must be contacted to retain an environmental consultant to monitor the turbidity levels of the plume and associated potential impacts. In addition, the location of the inadvertent release should be isolated from the watercourse by installing a cofferdam or other containment system by utilizing the following materials:
  - Sandbags and polyethylene sheets;
  - Siltsoxx™, filter cloth (silt fence), straw bales;
  - Corrugated culverts; and/or,
  - Turbidity curtains.
  - The following materials can be used to control and clean up the release:
  - Shovels and 5-gallon pails (if conditions are dry)
  - Trash pumps with hose, suction head and fish screens; and/or
  - Vacuum trucks.
- If subsequent drilling attempts result in additional inadvertent returns of drilling fluid, the crossing should be halted, the Supervisor contact the Environment Department at **1-855-336-2056** and refer to the Contingency Plan for Installation Alternatives below.

Contingency Plan for Installation Alternatives

If EGI is unable to use HDD methodology to install the pipeline even with the mitigation implemented above, construction activities must be suspended, and the Environmental and/or Permit Advisor must be contacted to discuss alternate crossing methods. Any changes to the permitted crossing method may require permit amendments or government agency approval.

EGI should consider the following (from most to least preferred):

- Further geotechnical investigations to revise the pipeline alignment or depth
- Implement another crossing method as outlined in the Enbridge Gas Inc. and Department of Fisheries and Oceans Agreement Related to Watercourse Crossings for Pipeline Construction and Maintenance in Ontario (EGI DFO Agreement)
- Implement another crossing method such as a Non-Isolated Trench/Wet Open Cut method (work area is not isolated from flowing water)

Once the crossing method is reviewed by all internal parties and has been revised, the revised crossing method must be resubmitted for review and approval to the respective regulatory agencies (i.e. Conservation Authority, DFO [if required]) prior to resuming work.

Death of Fish or Harmful Alteration, Disruption or Destruction of Fish Habitat (HADD)

- If death of fish or HADD has occurred due to failure of this plan, a restoration plan should be developed and implemented by the company in consultation with and upon receipt of approval from the respected Conservation Authority and the DFO.

If a HADD occurs, notification are required as per the Contingency Plan for Inadvertent Release section above. **NOTE:** There is a Duty to Notify and Duty to Take Corrective Measures to report death of fish or a HADD to DFO.

Restoration

The following conditions should be considered when restoring any areas impacted by an inadvertent release of drilling fluid:

- Ensure the drilling exit and entry pits are cleaned of drilling fluid and the fluids are disposed of at an approved location.
- Any disturbed areas adjacent to the watercourse should be seeded, covered with erosion control matting (or equivalent) and restored as close as possible to pre-construction condition.
- All seeding and vegetation replacement will be with native species and as directed by the landowner or regulator (as required).
- If post-construction monitoring reveals erosion, remedial work will be taken as quickly as possible.
- If there is insufficient time in the growing season, the site should be stabilized (i.e. cover exposed soils with erosion control matting) and seeded the following spring.
- Maintain effective erosion and sediment controls until revegetation of disturbed areas is achieved, then remove the control measures.
- All debris and garbage shall be removed from the construction site to an approved location.

NOTES

ENBRIDGE

LOCATION

ALL HORIZONTAL DIRECTIONAL DRILL CROSSINGS IN ONTARIO

DRAWING TITLE

GENERIC SEDIMENT CONTROL PLAN HORIZONTAL DIRECTIONAL DRILL

SCALE	DATE
NTS	DECEMBER 2021
FILE No.	PROJECT No.

DRAWN	CHECKED	DRAWING	REV
GTH			0

APPROVED

Generic Sediment Control Plan - Temporary Vehicle Crossings

This plan sets out the measures that will be taken by Enbridge Gas Inc. (EGI) and its contractors to control downstream sediment to the lowest level practically achievable during the construction, use and removal of temporary vehicle water crossing at any watercourse (e.g., streams, rivers and ponds). The conditions and techniques set out on this plan are to be followed unless approved otherwise by the Department of Fisheries and Oceans (DFO).

General Measures

EGI must use materials, construction practices, mitigation techniques and monitoring of operations at every water crossing in order to prevent the unauthorized harmful alteration, disruption or destruction of fish habitat or the impairment of water quality. General measures are available at https://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures-eng.html. Vehicle crossings typically include temporary bridges (e.g., Bailey bridges, log stringer bridges) and winter crossings such as ice bridges and snow fills. The following requirements apply to any watercourse and areas adjacent to it:

- Temporary vehicle crossings to be in place no longer than a single restricted activity timing window.
- Use existing vehicle access across watercourses wherever possible.
- Prior to removal of the low vegetative cover, effective mitigation techniques for erosion and sediment control must be in place to protect water quality. Limit the areal extent of disturbance to the minimum needed for construction and delay grubbing to immediately prior to grading operations.
- Prior to commencing the installation of temporary vehicle crossings, local weather stations will be monitored to determine whether any precipitation is forecasted. If practical work will be delayed until weather conditions are favourable. If necessary, to proceed with work under unfavourable conditions, EGI will exercise due diligent.
- Vehicle crossing structures capable of handling anticipated high water flows during the construction period will be used. See guidelines below on sizing of water opening.
- Coarse cobbles, sandbags, geotextile liners and/or curb stringers will be used to protect culvert and ramp approach fills from erosion and to prevent sediment from entering a watercourse.
- On the approaches to vehicle crossing structures, road ditches constructed for drainage control will incorporate the necessary erosion and sedimentation control measures (e.g., silt fence, check dams) to prevent sediment from entering a watercourse.
- Except during construction of the crossing, EGI will not obstruct any watercourse so as to impede the free movement of water and fish.
- All exposed mineral soil must be graded to a stable slope and treated as quickly as possible to prevent erosion and sediment from entering a watercourse.
- All temporary vehicle crossing structures will be removed upon completion of construction. Banks and approaches will be restored and stabilized immediately upon removal of a vehicle crossing structure.
- The area around water crossings is to be regularly monitored and if erosion problems develop, immediate action is to be taken with appropriate treatments and completed as quickly as possible. Accumulated sediment is to be removed regularly from sediment control mitigations.
- Equipment fording will only be allowed if the Code of Practice can be met. It is available at https://www.dfo-mpo.gc.ca/pnw-ppe/codes/temporary-crossings-traversees-temporaires-eng.html.
- The Company will be held responsible for implementation of this plan. Any questions regarding the implementation of this plan should be directed towards the Environmental Advisor assigned to the project.

Sizing of Water Opening

It is important that the size of the water opening be selected so the structure can safely pass flood flows that can reasonably be expected to occur during the life of the crossing. **These structures must also allow for fish passage at all times except during the pipeline installation.** Any one of the following methods can be followed:

- Install a bridge that clear spans the watercourse from top of bank to top of bank where banks are defined (i.e. ordinary high water mark), and ensure adequate freeboard to allow for anticipated increase in stream discharge and passage of debris. In cases where banks are undefined: use cribbing or other footing material to hold the bridge and ensure adequate freeboard to allow for anticipated increase in steam discharge and passage of debris.
- Maximum culvert length will be 12.2 m (40 ft).
- Conduct a hydrology and hydraulics analysis to determine theoretical opening size. The design flow will be the two year flood (Q2), unless the culvert is to be left in place through the spring freshet, in which case the theoretical opening size will be based on the five year flood (Q5).
- Culvert sizes may also be selected to be the same as nearby culverts that have been in place for many years and have performed satisfactorily.
- If culverts are used, the approved size or equivalent multiple culverts must be installed. If multiple culverts are used a low-flow channel through one culvert must be established.

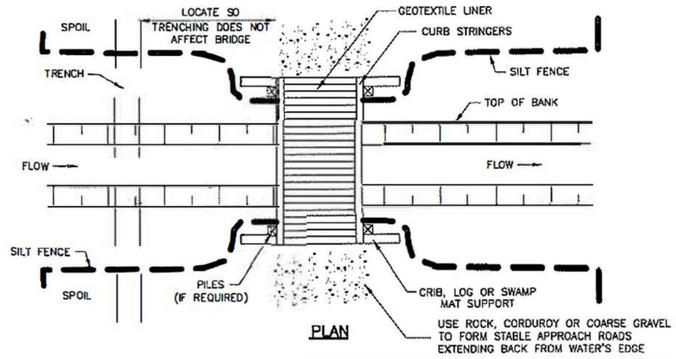
Detailed Construction Sequence - Temporary Bridges

In general terms, the following sequence of construction and mitigation measures will be followed at all temporary bridges.

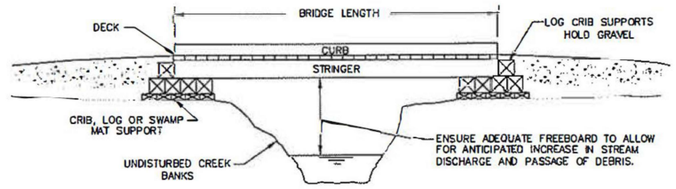
Conditions for use

- The temporary bridge is no greater than one lane wide.
- The crib, log or swamp mat support is above the ordinary high water mark.

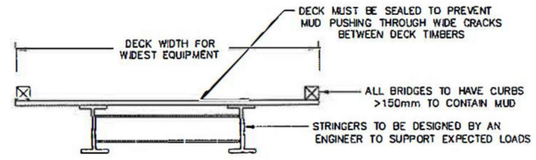
1. Generally, there are no restrictions on timing for the construction of clear-span structures as they do not involve in-water work. However, if there are any activities with the potential to disrupt fish or fish habitat (e.g., in-water crossing of watercourse by machinery), these should be undertaken outside of the restricted activity timing windows.
2. Install the bridge in a manner that will minimize sediment entering the watercourse. Stringers must be engineered to support the loads expected on the bridge. Curbs at least 150 mm high must be installed along the edge of the deck and if necessary, the deck lined with geotextile to contain mud on the bridge. Fasteners connecting components must be strong enough to hold them in position during the life of the bridge.
3. Road approaches leading to the bridges must be raised and stable, so equipment loads are supported a sufficient distance back from the watercourse to reduce sediment entering the watercourse from equipment. This may require using materials such as gravel, rock or corduroy. If cuts are needed to obtain a satisfactory grade, they are to be dug with side ditches and stable slopes. Erosion and sediment control measures are to be installed to keep sediment from entering the watercourse (e.g., check dams, filler cloth, rip rap, seed and mulch, sediment traps, etc.)
4. While the bridge is in use, any buildup of sediment on the bridge deck or approaches that has the potential to enter the watercourse is to be scraped off and disposed of in an approved location.
5. Temporary crossings will be removed as quickly as possible when no longer required. Surplus gravel and bridge materials are to be removed from the crossing area and stabilized above the floodplain in an approved location. The watercourse bed and banks are to be restored to a stable angle and protected with erosion resistant material compatible with flow velocity (e.g., coarse gravel or rip rap). Measures such as berms or logs may be needed to prevent sediment laden water from entering the watercourse.
6. Vegetate any disturbed areas by planting and seeding native trees, shrubs or grasses and cover such areas with mulch or erosion control matting to prevent soil erosion and to help seeds germinate.



PLAN



BRIDGE PROFILE



TYPICAL STEEL BRIDGE SECTION

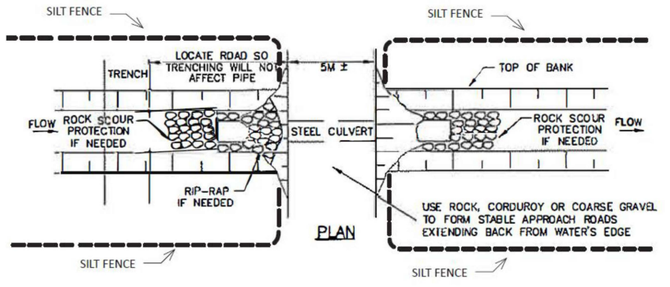
Detailed Construction Sequence - Temporary Culverts

Conditions for use

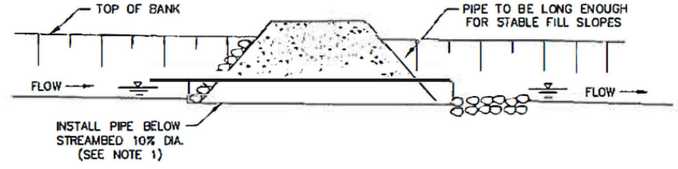
- The use of explosives is not required to complete the works, undertakings and activities
- Fish passage is maintained during the works, undertakings and activities
- No sensitive habitat exists at the crossing location
- The temporary culvert does not result in the draining of upland ponded or wetland features
- The culverts have a maximum length of no longer than 12.2m (40ft)
- The installation and removal of culverts must occur within a single allowable activity timing window

In general terms, the following sequence of construction and mitigation measures will be followed at all temporary culverts. Pre-, during-, and post-construction photographs showing the culvert location will be taken.

1. Install culvert pipe of diameter and length as per the Sizing of Water Opening requirements to ensure for stable fill slopes and safe vehicle/equipment passage. Culvert invert is to be set to allow a minimum of 10cm water depth for fish passage. Culvert installation can be done in flowing water as long as the installation occurs outside the restricted activity timing window. Culvert backfill and fill for the road is to be course granular or rock fill material. Erosion protection may be needed on the upstream road fill slope and if scour is possible, rip rap is to be placed in the watercourse upstream and downstream of the culvert outlet.
2. Road approaches leading to the culvert crossing must be raised and stable, so equipment loads are supported a sufficient distance back from the watercourse to reduce sediment entering the watercourse from equipment. This may require using materials such as gravel, rock, or corduroy. If cuts are needed to obtain a satisfactory grade, they are to be dug with side ditches and stable slopes. Erosion and sediment control measures are to be installed to keep sediment from entering the watercourse (e.g., check dams, filter cloth, rip rap, seed and mulch, sediment traps, etc.).
3. While the culvert is in use, any build-up of sediment on the road surface or approaches that has the potential to enter the watercourse is to be scraped off and disposed of in an approved location.
4. Temporary crossings will be removed as quickly as possible when no longer required. Removal must occur outside the restricted activity timing window. Surplus gravel and culvert materials are to be removed from the crossing area and stabilized above the floodplain in an approved location. The watercourse bed and banks are to be restored to a stable angle and protected with erosion resistant material compatible with flow velocity (e.g., coarse gravel or rip rap). Measures such as berms or logs may be needed to prevent sediment laden water from entering the watercourse.
5. Vegetate any disturbed areas by planting and seeding native trees, shrubs or grasses and cover such areas with mulch or erosion control matting to prevent soil erosion and to help seeds germinate.



PLAN



STREAM PROFILE

NOTES

ENBRIDGE

LOCATION

ALL TEMPORARY VEHICLE CROSSINGS (BRIDGES & CULVERTS) IN ONTARIO

DRAWING TITLE

GENERIC SEDIMENT CONTROL PLAN TEMPORARY VEHICLE CROSSINGS

SCALE		DATE
NTS		DECEMBER 2021
FILE No.		PROJECT No.
DRAWN GTH	CHECKED	DRAWING / REV 0

APPROVED

Generic Sediment Control Plan Dam and Pump Water Crossings

This plan sets out the measures that will be taken by Enbridge Gas Inc. (EGI) and its contractors to control downstream sediment to the lowest level practically achievable during the construction, use and removal of dam and pump type crossings. The conditions and techniques set out on this plan are to be followed unless approved otherwise by the Department of Fisheries and Oceans (DFO). This includes the current DFO Code of Practice for temporary cofferdams and diversion channels available at https://www.dfo-mpo.gc.ca/pnw-ppe/codes/cofferdams-batardeaux-eng.html

Conditions for using the Standard

- The crossing can be completed in 7 calendar days or less avoiding the restricted activity timing window
- The watercourse is 15 m or less wide (current water level) AND flow conditions are 1.5m^3/sec or less
- The in-water work site disturbs a maximum of 50 linear m or less of the watercourse

Note: fish passage in a dam and pump crossing is not required

General Measures

EGI must use materials, construction practices, mitigation techniques and monitoring of operations at every water crossing in order to prevent the death of fish, unauthorized harmful alteration, disruption or destruction of fish habitat or the impairment of water quality. General measures are available at https://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures-eng.html. The following requirements apply to any permanent or intermittent watercourse (stream, river, pond) and areas adjacent to it.

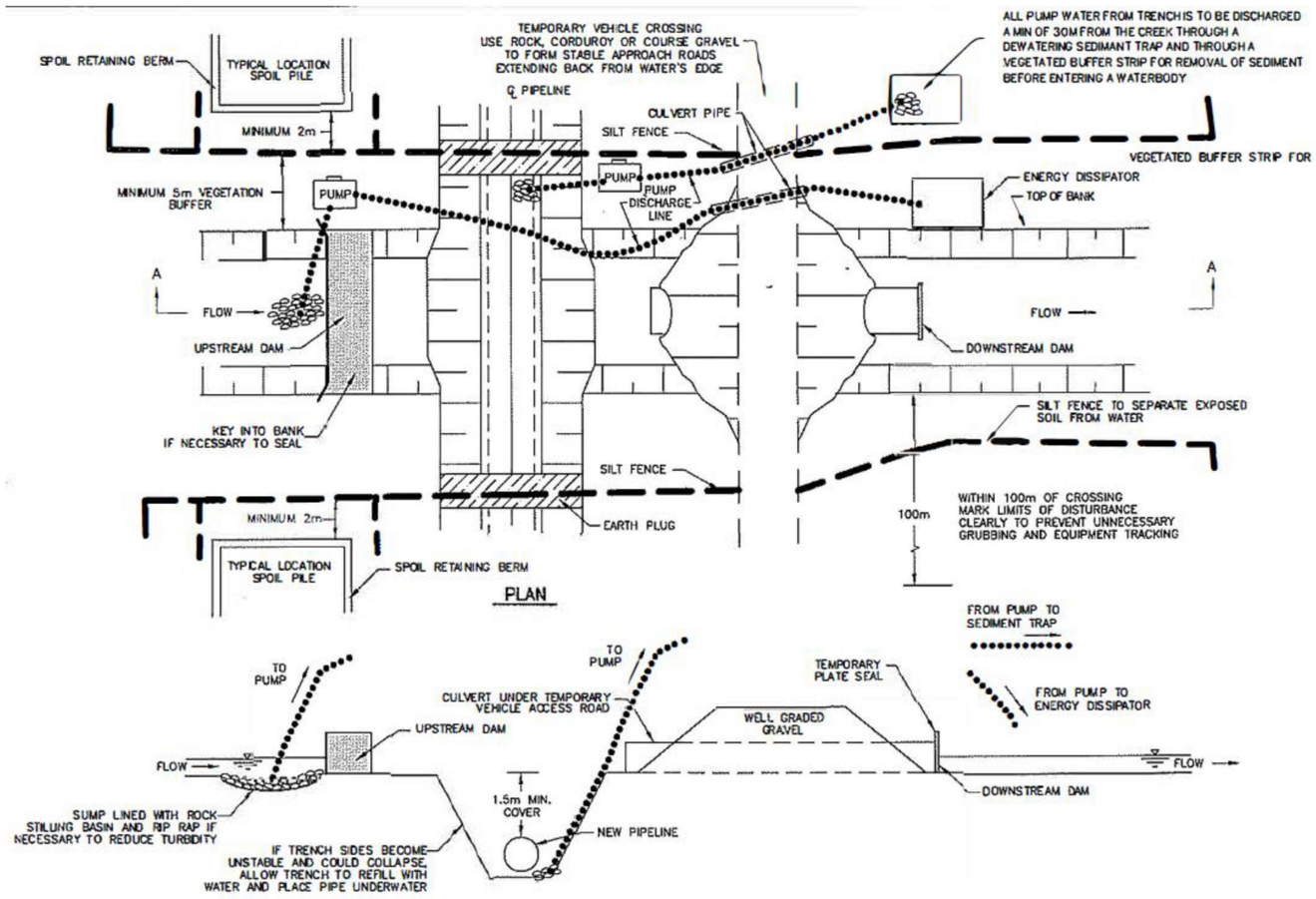
- EGI will adhere to all permits and approvals of federal and provincial agencies related to watercourse crossings.
- EGI will notify the appropriate federal or provincial agencies prior to commencement of a watercourse crossing in accordance with regulatory permit conditions.
- In-stream work will occur during the appropriate time windows for the geographic region and for the fish species present unless otherwise permitted by the appropriate agencies.
- Prior to removal of the low vegetative cover, effective mitigation techniques for erosion and sediment control must be in place to protect water quality. Limit the areal extent of disturbance to the minimum needed for construction and delay grubbing to immediately prior to grading operations.
- All watercourses will require a minimal disturbance zone (MDZ) to be clearly marked with flagging prior to the commencement of clearing activities or any construction activity near the watercourse. This flagging will be set back a minimum of 5m from the watercourse and will be based on site specific conditions. Extra work area required at watercourse crossing will be situated away from the watercourse outside of the MDZ.
- Materials removed or stockpiled during construction (e.g., excavated soil, backfill material) must be deposited in a manner to ensure sediment does not enter a watercourse. Appropriate erosion and sediment controls (e.g. revegetation, vegetated buffer strips, drainage control, sediment settling devices, and sediment fence or other appropriate mitigation measures) will be installed around spoil or stockpiles, to prevent sediment from stockpile runoff from entering a watercourse.
- All vehicles, machinery and other construction equipment shall not enter the water. There must be no fording of any stream.
- Except during construction of the crossing, EGI will not obstruct any watercourse so as to impede the free movement of fish.
- Flow will be maintained at all times downstream of the watercrossing.
- All exposed soil must be stabilized (e.g. graded to a stable slope and erosion control measures implemented) as quickly as possible to prevent erosion.
- EGI is to adhere to the Generic Sediment Control Plan For Temporary Vehicle Crossings.
- All required materials (e.g., silt fencing, filter cloth, polyethylene liners, granular material, rip rap, dam materials) and installation equipment (e.g., pipe, flumes, pumps, pump hoses, generators, spores, energy dissipaters) will be on-site and in good working order prior to construction.
- Prior to commencing watercourse crossings, local weather stations will be monitored to determine whether any precipitation is forecasted. In-stream activity will be delayed if flows are in flood stage and until weather conditions are favourable. If practical work will be delayed until weather conditions are favourable. If necessary, to proceed with work under unfavourable conditions, EGI will exercise due diligence.
- If there is any flow in the watercourse, EGI is to install pumps to maintain streamflow around the blocked off section of channel. An energy dissipater is to be built to accept pump discharge and prevent watercourse erosion.
- Adequate pump capacity will be on site to handle anticipated water flows and any potential increases in flow during the construction period. Backup pumps with adequate capacity to handle 100% of the downstream flow must be on site and ready for immediate replacement, should the primary operating pump(s) fail.
- Water intakes used in fish bearing waters will be screened in accordance with current DFO Code of Practice for end-of-pipe fish protection screens for small water intakes in freshwater https://www.dfo-mpo.gc.ca/pnw-ppe/codes/screen-ecran-eng.html.
- Fish recovery and transfer will be conducted prior to and during the isolation of flow and in accordance with permit regulations. See detailed construction sequence for timing of fish recovery operations.
- Instream activities in all watercourses (e.g., trenching, pipe installation, backfilling) will be completed in as short a time as possible to minimize disturbance to water quality, fish and fish habitat.
- In situations where the crossing can be completed in one day, in-stream excavation will begin in the early morning to allow for same day installation.
- Refueling and lubrication of equipment will be conducted in areas that will allow any accidental spill of deleterious substance to be disposed of in an approved location before it reaches any watercourse. Appropriate spill prevention kits will be readily available on site.
- The area around water crossings is to be regularly monitored and if erosion problems develop, immediate action is to be taken with appropriate treatments and completed as quickly as possible. Accumulated sediment is to be removed regularly.
- Revegetation must be completed as quickly as possible. Revegetate any disturbed areas by planting and seeding native trees, shrubs or grasses and cover such areas with mulch or erosion control matting to prevent soil erosion and to help seeds germinate.
- All use of silt fence, rock check dams and dewatering traps shall be constructed/installed in accordance to the most up to date EGI specifications and drawings. Where these mitigation measures are not sufficient to prevent sediment from entering the watercourse, additional mitigation measures will be implemented to prevent sediment from entering the watercourse.
- EGI will be held responsible for implementation of this plan. Any questions regarding the implementation of this plan should be directed towards the Environmental Advisor assigned to the project.

Contingency Plan

If unforeseen events (e.g., bedrock in trench, dam washout) cause the strategies set out in this plan to be insufficient or inappropriate to meet the objective, EGI is expected to respond in a timely manner with all reasonable measures consistent with safety, to prevent, counteract or remedy any effects on fish or fish habitat that may result. DFO is to be notified as soon as practical. **NOTE:** There is a Duty to Notify and Duty to Take Corrective Measures to report death of fish or a HADD of fish habitat to DFO.

Spill reporting procedures established by EGI shall be used to report any unexpected discharge of silt or sediment or other deleterious substance at the water crossing. At a minimum contact the Environmental Advisor at **1-855-336-2056.**

If DFO determines that long term damage to fish habitat has occurred due to failure of this plan to control sediment, a restoration plan will be developed by EGI, in consultation with and approval from DFO for implementation by EGI.



Detailed Construction Sequence - Dam and Pump Crossings

In general terms, the following sequence of construction and mitigation measures will be followed at all "dam and pump" type water crossings.

1. Mark out and maintain limits of authorized work areas with fencing or flagging tape to avoid unnecessary disturbance of vegetation. Ensure equipment operators working on the crossing have been briefed about this plan and the measures needed to protect water quality. Install pre-work sediment control measures, including silt fences and measures to contain excavated spoil and backfill. All necessary equipment and materials to build the dams and to pump water must be on site or readily available prior to commencing in-water construction. Pipe shall be strung, welded and coated ready for installation prior to watercourse trenching.
2. If possible, install pumps in a natural pool upstream of the excavation. Excavate temporary sump within right-of-way if no natural pool exists. Check pump operation to equalize flow and ensure water intakes used in fish bearing waters are screened in accordance with DFO Code of Practice. Rip rap, stilling wells, filter cloth, gravel filters or other mitigation measures will be used at the upstream inlet of the pump to prevent suspension of sediment from pumping when necessary. Rip rap and rock check dams will be used when necessary to prevent scouring and erosion at the pump outlet. Pump discharge lines shall be installed to keep pumped water from coming into contact with soil on the construction site.
3. Dams are to be made of steel plate, inflatable rubber dam (aquadam), pea stone bags, or metre bags and constructed so that sediment is not introduced to the watercourse. An impervious membrane is to be incorporated into the dam if necessary, to control seepage flow. Dams may need keying into the banks and streambed. Install downstream dam only if needed to keep the trench area dry. Dewater the area between dams and for fish bearing streams, conduct fish recovery operations. All pump water is to be discharged well away (minimum 30 m) from the creek and through a sediment trap to prevent reentry of sediment into the watercourse.
4. Excavate trench through plugs and streambed as quickly as possible, re-positioning discharge hose as necessary. Lower the pipe in the trench and backfill immediately. During pumping activities, monitor flow upstream and downstream to ensure normal flow levels. The top 300 mm of trench backfill is to be clean rock, cobble material or native streambed material. EGI is to use granular backfill if the native material is not suitable. Any excess material is to be disposed of above the high-water mark in an approved location and stabilized to prevent reentry into the watercourse. Work is to be completed as quickly as possible.
5. Restore, stabilize and reclaim bed and banks of watercourse to preconstruction profiles and protected with erosion resistant material compatible with flow velocity (e.g., coarse gravel or rip rap) to the maximum extent possible between dams. Do not use erosion control matting in the bankfull channel. All construction material (e.g. dams, rip rap, pea stone bags) will be removed from the site to an approved location. Removal of all materials will be done in a manner to prevent entry of sediment to the watercourse. The downstream dam will be removed first. Keep pump running until normal flow is resumed. Complete bank trimming and erosion protection. If pea stone bags are used for the dams, place and remove by hand to avoid equipment breaking bags.
6. Site stabilization, which includes control of stormwater drainage using a combination of methods such as silt fences, erosion blankets, diversion berms and check dams etc. is to be completed immediately upon trench backfilling or as directed by the Environmental Advisor. If stabilization is delayed, short term erosion control measures will be used to prevent sediment entering the watercourse. Material accumulated at silt fences is to be removed or stabilized in place. Silt fences are to be removed when the site is permanently stabilized.
7. Vegetate any disturbed areas by planting and seeding native trees, shrubs or grasses and cover such areas with mulch or erosion control matting to prevent soil erosion and to help seeds germinate.
8. If post-construction monitoring reveals erosion problems, remedial work is to be undertaken as quickly as possible.

NOTES

ENBRIDGE

LOCATION

All DAM AND PUMP WATER CROSSINGS IN ONTARIO

DRAWING TITLE

GENERIC SEDIMENT CONTROL PLAN DAM AND PUMP WATER CROSSINGS

SCALE	DATE
NTS	DECEMBER 2021

FILE No.	PROJECT No.

DRAWN	CHECKED	DRAWING	REV
GTH			0

APPROVED

Generic Sediment Control Plan - Dry Flume Water Crossings

This plan sets out the measures that will be taken by Enbridge Gas Inc. (EGI) and its contractors to control downstream sediment to the lowest level practically achievable during the construction, use and removal of dry flume type crossings. The conditions and techniques set out on this plan are to be followed unless approved otherwise by the Department of Fisheries and Oceans (DFO).

Conditions for using the Standard

- The crossing can be completed in 7 calendar days or less avoiding the restricted activity timing window
- The watercourse is 15 m or less wide (current water level) AND flow conditions are 1.5m^3/sec or less
- The in-water work site disturbs a maximum of 50 linear m or less of the watercourse

Note: fish passage in a dry flume is not required

General Measures

EGI must use materials, construction practices, mitigation techniques and monitoring of operations at every water crossing in order to prevent the death of fish, unauthorized harmful alteration, disruption or destruction of fish habitat or the impairment of water quality. General measures are available at https://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures-eng.html. The following requirements apply to any permanent or intermittent watercourse (stream, river, pond) and areas adjacent to it.

- EGI will adhere to all permits and approvals of federal and provincial agencies related to watercourse crossings.
- EGI will notify the appropriate federal or provincial agencies prior to commencement of a watercourse crossing in accordance with regulatory permit conditions.
- In-stream work will occur outside of the restricted activity timing windows for the geographic region and for the fish species present unless otherwise permitted by the appropriate agencies.
- Prior to removal of the low vegetative cover, effective mitigation techniques for erosion and sediment control must be in place to protect water quality. Limit the areal extent of disturbance to the minimum needed for construction and delay grubbing to immediately prior to grading operations.
- All watercourses will require a minimal disturbance zone (MDZ) to be clearly marked with flagging prior to the commencement of clearing activities or any construction activity near the watercourse. This flagging will be set back a minimum of 5m from the watercourse and will be based on site specific conditions. Extra work area required at watercourse crossings will be situated away from the watercourse outside of the MDZ.
- Materials removed or stockpiled during construction (e.g., excavated soil, backfill material) must be deposited in a manner to ensure sediment does not enter a watercourse. Appropriate erosion and sediment controls (e.g. revegetation, vegetated buffer strips, drainage control, sediment settling devices, and sediment fence or other appropriate mitigation measures) will be installed around spoil or stockpiles to prevent sediment from stockpile runoff from entering a watercourse.
- All vehicles, machinery and other construction equipment should not enter the water. There should be no fording of any stream.
- Except during construction of the crossing, EGI will not obstruct any watercourse so as to impede the free movement of fish.
- Flow will be maintained at all times downstream of the water crossing.
- All exposed soil must be stabilized (e.g. graded to a stable slope and erosion control measures implemented) as quickly as possible to prevent erosion.
- EGI is to adhere to the Generic Sediment Control Plan For Temporary Vehicle Crossings.
- All required materials (e.g., silt fencing, filter cloth, polyethylene liners, granular material, rip rap, dam materials) and installation equipment (e.g., pipe, flumes, pumps, pump hoses, generators, spores, energy dissipaters) will be on-site and in good working order prior to construction.
- Prior to commencing watercourse crossings, local weather stations will be monitored to determine whether any precipitation is forecasted. In-stream activity will be delayed if flows are in flood stage and until weather conditions are favourable. If practical work will be delayed until weather conditions are favourable. If necessary, to proceed with work under unfavourable conditions, EGI will exercise due diligence
- Water intakes used in fish bearing waters will be screened in accordance with current DFO Code of Practice for end-of-pipe fish protection screens for small water intakes in freshwater https://www.dfo-mpo.gc.ca/pnw-ppe/codes/screen-ecran-eng.html.
- Fish recovery and transfer will be conducted prior to and during the isolation of flow and in accordance with permit regulations. See detailed construction sequence for timing of fish recovery operations.
- In-stream activities in all watercourses (e.g., trenching, pipe installation, backfilling) will be completed in as short a time as possible to minimize disturbance to water quality, fish and fish habitat.
- In situations where the crossing can be completed in one day, in-stream excavation will begin in the early morning to allow for same day installation.
- Refueling and lubrication of equipment will be conducted in areas that will allow any accidental spill of deleterious substance to be disposed of in an approved location before it reaches any watercourse. Appropriate spill prevention kits will be readily available on site.
- The area around water crossings is to be regularly monitored and if erosion problems develop, immediate action is to be token with appropriate treatments and completed as quickly as possible. Accumulated sediment is to be removed regularly.
- Revegetation must be completed as quickly as possible. Revegetate any disturbed areas by planting and seeding native trees, shrubs or grasses and cover such areas with mulch or erosion control matting to prevent soil erosion and to help seeds germinate.
- All use of silt fence, rock check dams and dewatering traps shall be constructed/installed in accordance to the most up to date Company specifications and drawings. Where these mitigation measures are not sufficient to prevent sediment from entering the watercourse, additional mitigation measures will be implemented to prevent sediment from entering the watercourse.
- EGI will be held responsible for implementation of this plan. Any questions regarding the implementation of this plan should be directed towards the Environmental Advisor assigned to the project.

Contingency Plan

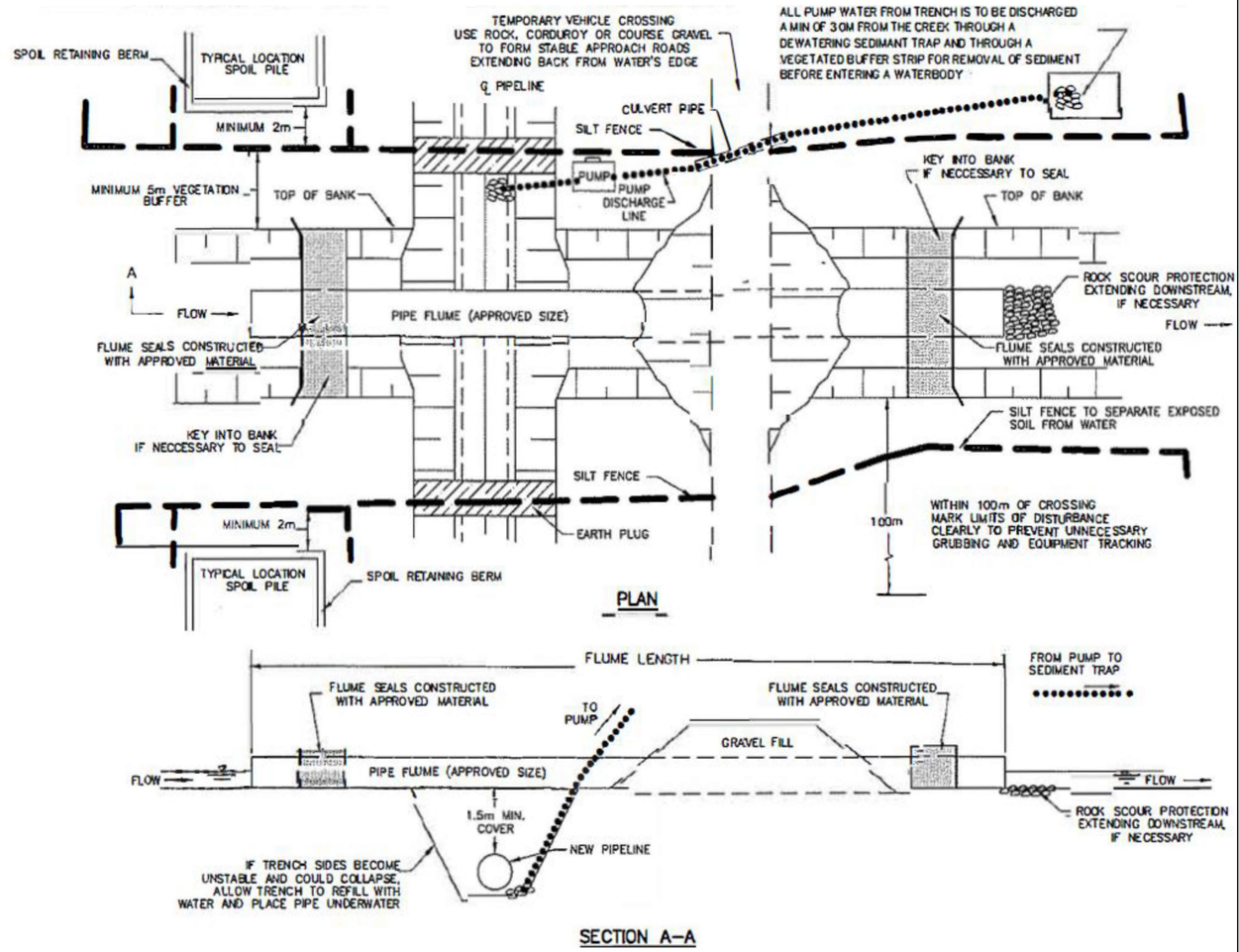
If unforeseen events (e.g. bedrock in trench, flume washout) cause the strategies set out in this pion to be insufficient or inappropriate to meet the objective, EGI is expected to respond in a timely manner with all reasonable measures consistent with safety, to prevent, counteract or remedy any effects on fish or fish habitat that may result. DFO is to be notified as soon as practical. **NOTE:** There is a Duty to Notify and Duty to Take Corrective Measures to report death of fish or a HADD of fish habitat to DFO.

Spill reporting procedures established by EGI will be used to report any unexpected discharge of silt or sediment or other deleterious substance of the water crossing. At a minimum contact the Environmental Advisor at **1-855-336-2056.**

If DFO determines that tong term damage to fish habitat has occurred due to failure of this plan to control sediment, a restoration plan will be developed by EGI, in consultation with and approval from DFO for implementation by EGI.

Flume Sizing

- Flumes will be sized initially based on hydrology and hydraulic analysis to determine theoretical opening size. The capacity of the flumes will be sized to handle 150% of the anticipated flow.
- The approved size or equivalent multiple flumes must be installed.
- Flume sizes may also be selected to be the same as existing nearby culverts that have been in place for many years and have performed satisfactorily.



Detailed Construction Sequence - Dry Flume Crossings

In general terms, the following sequence of construction and mitigation measures will be followed at all "dry flume" type water crossings.

1. Mark out and maintain limits of authorized work areas with fencing or flagging tape to avoid unnecessary disturbance of vegetation. Ensure equipment operators working on the crossing have been briefed about this plan and the measures needed to protect water quality. Install pre-work sediment control measures, including silt fences and measures to contain excavated spoil and backfill. All necessary equipment and materials to build the flume must be on site or readily available prior to commencing in-water construction. Pipe shall be strung, welded and coated ready for installation prior to watercourse trenching.
2. Install flumes equal to or larger than the diameter determined by the methods described above. Place impervious dams at each end of the flume, upstream first then downstream. Alternative dam materials include coarse gravel with rip rap protection, pea stone bags, steel plate and metre bags. During placement, install an impervious membrane, if necessary, to prevent leakage. Dams may need keying into the bank and streambed. Once the area is isolated, conduct fish recovery and transfer operations and dewater the area between the dams. All pump water is to be discharged well away (minimum 30 m) from the watercourse and through a sediment trap to prevent reentry of sediment into the watercourse. Pump discharge lines will be installed to keep pumped water from coming into contact with soil on the construction site.
3. Excavate trench through plugs and under flume, then dewater. Work area dewatering will be filtered to remove suspended solids. Lower in pipe by passing under flume and backfill immediately. The top 300 mm of trench backfill is to be clean rock, cobble material or native streambed material. EGI is to use granular backfill if the native material is not suitable. Any excess material is to be disposed of in an approved location and stabilized to prevent reentry into the watercourse. Work is to be completed as quickly as possible.
4. Once the pipe installation is complete and the flume(s) are no longer necessary, they will be removed as quickly as possible and in the following manner: remove the downstream dam; remove the upstream dam; remove flume(s).
5. Restore, stabilize and reclaim bed and banks of watercourse to preconstruction profiles and protected with erosion resistant material compatible with flow velocity (e.g., do not use erosion control matting in the bankfull channel coarse gravel or rip rap) to the maximum extent possible between dams. All construction material (e.g. dams, rip rap) not required to return the watercourse to preconstruction condition will be removed from the site and stabilized above the high-water mark in an approved location. Removal of all materials will be done in a manner that will not introduce sediment to the watercourse.
6. Site stabilization, which includes control of stormwater drainage using a combination of methods such as silt fences, erosion blankets, diversion berms and check dams etc., is to be completed immediately upon removal of the flume or as directed by the Environmental Advisor. If stabilization is delayed, short term erosion control measures will be used to prevent sediment entering the watercourse. Material accumulated at silt fences is to be removed or stabilized in place. Silt fences are to be removed when the site is permanently stabilized.
7. Vegetate any disturbed areas by planting and seeding native trees, shrubs or grasses and cover such areas with mulch or erosion control matting to prevent soil erosion and to help seeds germinate.
8. If post-construction monitoring reveals erosion problems, remedial work is to be undertaken as quickly as possible.

NOTES

ENBRIDGE

LOCATION: ALL DRY FLUME WATER CROSSINGS IN ONTARIO			
DRAWING TITLE: GENERIC SEDIMENT CONTROL PLAN DRY FLUME WATER CROSSINGS			
SCALE: NTS		DATE: DECEMBER 2021	
FILE No.		PROJECT No.	
DRAWN: GTH	CHECKED	DRAWING	REV: 0
APPROVED			