SUPPLEMENTAL ENVIRONMENTAL AND SOCIO-ECONOMIC ASSESSMENT

Line 10 Westover Segment Replacement Project

Prepared for

ENBRIDGE

Enbridge Pipelines Inc.

August 2016

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Acronyms and Abbreviations

CH2M	CH2M HILL Energy Canada, Ltd.
CSA	Canadian Standards Association
DBH	diameter-at-breast-height
DFO	Fisheries and Oceans Canada
Dillon	Dillon Consulting Limited
EAS	Environmental Alignment Sheets
ECCC	Environment Canada and Climate Change
ELC	Ecological Land Classification
EPP	Environmental Protection Plan
ESA	Environmental and Socio-Economic Assessment
Enbridge	Enbridge Pipelines Inc.
Footprint	Project Footprint
GRCA	Grand River Conservation Authority
HCA	Hamilton Conservation Authority
HDD	horizontal directional drill
HDI	Haudenosaunee Development Institute
KP(s)	Kilometer Post(s)
LSA	Local Study Area
MNCFN	Mississaugas of the New Credit First Nation
MNRF	Ontario Ministry of Natural Resources and Forestry
MOECC	Ontario Ministry of Environment and Climate Change
MTCS	Ontario Ministry of Tourism, Culture and Sport
NEB	National Energy Board
NPCA	Niagara Peninsula Conservation Authority
NPS	nominal pipe size
O.D.	outside diameter
OWES	Ontario Wetland Evaluation System
PTTW	Permit to Take Water
ROW(s)	right(s) of way
Six Nations	Six Nations of the Grand River
The Application	Enbridge's Line 10 Westover Segment Replacement Project Application filed with the National Energy Board on December 4, 2015 [Filing ID: A74506 and A74508]

The Project	The construction and operation of approximately 35 km of replacement pipeline (the Line 10 Westover Segment Replacement pipeline) and the decommissioning in-place of approximately 32 km of the corresponding segment of the pipeline (the existing Line 10 pipeline)

1.0 Introduction

On December 4, 2015 Enbridge Pipelines Inc. (Enbridge) submitted an application (the Application) to the National Energy Board (NEB) for approval to construct and operate the Line 10 Westover Segment Replacement Project (the Project). The Project consists of the construction and operation of approximately 35 km of 508.0 mm O.D. (NPS 20) replacement pipeline and the decommissioning in-place of approximately 32 km of 323.9 mm O.D. (NPS 12) of existing pipeline in southern Ontario from Enbridge's existing Westover Terminal to the existing Nanticoke Junction Facility.

The replacement pipeline will be constructed within a construction right-of-way (ROW) comprised of a permanent easement and temporary workspace. The existing Line 10 pipeline will be decommissioned and, in accordance with Canadian Standards Association (CSA) Z662-15, be cleaned, isolated, left in place, and will be subject to ongoing monitoring. The pipeline will be placed in either the existing easement or new easement acquired adjacent to the existing easement.

Pending regulatory approval, construction is anticipated to commence in Q3 2017 and be in-service by Q1 2018. Enbridge commissioned CH2M HILL Energy Canada, Ltd. (CH2M) to prepare an Environmental and Socio-Economic Assessment (ESA) in collaboration with Dillon Consulting Limited (Dillon), which was submitted to the NEB in association with the Application on December 4, 2015.

1.1 Objectives

Since writing the ESA, additional work has been completed on the Project. On April 18, 2016, Enbridge filed an ESA Update outlining supplemental environmental survey information [Filing ID A4Z3Z4] and update to consultation and engagement activities [Filing ID A4Z3Z3]. On July 15, 2016, Enbridge filed a Project-specific Preliminary Environmental Protection Plan (EPP) and an updated Environmental Alignment Sheet (EAS) Package [Filing ID A5D8Y1 and A5D8Y2]. The EPP and EAS were prepared using routing information that was updated since the initial Application was filed in December 2015. The same updated routing information has been used to prepare this Supplemental ESA. A summary of the route revisions along the replacement pipeline route since the Application was filed is provided in Section 2.1 and detailed on Figures 1A to 1G. As such, the resource-specific measures provided in the EPP and EAS are inclusive of the updated routing information and are consistent with this Supplemental ESA.

The objective of this document is to provide the NEB with supplemental information related to updates to the Project and ESA. Specifically, the intent of this document is to provide the following information:

- A summary of changes to Project details regarding the proposed replacement pipeline and facilities (Section 2.0)
- A summary of the environmental and socio-economic consultation and engagement activities conducted since March 2016 (Section 3.0)
- A review of field-based information that has been collected since the ESA was filed (Section 4.0)
- A summary of the environmental and socio-economic considerations resulting from changes to the Project details, ongoing consultation and engagement and results of 2016 environmental field surveys (Section 5.0)
- An evaluation of the potential effects and cumulative effects assessment completed for the Project considering the changes to Project details, updated consultation and engagement, 2016 field studies, NEB Information Request commitments and changes to the proposed mitigation (Section 6.0)
- An update on remaining supplemental field studies for the Project (Section 7.0).

2.0 Changes to Project Details

2.1 Replacement Pipeline

Since the initial ESA was written, the anticipated replacement pipeline route has been refined to accommodate the outcomes of ongoing consultation and engagement activities (see Section 3.0), engineering and construction planning, and the outcomes of field surveys completed in December 2015 and throughout 2016 (see Section 4.0).

Enbridge will continue to evaluate Project design and routing options as further consultation and Project design work are undertaken. As such, further route refinements may be warranted as a result ongoing Project planning (including consideration of the results of ongoing stakeholder consultation, Aboriginal engagement, and field surveys).

Locations along the Line 10 replacement pipeline route are referred to by Kilometer Post (KP). KPs are numbered sequentially starting at KP 0.0 at the Westover Terminal and ending at KP 35.8, just beyond the existing Nanticoke Facility. KPs reported below, in the EAS [Filing ID A5D8Y2] and Resource-Specific Mitigation Tables (Appendix O of the EPP [Filing ID A5D8Y1]) have accounted for changes due to the route revisions listed below.

A summary of each route revision, including the start and end points, and the rationale is provided in Table 2-1. Corresponding figures are provided in Figures 1A to 1G in Appendix 1.

Table 2-1. Summary of Route Revisions Along the Proposed Replacement Pipeline Route

Start KP	End KP	Land Use	Route Revision Length (km)	Maximum Deviation (m)	Route Revision Rationale	Figure Number
6.2	7.3	Treed, cultivated	1.1	14	Pipeline route was revised as a result of updated property survey boundaries.	Figure 1A
8.6	9.9	Cultivated, shrub, treed	1.3	55	Pipeline route was revised as a result of landowner consultation.	Figure 1B
11.2	12.4	Cultivated, treed, open water	1.2	200	Pipeline route was revised to better accommodate existing foreign line crossings.	Figure 1C
13.0	13.3	Cultivated	0.3	14	Pipeline route was revised to accommodate an offset associated with an underground power line.	Figure 1D
19.6	20.5	Cultivated, tame pasture, treed	0.8	185	Pipeline route was revised as a result of landowner consultation.	Figure 1E
31.3	31.6	Cultivated	0.3	72	Pipeline route was revised as a result of constructability constraints.	Figure 1F
35.7	35.8	Cultivated and disturbed land	0.1	--	Extended the proposed route since the Project will tie-into the existing 20” trap and not require a new 20” trap.	Figure 1G

Note:

KPs and route revision lengths have been rounded up to the nearest one decimal

The Project Footprint (Footprint) is made up of the area directly disturbed by Project construction and clean-up activities, including associated physical works and activities (i.e., construction ROW, permanent facilities, temporary facilities, temporary workspace and additional temporary workspace).

The need for an additional 2 m of temporary workspace associated with the construction ROW has been identified. As a result, it is anticipated that the construction ROW will typically be approximately 35 m wide, comprised of 10 m of permanent easement and 25 m of temporary workspace.

A summary of the changes since the ESA was submitted (i.e., December 2015) in length and Footprint resulting from route revisions is provided in Table 2-2.

Table 2-2. Summary of Changes in Length and Footprint Resulting from Route Revisions and Changes to Temporary Workspace

Element	Project Detail – December 2015	Project Detail – Current
Total Replacement Pipeline Footprint	135 ha	162 ha
Permanent Easement Footprint	36 ha	29 ha
Temporary Workspace Footprint	99 ha	133 ha
Total Replacement Pipeline Length	Approximately 35 km	Approximately 35.8 km

2.2 Permanent Facilities

Permanent facilities associated with the Project remain the same as initially identified in Section 2.5 of the ESA submitted to the NEB in December 2015 [Filing ID A4W2R0].

2.3 Temporary Infrastructure and Workspace

In addition to revisions to temporary workspace associated with the construction ROW, ongoing Project planning has also identified the need for revisions to extra temporary workspace (e.g., equipment staging areas). As a result of the revisions, the area of temporary workspace associated with the Project is approximately 133 ha.

Changes to temporary workspace are not considered route revisions and are therefore not discussed further. However, the changes to temporary workspace have been considered in the assessment of changes to the Project below, are currently depicted on the EAS filed in July 2016 and will be revised in the EAS Package issued prior to construction.

2.4 Line 10 Decommissioning

A Decommissioning Environmental Technical Report was filed with the Application [Filing ID A4W2T9]. An updated Decommissioning Environmental Technical Report is provided in Appendix 3 and includes the following information.

- Revised anticipated segmentation locations
- Revised site-specific mitigation measures
- Updated information regarding decommissioning treatment
- Specified use of cut and cap as a means of segmenting the pipeline
- Incorporation of land use assessment
- Inclusion of decommissioning environmental alignment sheets

A complete list of changes and associated rationale has been included as a concordance table in the revised report.

3.0 Consultation and Engagement Update

3.1 Government and Non-Government Consultation

Enbridge consulted with stakeholders and engaged with Aboriginal groups to share updated Project information, and to obtain input on the Project design and ESA requirements. Sections 4.0 and 5.0 of the Application [Filing ID A4W2K6 and A4W2T4] and Section 3.0 of the ESA [Filing ID A4W2R0] included the results of Enbridge's consultation and engagement efforts starting in 2013 up to and including November 30, 2015. Additionally, Enbridge filed a Stakeholder Consultation Update [Filing ID A4Z3Z2] and an Aboriginal Engagement Update [Filing ID A4Z3Z3] on April 28, 2016 which included information regarding consultation efforts since the Application filing in December 2015 up to and including March 2016.

This section provides information on the stakeholder consultation and Aboriginal engagement programs for the Project conducted up to and including July 28, 2016. Interests identified during recent consultation and engagement efforts are noted in Sections 3.2.1 and 3.3.3.

3.2 Stakeholder Consultation

Enbridge remains committed to ongoing consultation throughout the lifecycle of the Project. Enbridge continues to provide accurate and timely Project information to stakeholders, as well as gather stakeholder feedback through a series of open houses and meetings with local government agencies (regulators), presentations/speaking opportunities, and email engagement.

Landowners and Tenants. Enbridge has met, and continues to meet and engage, with directly affected landowners. Topics of consultation include, but are not limited to, ongoing surveys and providing Project updates, as applicable. Enbridge has also met with adjacent landowners or stakeholders who have contacted Enbridge directly in response to engagement opportunities or where temporary access was needed for field surveys along the replacement pipeline route. Consultation will continue throughout the various Project stages.

Consultation with Other Stakeholders. Enbridge has maintained continuous dialogue and consultation efforts with the environmental regulators and municipalities along the Project ROW since the onset of the Project (i.e., prior to the Application submission) and has continued to provide the municipalities affected by the Project with opportunities to review Project plans and provide feedback. A summary of recent governmental and non-governmental consultation related to environmental and socio-economic matters (e.g., heritage resources) is provided below in Table 3-1.

As part of the ongoing Public Consultation Program for the Project, Enbridge continues to monitor and respond to comments/inquiries made via the Project toll-free line and email address provided to stakeholders. Affected and adjacent landowners and all other stakeholders will continue to receive regular Project updates.

3.3 Aboriginal Engagement

Through correspondence, discussions and meetings, there have been opportunities for engaged Aboriginal communities to identify specific interests with the Project. Enbridge will continue to discuss all issues and concerns that have been brought forward and will continue to work with Aboriginal communities to resolve Project-related concerns.

3.3.1 Six Nations of the Grand River

On April 18, 2016, Enbridge submitted an Aboriginal Engagement Update [Filing ID A4Z3Z3]. Recently, the Six Nations of the Grand River (Six Nations) filed an affidavit with the NEB on June 20, 2016 [Filing ID A77766] stating that Six Nations is concerned the Project may impact traditional deer hunting in the vicinity of Copetown Woods Golf Club and that there has not been an impact assessment evaluation on deer habitat. No specific concerns about traditional deer hunting were raised by Six Nations during previous engagement opportunities.

Enbridge continues to meet with Six Nations to discuss traditional land use practices that may be impacted by the Project. Six Nations' representatives inquired about a Traditional Knowledge Study that would contemplate the impact of all projects and operations by Enbridge within Six Nations' asserted treaty and/or traditional territory, however at this time, Six Nations has not expressed that such a study is necessary for the Project. In fact, Enbridge and Six Nations met previously to discuss an overview of the environmental assessment process, potential impacts, and key mitigation measures for wildlife, fish habitat and watercourse crossing management.

On June 8, 2016, both parties signed a Line 10 Capacity Funding Agreement to facilitate Six Nations' participation in the Project. Through such funding, Enbridge intends for Six Nations to consult with Enbridge on the Project and subsequently provide relevant input.

In the fall of 2015, both parties executed an Archaeological Monitoring Agreement and, as such, Six Nations monitors are currently participating in the archaeological work being carried out for the Project. Enbridge is continuing to proactively engage in meaningful discussions with Six Nations to address any concerns about potential impacts on Haudenosaunee (Six Nations) practices.

3.3.2 Mississaugas of the New Credit First Nation

In early March 2016, the Mississaugas of the New Credit First Nation (MNCFN) expressed an interest in being involved in the environmental field surveys planned for the Project. As such, Enbridge and MNCFN signed an Environmental Participation Agreement in April 2016 and an MNCFN representative has been actively participating in the environmental field surveys. To date, MNCFN has participated in soil sampling, wildlife surveys, fish habitat assessments, butternut health assessments, and fish surveys. No new issues or concerns were identified during survey participation.

In June 2016, Enbridge and the MNCFN executed a Line 10 Capacity Funding Agreement in order to facilitate meaningful engagement with the community on the Project, as well as provide input into the Project. Through discussions for the Line 10 Capacity Funding Agreement, MNCFN noted general interests including, wildlife and wildlife habitat, vegetation (e.g., white pine needles), and water quality. No new issues or concerns were raised by MNCFN that were not previously identified in the ESA [Filing ID A4W2R0].

MNCFN participated in 2016 field investigations as Environmental Monitors. MNCFN are interested in participating in future field surveys for the Project. Additionally, Enbridge has maintained an open line of communication for MNCFN inquiries about specific survey methodology and interpretation, such as soil sampling.

3.3.3 Haudenosaunee Development Institute

In March 2016, Enbridge met with the Haudenosaunee Development Institute (HDI) to discuss environmental surveys and potential environmental impacts as well as to provide a presentation regarding Enbridge's approach to environmental assessments and reporting. When given the opportunity to ask questions or voice concerns, HDI chose not to. HDI did request an opportunity to participate in environmental field surveys for the Project, and Enbridge and HDI have had discussions

about facilitating such participation. HDI has also been actively participating on-site as archaeology monitors since November 2015 and continue to participate in the archeology fieldwork.

3.3.1 Métis Nation of Ontario

There have been no engagement activities with the Métis Nation of Ontario since the update filed on April 28, 2016 [Filing ID A4Z3Z3]. As outlined in that update, Métis Nation of Ontario do not assert Aboriginal rights in the Project area but are interested in potential employment and economic opportunities and wish to be kept updated on Project milestones. Enbridge has and will continue to provide Métis Nation of Ontario with Project updates.

3.3.2 Summary

Enbridge will continue to actively engage with all identified Aboriginal communities in meaningful dialogue for the purposes of exchanging information regarding the Project, responding to inquiries, hearing and responding to any interests or concerns that may arise, as well as participating in ongoing dialogue about the Project.

Should an Aboriginal community that has not been previously engaged identify itself as being affected by the Project, Enbridge will engage with that Aboriginal group.

Table 3-1. Consultation Activities with Government Agencies and Non-Government Organizations

Stakeholder Group/Agency Name	Name and Title of Contact	Method of Contact	Date of Consultation Activity	Reason for Engagement	Consultation Outcomes, Issues and/or Concerns	Commitments, Follow-up Actions, and/or Comments	New Issue Addressed in ESA
FEDERAL GOVERNMENT							
Environment Canada and Climate Change (ECCC)	Denise Fell, Environmental Assessment Officer	Email, Phone	Various (May through July 2016)	Enbridge provided consultation records from meetings with the Ontario Ministry of Natural Resources and Forestry (MNRF) regarding species at risk field survey and mitigation methodology, as well as route updates, including a shapefile of the route (current in May 2016), and an electronic copy of the preliminary EPP (July 15, 2016) to support the discussion.	None	None	N/A
	Rob Dobos, Manager Environmental Assessment Section	Phone	July 19, 2016	Discussed opportunity for Enbridge to provide an overview of environmental survey summary results and consultation with MNRF.	None	Enbridge to set up a conference call for July 28, 2016 to review Project information with appropriate agency staff.	N/A
	Rob Dobos, Manager Environmental Assessment Section; Denise Fell, Environmental Assessment Officer; Burke Korol, Habitat Biologist	Phone	July 28, 2016	Discussed ongoing consultation with MNRF, field surveys that occurred in 2013, 2015 and 2016, results of field investigations with an emphasis on species at risk, and mitigation measures outlined in the preliminary EPP.	None	Enbridge to send meetings minutes and emails with MNRF between March 2016 and present to ECCC.	N/A

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PROVINCIAL GOVERNMENT							
Ontario Ministry of Environment and Climate Change (MOECC)	Abdul Quyum, Groundwater Specialist; Craig Fowler, Surface Water Specialist; Adriana DeBellis, Permit to Take Water (PTTW) Coordinator	Meeting	June 9, 2016	Discussion of PTTW requirements. Topics specifically discussed include: general assessment and PTTW approach, private well risk assessment process, impact assessment for surface water features, permit requirements, conservation authority consultation, mitigation plans, water quality assessment, trench construction, overview of general geological and hydrogeological conditions, maximum daily permit volumes, and the use of aquadams in wetlands.	None	None	N/A
Ministry of Tourism, Culture and Sport (MTCS)	Jim Sherratt, Team Lead; Blair Rohaly, Manager	Meeting	March 15, 2016	Enbridge updated MTCS on 2015 Stage 2 assessment progress, outlined the anticipated 2016 field assessment program and discussed mitigation measures. Discussion topics also included recommendations for atypical circumstances and process for dealing with new work space during construction.	None	Enbridge to set up periodic meetings with MTCS to review Project status and schedule as well as reporting timelines as assessments progress, as warranted.	N/A
Ministry of Transportation (MTO)	Paul Nunes, Corridor Management Officer	Meeting	June 15, 2016	Meeting to review the permit application submitted to MTO for permanent easement, temporary workspace and crossings.	Enbridge to make a few revisions to the drawings provided as requested by MTO.	Enbridge to submit an updated permit application package.	N/A

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MNRF	Graham Buck, Management Biologist	Meeting (phone)	February 29, 2016	Discussion regarding Jefferson Salamander survey protocol, and ploughing requirements for archaeology surveys in habitat for grassland bird species at risk.	None	None	N/A
	Graham Buck, Management Biologist; Anne Marie Laurence, Management Biologist	Email	March and April 2016	Discussion regarding turtle basking and bat survey field methodology and species at risk (e.g., Jefferson salamander) habitat.	None	None	N/A
	Graham Buck, Management Biologist; Anne Marie Laurence, Management Biologist	Meeting (phone)	June 22, 2016	Discussion regarding Jefferson salamander and bat cavity studies completed to date, amphibian breeding habitat, butternut, deer wintering areas, and displaying sensitive information on publicly available documents.	MNRF advised not to provide sensitive locations on public documents.	MNRF were provided further information regarding Jefferson salamander surveys and butternut.	N/A
Infrastructure Ontario	Patrick Grace, Manager Corridor Lands; Frank Dieterman, Manager, Heritage Projects; Abbey Flower, Heritage Specialist; Rita Kelly, Project Manager; Lisa Myslicki, Environmental Advisor; Joe Vecchiolla, Policy Lead - Ministry of Economic Development and Growth	Meeting	May 25, 2016	Enbridge provided a Project summary overview and field survey status on the impacted parcels. Topics for discussion included the environmental requirements for the permanent easement application with respect to archaeology, Consultation and Documentation Records, and environmental site assessment information.	None	Enbridge to provide the respective environmental site assessment information.	N/A

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MUNICIPAL AUTHORITIES							
City of Hamilton	Sam Brush, Urban Forest Health Technician	Meeting	March 4, 2016	Discussion on applicable City of Hamilton By-laws regarding tree removal, and reporting requirements.	None	None	N/A
	Gord McGuire, Manager Geomatics/Corridor Management/Public Works/Engineering Services	Email	June 2, 2016	Enbridge emailed a Permit Application for road crossings and use of municipal road ROWs for temporary workspaces and temporary ingress/egress. Enbridge requested a meeting to review the Permit Application once the City of Hamilton has reviewed.	None	Follow-up meeting to review feedback from the City of Hamilton Permit Application.	N/A
	--	Public event	April 1, 2016	Enbridge representatives attended the Outstanding Business Achievement Awards Gala where the Project was discussed with members of the Hamilton and Flamborough municipal government.	None	None	N/A
	--	Email	April 14 and April 15, 2016	City of Hamilton staff member asked about the progress on Enbridge's request for bulk water. Enbridge representative informed staff member that Water Distribution had review the request for bulk water and can accommodate approximately 9,000m^3.	None	None	N/A

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City of Hamilton (cont'd)	David Cunliffe, Deputy Fire Chief, Hamilton Fire Department Community and Emergency Services; Christopher Cutler, Advisor, Community Relations; Fred Eisenberger, Mayor; Lloyd Ferguson, Ward 12 Councilor; Brenda Johnson, Ward 11 Councilor; Guy Paparella, Director of Growth Planning; Judi Partridge, Ward 15 Councilor; Robert Pasuta, Ward 14 Councilor; Marco Siverio, Project Manager, Infrastructure and Source Water Planning	Email	April 21, 2016	The Line 10 Westover Segment Replacement Project Spring Newsletter was emailed to City of Hamilton Councilors.	None	None	N/A
	Guy Paparella, Director of Growth Planning	Meeting	April 28, 2016	Enbridge met with City of Hamilton representative to discuss the City of Hamilton's prior resolution regarding landowner concerns. Discussed questions and issues.	None	None	N/A
	Christopher Cutler, Advisor, Community Relations; Fred Eisenberger, Mayor; Chris Murray, City Manager	Meeting	April 28, 2016	Enbridge representatives attended the Hamilton Chamber of Commerce Annual Breakfast and discussed Project updates and progress regarding the City of Hamilton's questions and issues.	None	None	N/A
	Guy Paparella, Director of Growth Planning	Phone	April 28, 2016	Discussed the City of Hamilton's position on road crossings, emergency response and environmental protection.	None	None	N/A

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City of Hamilton (cont'd)	--	Email	May 16, 2016	Enbridge following up on the request for bulk water.	None	None	N/A
	Fred Eisenberger, Mayor; Chad Collins, Ward 5 Councilor; Matthew Green, Ward 3 Councilor; Jason Farr, Ward 2 Councilor; Aidan Johnson, Ward 1 Councilor	Email	May 16, 2016	Email from Enbridge representative to extend an invitation to the Aboriginal Arts & Stories event on June 15, 2016.	None	None	N/A
	--	Email	May 16, 2016	Enbridge received an email from the City of Hamilton informing Enbridge they will respond to their questions after a few days of research.	None	None	N/A
	Marie Pearson, Ward 10 Councilor; Doug Conley, Ward 9 Councilor; Terry Whitehead, Ward 8 Councilor; Donna Skelly, Councilor; Tom Jackson, Ward 6 Councilor; Judi Partridge, Ward 15 Councilor; Robert Pasuta, Ward 14 Councilor; Arlene VanderBeek, Ward 13 Councilor; Lloyd Ferguson, Ward 12 Councilor; Brenda Johnson, Ward 11 Councilor	Email	May 17, 2016	Enbridge extended an invitation to the Aboriginal Arts & Stories event on June 15, 2016.	None	None	N/A

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City of Hamilton (cont'd)	--	Email	May 20, 2016	City of Hamilton representative emailed requesting an update next week regarding the status of questions previously submitted to Enbridge about hydrostatic testing. Enbridge informed the representative that they are still working on providing a response to those questions.	None	Enbridge to provide a response to the City of Hamilton's questions regarding hydrostatic testing.	N/A
	--	Email	May 25, 2016	City of Hamilton responded to a previous request from Enbridge regarding bulk water requirements.	None	None	N/A
	--	Email	May 27, 2016	Email from Enbridge outlining their provincial permitting approach that will meet all provincial permitting standards.	None	None	N/A
	Donna Skelly, Councilor	Phone	June 3, 2016	Enbridge left a voicemail requesting an opportunity to brief the Councilor on the Project.	None	None	N/A

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City of Hamilton (cont'd)	David Cunliffe, Deputy Fire Chief, Hamilton Fire Department Community and Emergency Services; Christopher Cutler, Advisor, Community Relations; Chad Collins, Ward 5 Councilor; Doug Conley, Ward 9 Councilor; Fred Eisenberger, Mayor; Lloyd Ferguson, Ward 12 Councilor; Tom Jackson, Ward 6 Councilor; Brenda Johnson, Ward 11 Councilor; Sam Merulla; Judi Partridge, Ward 15 Councilor; Robert Pasuta, Ward 14 Councilor; Marie Pearson, Ward 10 Councilor; Terry Whitehead, Ward 8 Councilor	Email	June 3, 2016	Enbridge emailed the notification related to the NEB's upcoming community meetings to be held on June 28 and June 29, 2016 in Hamilton.	None	None	N/A
	Robert Pasuta, Ward 14 Councilor	Emails	June 7, 2016	City of Hamilton representative accepted the invitation to the Aboriginal Arts & Stories event. Enbridge representative informed him that there would be no formal role or expectations for councilors at the event.	None	None	N/A

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City of Hamilton (cont'd)	Guy Paparella, Director of Growth Planning	Email	June 22, 2016	Email from Enbridge regarding Infrastructure Ontario/Hydro One corridors intersecting with the Project in four areas. Enbridge requested that the City of Hamilton confirm municipal information and provided maps of the areas.	None	None	N/A
	Christopher Cutler, Advisor, Community Relations	Email	June 29, 2016	Project updates including a note that the NEB Open House on June 28, 2016 went well. The Mayor welcomes a briefing in August or later. City representative agreed on briefing members of council.	None	Enbridge to send an email regarding the Section 73 update.	N/A
	Donna Skelly, Councilor	Meeting	June 29, 2016	Meeting to discuss the Project and opposition points.	None	None	N/A
	--	Email	July 6, 2016	Enbridge representative requested a briefing with Hamilton Police Chief or a Hamilton Police representative. Enbridge provided a Project overview map and a brief history of the Project's opposition.	None	None	N/A
	Greg Huss, Inspector, Hamilton Police Services Division 3	Meeting	July 11, 2016	Enbridge provided an overview of the Project and discussed Enbridge's approach to health and safety, key timelines, Enbridge's approach to security and key contacts and lines of communication.	None	Enbridge will follow-up with details closer to the start of Project construction.	N/A

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CONSERVATION AUTHORITIES							
Grand River Conservation Authority (GRCA)	Drew Cherry, Resource Planner	Letter	April 29, 2016	Enbridge provided a letter to GRCA outlining temporary soil stockpiling requirements at wetlands and watercourses.	None	None	N/A
	Drew Cherry, Resource Planner	Letter	May 3, 2016	Field studies scoping document issued to GRCA to discuss natural environmental field study methodology.	None	None	N/A
	Drew Cherry, Resource Planner	Email	June 2, 2016	GRCA requested the detailed monitoring plan for the Field Studies Scoping document provided for review and comment.	None	Enbridge to provide monitoring plan.	N/A
	Drew Cherry, Resource Planner	Email	June 12 and 13, 2016	Enbridge received feedback regarding species at risk and associated habitat as well as provincial permitting.	None	None	N/A
	Drew Cherry, Resource Planner	Email	July 25, 2016	Enbridge provided an electronic copy of the preliminary EPP.	None	None	N/A
Niagara Peninsula Conservation Authority (NPCA)	Darren MacKenzie, Supervisor, Construction Permit Approvals	Letter	April 29, 2016	Enbridge provided a letter to NPCA outlining temporary soil stockpiling requirements at wetlands and watercourses.	None	None	N/A
	Darren MacKenzie, Supervisor, Construction Permit Approvals; Lee-Ann Hamilton, Supervisor, Watershed Biology	Meeting (phone)	May 5, 2016	In follow-up to the letter provided (dated April 29, 2016), a conference call was scheduled to discuss buffer requirements at wetlands and watercourses, construction methodology and observation, and post-construction reclamation.	None	Enbridge to confirm crossing methods and provide to NPCA. Monitoring plan to be shared with NPCA. A field visit during construction to be offered to NPCA staff.	N/A

Table 3-1. Consultation Activities with Government Agencies and Non-Government Organizations

Stakeholder Group/Agency Name	Name and Title of Contact	Method of Contact	Date of Consultation Activity	Reason for Engagement	Consultation Outcomes, Issues and/or Concerns	Commitments, Follow-up Actions, and/or Comments	New Issue Addressed in ESA
Niagara Peninsula Conservation Authority (NPCA) (cont'd)	Darren MacKenzie, Supervisor, Construction Permit Approvals; Lee-Ann Hamilton, Supervisor, Watershed Biology	Email	July 25, 2016	Enbridge provided an electronic copy of the preliminary EPP.	None	None	N/A
Hamilton Conservation Authority (HCA)	Darren Kenny, Watershed Officer	Letter	April 29, 2016	Enbridge provided a letter to HCA outlining temporary soil stockpiling requirements at wetlands and watercourses.	None	None	N/A
	Darren Kenny, Watershed Officer	Email	May 3, 2016	Enbridge received a follow-up email confirming receipt of letter and temporary vehicle crossings at watercourses.	None	None	N/A

-- indicates contact information and title that are not disclosed.

4.0 Update on Environmental Studies

The environmental studies conducted since the Application was filed address previously outstanding knowledge gaps that were discussed in Section 10.0 of the ESA [Filing ID A4W2R6] and in the ESA Update filed in April 2016 [Filing ID A4Z3Z4]. Several environmental studies have been completed, starting in December 2015 and continuing throughout spring and summer 2016. Since certain study locations resulted in confidential species at risk observations, select study locations are provided in Appendix 2.

4.1 Soil and Soil Productivity

Soil sampling occurred along the replacement pipeline ROW in April and May 2016 using standard soil procedures (Denholm and Schut, 1993) for landscapes encountered by the replacement pipeline route (e.g., farms, stream catchment). Information gathered during soil sampling included:

- the depth, texture and colour of the topsoil layer or plough layer;
- the texture and colour of the subsoil layer;
- the presence or absence of mottles or grey gley colours;
- the presence of hard pan, gravels, and/or stones, or bedrock that is close to, or at, the surface; and
- the presence or absence of free moisture.

Soil sampling was conducted at a Level 2, or detailed intensity level, based on Specifications for Soil Survey Intensity (Survey Order) in Canada (Valentine and Lidstone, 1985). Sampling occurred at approximately 200 m intervals excluding woodlands, wetlands, areas where horizontal directional drilling (HDD) is proposed, in close proximity to roads, or in areas overlapping with soil sampling for the recent Line 11 Westover Replacement Project (see Figure 2).

All soil sampling results are provided in Table 1 of Appendix O of the preliminary EPP [Filing ID A5D8Y1] and have been used to support recommendations regarding soil lifts and handling procedures.

4.2 Vegetation

4.2.1 Rare Plant Survey

Rare plant surveys were completed in May and June 2016 where suitable habitat was identified. Surveys were completed in areas where multi-season vegetation surveys were not previously completed in 2013 due to late property access and in areas in areas where the route has been refined since previous vegetation surveys (see Figure 2).

Butternut (*Juglans cinerea*), a species at risk, was identified at multiple locations. Due to the sensitive nature of these records, specific location details have not been provided.

Late season vegetation surveys will be completed where access was not granted in 2013 and along route revision areas in August or early September 2016, as outlined in Section 7.1.

All results of the rare plant surveys conducted to date are presented in Table 5 of Appendix O of the preliminary EPP [Filing ID A5D8Y1]. These results will be used to inform protection measures, including contingency plans, for butternut as well as other plant species at risk in the event additional rare plants are discovered during construction.

4.2.2 Weed Survey

Weed surveys were conducted in May and June 2016 to identify the presence of weeds along the replacement pipeline route outside of active agricultural lands. Weed species observed during 2016 surveys along the replacement pipeline route include meadow fescue (*Schedonorus pratensis*), common reed (*Phragmites australis*), hybrid cattail (*Typha x glauca*), poison ivy (*Toxicodendron radicans*), reed canary grass (*Phalaris arundinacea*), Kentucky bluegrass (*Poa pratensis*), garlic mustard (*Allaria petiolata*), sweet coltsfoot (*Tussilago farfara*), tall fescue (*Schedonorus arundinaceus*), yellow sweet-clover (*Melilotus officinalis*), Canada thistle (*Cirsium arvense (L.) Scop.*), and crown vetch (*Securigera varia*).

Field survey methodology and weed classifications are provided in the Biosecurity Management Plan included as Appendix G of the preliminary EPP [Filing ID A5D8Y1]. To prevent the transfer of weeds, recommended vehicle cleaning locations are provided in Table 6 of Appendix O in the preliminary EPP [Filing ID A5D8Y1].

4.2.3 Tree and Woodland Surveys

To support municipal regulatory approvals required for the removal of trees along the replacement pipeline route, a field inventory and assessment of tree stands was conducted for all trees that may require removal during construction of the Project. Data collected from the inventory and assessment are included in an Arborist Report along with supplementary documentation that will be submitted to the City of Hamilton.

Inventories and assessments were completed between late May and late June 2016 during the leaf-on period under the supervision of an International Society of Aboriculture Certified Arborist (see Figure 2). The area of focus for the tree surveys included those stands of trees on private property that may be subject to the City of Hamilton's Woodland Conservation Bylaw No. R00-054 (e.g., stands equal or greater than 0.81 ha). Tree and woodland surveys conducted along the replacement pipeline route included collecting the following information.

- The identification of tree species, specifically designated as species at risk (e.g., American chestnut and butternut)
- An inventory of diameter-at-breast-height (DBH) (i.e., 1.38 m from the ground) measurements
- An assessment of stand condition health
- Documentation of emerald ash borer and/or evidence of infestation in ash trees
- Any recommendations regarding removal, protection or preservation, if determinable

Additionally, tree surveys within municipal road ROWs were completed in April 2016 where individual trees are subject to the City of Hamilton Bylaw No. 06-151 To Regulate the Planting, Maintenance, and Preservation of Trees on or Affecting Public Property (i.e., trees within public road ROWs). Trees within municipal road ROWs were surveyed on both sides of the road along the full width of temporary work space areas where tree clearing is required for construction crews to access both sides of the road. Through discussion with the City of Hamilton (see Table 3-1), it was determined that trees within the municipal road ROWs will need to be individually tagged. The following information was recorded: species, DBH, health, ownership (public or private), and recommendations to preserve or remove. An arborist report for trees in municipal road ROWs was submitted to the City of Hamilton and a permit was received in June 2016. The City of Hamilton reviewed the field assessment and tree surveys completed for the Project and additional surveys are not required, as outlined in the in the ESA Update [Filing ID A4Z3Z4] filed in April 2016.

4.2.4 Ecological Land Classification

Ecological Land Classification (ELC) was completed along areas where access was not granted in 2013 and in areas where the current pipeline route has updated since 2013 surveys were completed. Vegetation was characterized using the ELC System for Southern Ontario (Lee at al., 1998). Field data was used to classify vegetation and assist with the identification of wildlife habitats. All vegetation communities surveyed during 2016 field studies are considered very common in Ontario.

4.3 Fish and Fish Habitat

Fish habitat assessments were completed at crossings along the replacement pipeline route in areas where the route has been refined since previous surveys and/or where access was not previously granted. Methodology was consistent with the previous surveys conducted for the Project in 2013 and 2015. Habitat assessments evaluated flow permanency and physical characteristics at each crossing including waterbody type, channel size, habitat availability and type of fish, and potential barriers to fish movement. Assessments were completed at each crossing as well as 50 m upstream and 50 m downstream, where access was available.

As noted in the ESA [Filing ID A4W2R0], five watercourse crossings were identified from desktop surveys but not previously assessed in the field (i.e., WC 18, 36, 37, 39, and 40). These watercourses were visited in 2016 to determine physical habitat characteristics. Watercourses 18 and 39 were determined to not be watercourses during site visits and WC 37 is no longer crossed by the replacement pipeline route, therefore these features have been removed from the listing of watercourses provided in Table 2 of Appendix O in the preliminary EPP [Filing ID A5D8Y1]. Assessments were completed for WC 36 and 40 and site-specific information is provided in Table 2 of Appendix O in the preliminary EPP [Filing ID A5D8Y1].

An additional assessment will be completed in August 2016 to confirm flow permanency at these crossings, as outlined in Section 7.1.

4.3.1 Fish Community Surveys

Fish community surveys were completed at six watercourse crossings that were identified as having the potential for fish species at risk (i.e., WC 48, 50, 52, 54, 58 and 59) (see Figure 2). Fish were captured at three of the six watercourses surveyed (i.e., WC 48, 52 and 59). All fish captured were warmwater common species including black crappie (*Pomoxis nigromaculatus*), Johnny darter (*Etheostoma nigrum*), fathead minnow (*Pimephales promelas*), pumpkinseed (*Lepomis gibbosus*) and central mudminnow (*Umbra limi*). There were no species at risk caught or observed during the 2016 fish community surveys. Habitat suitability for grass pickerel was identified during 2016 surveys at one watercourse crossing (WC 52).

In addition, an assessment was completed for the relocated crossing of Big Creek (WC 20), and for an ephemeral watercourse (WC 71) and an intermittent watercourse (WC 72) that were subsequently identified on portions of the proposed replacement pipeline route.

4.3.2 DFO Self-Assessments

There are 10 Fisheries and Oceans Canada (DFO) Self-Assessments included in Appendix 4 of this report. Four are new assessments that were not previously completed due to access constraints and/or due to route refinements (WC 36, 40, 71 and 72). The remaining six DFO Self-Assessments were updated since the initial Application (see Appendix 4 of the ESA [Filing IDs A4W2U5, A4W2U5, A4W2U6 and A4W2U7]) based on the results of 2016 field surveys.

Grass pickerel habitat was previously identified in the Local Study Area (LSA) defined for the Project during an initial desktop review of the anticipated replacement pipeline route (DFO 2015, Durley 2006, Morrison Hershfield Limited 2012, Niagara Peninsula Conservation Authority 2011) resulting in DFO Self-Assessments for WC 48, 52, 55 and 56. Aquatic species at risk mapping (Conservation Ontario, 2015) indicates that there is no potential for grass pickerel habitat at watercourses 55 and 56 and revised DFO Self-Assessments and DFO reviews are therefore not warranted. Suitable habitat for grass pickerel was identified during 2016 surveys at one watercourse crossing (WC 52).

4.4 Wetlands

Field surveys were completed in June 2016 at wetlands located along route revisions and areas where access was not granted in 2013 and 2015 (see Figure 2). Wetlands were evaluated using the Ontario Wetland Evaluation System (OWES) and delineated based on OWES methodology. As the majority of wetlands that overlap with the pipeline replacement route have been previously evaluated by the MNRF to be provincially significant, it is assumed that wetlands not currently evaluated by the MNRF (i.e., unevaluated wetlands as per Land Information Ontario mapping) will be "complexed" into existing Provincially Significant Wetlands. As a result, further wetland evaluations were not completed.

Provincially significant wetlands that the replacement pipeline route crosses include the Sheffield-Rockton, the Hayesland-Christie and the Big Creek Headwaters complexes. There are a total of 24 wetlands crossed or located within 50 m of the current replacement pipeline route and/or temporary workspace, as outlined in Table 4 of Appendix O of the EPP [Filing ID A5D8Y1].

4.5 Wildlife and Wildlife Habitat

4.5.1 Bat Cavity Surveys

Deciduous and/or mixed woodlands along the replacement pipeline route were targeted during the bat snag surveys in order to help identify bat maternity colony roosts. Bat snag surveys were conducted along the replacement pipeline ROW in deciduous and/or mixed woodland areas that will require vegetation clearing (i.e., snag survey areas). Surveys were typically conducted within a 50 m area (i.e., approximately 25 m on both sides of the centerline). In consultation with MNRF, survey methodology was adapted from applicable guidelines (MNR, 2011) for the Project area to establish larger snag surveys and increase the degree of survey effort resulting in more accurate results within the woodland areas.

A total of 24 woodlands along the replacement pipeline route were subject to snag surveys in December 2015 and April and May 2016. The snag surveys were conducted during the 'leaf-off period' in order to view tree cavities and crevices not obscured by foliage.

Surveyed woodlands found to have a snag density ≥10 snag/cavity trees per hectare are considered to be Assumed Significant Bat Maternity Roosting Habitats (MNR, 2000; MNRF, 2011, 2015). A total of two Assumed Significant Bat Maternity Roosting Habitats have been identified.

Results of the bat snag surveys are provided in Table 3 of Appendix O of the preliminary EPP [Filing ID A5D8Y1] and have been used to support species-specific mitigation measures.

4.5.2 Turtles

Turtle basking surveys were conducted in one location (see Figure 2) on the replacement pipeline route identified as having high potential for turtle habitat based on consultation with the MNRF. Surveys followed the Blanding's Turtle Protocol provided by the MNRF. Five visits were completed in late April and early May 2016 under ideal weather conditions. There were no Blanding's turtles detected during field surveys. Snapping turtles (*Chelydra serpentina*) were observed during four of the visits and more

than 20 midland painted turtles (*Chrysemys picta marginata*) were observed on two occasions. Therefore, this habitat is considered Significant Turtle Habitat and Significant Habitat for Snapping Turtle (MNRF, 2000; MNRF, 2015).

4.5.3 Amphibians

Amphibian breeding surveys were completed in 12 locations identified as providing suitable habitat along the replacement pipeline route. Surveys were conducted between April and June 2016 to detect the presence or absence of early, mid, and late season breeding frogs and toads. Surveys occurred between dusk and midnight on nights with minimal or no precipitation and low wind speeds. Species type and abundance was documented to determine potential amphibian breeding habitats. Of the 12 potential habitats surveyed, 4 are considered Significant Amphibian Breeding Habitat (MNRF, 2000; MNRF, 2015). No amphibian species at risk were detected. Species observed include spring peeper (*Pseudacris crucifer*), northern leopard frog (*Lithobates pipiens*), American toad (*Anaxyrus americanus*), gray treefrog (*Hyla versicolor*), green frog (*Lithobates clamitans*) and bull frog (*Lithobates catesbeianus*).

4.5.3.1 Jefferson Salamander

Jefferson salamander pond suitability studies were completed in two areas in April and June 2016 where access was available. At the request of the MNRF, the survey methodology cannot be included in publicly available documents; however, surveys followed the protocol provided by MNRF.

Shallow vernal pools were observed during the first visit in the two woodland/wetland areas. During the second visit, all vernal pools were found to be dry; therefore, a third visit was not required.

Due to property access restrictions, a section of one natural feature was not surveyed in 2016, therefore, it could not be confirmed if this area contains habitat features suitable for Jefferson salamander and is assumed to be potential habitat. Consultation with MNRF regarding field investigations and habitat suitability is ongoing and pre-construction surveys will be conducted to confirm the presence or absence of Jefferson salamander habitat in this area. Due to the sensitive nature of this record, location details have not been provided.

4.5.4 Breeding Birds

Breeding bird surveys were conducted at 17 locations with natural habitats identified along the replacement pipeline route and route refinement locations where access was not granted in 2013 or where both survey visits were not initially able to be completed (see Figure 2). Surveys followed methods outlined in the Ontario Breeding Bird Atlas Guide for Participants (Ontario Breeding Bird Atlas, 2001) with surveys conducted over two visits during the peak of the breeding bird season (between late May and the first week of July). Survey visits were completed in May and June 2016. Results of breeding bird surveys will be used to establish a baseline assessment for the Project area prior to construction.

Fourteen habitats contain species at risk (e.g., eastern wood-pewee [*Contopus virens*], wood thrush [*Hylocichla mustelina*], bobolink [*Dolichonyx oryzivorus*], eastern meadowlark [*Sturnella magna*] and common nighthawk [*Chordeiles minor*]) and/or Significant Wildlife Habitat (MNRF, 2000; MNRF, 2015).

4.5.4.1 Crepuscular Bird Surveys

Crepuscular Bird Surveys were completed at 19 locations along the replacement pipeline route (see Figure 2). Two survey visits were completed between mid-May and the end of June 2016 when the moon phase was greater than 50%, above the horizon and not obscured by clouds. Common nighthawk (*Chordeiles minor*), a species at risk, was identified at four locations. Due to the sensitive nature of these records, location details have not been provided.

4.5.4.2 Bobolink/Eastern Meadowlark

Hayfields along the replacement pipeline route were identified as moderate or high potential habitat for bobolink (*Dolichonyx oryzivorus*) and/or eastern meadowlark (*Sturnella magna*). Bobolink and/or eastern meadowlark were observed in three of these hayfields during field surveys conducted in 2013 and are considered to be confirmed habitat for these species and repeat surveys were not required. Three hayfields that were considered to be potential habitat identified in 2013 and 2015 have since become row crops and are no longer considered suitable habitat. Therefore, 2016 surveys were not conducted in these areas. Additionally, an HDD is anticipated at another hayfield, thereby avoiding the potential habitat and removing the requirement for surveys at this location.

Field surveys were conducted during late May and early July 2016 in the remaining seven hayfields that were identified as moderate or high potential habitat for bobolink and/or eastern meadowlark (see Figure 2). These species were identified in four hayfields, thus these fields are considered to be confirmed habitat, totaling seven confirmed habitats along the replacement pipeline route.

4.6 Species at Risk

Species at risk is defined to include those that are federally-listed under Schedule 1 of the *Species at Risk Act* or by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), or are provincially-listed under the Ontario *Endangered Species Act*. Field survey results related to wildlife, vegetation and aquatic species at risk are provided in Section 4.5, Section 4.2 and Section 4.3, respectively. Status ranking for species at risk with the potential to interact with the Project are provided in Section 5.0 of the ESA [Filing ID A4W2R0] and Appendix 2A of the ESA [Filing ID A4W2T9].

4.7 Heritage Resources

Enbridge continues to conduct a Stage 2 archaeological assessment along the proposed pipeline ROW, and in consultation with MTCS, has begun Stage 3 archaeological assessment work. Results of the archaeological assessments will be used to support mitigation measures for the protection of heritage resources (e.g., archaeological, palaeontological or historical sites) to be implemented during construction.

4.8 Traditional Land and Resource Use

4.8.1 Medicinal Plants

Six Nations previously identified plant species considered to be medicinal, including strawberry, tobacco, plantain, raspberry root, and jewelweed. Field investigations identified multiple species of strawberry (*Fragaria spp.*), plantain, raspberry (*Rubus spp.*) and jewelweed (touch-me-nots; *Impatiens spp*.) along the replacement pipeline route. These species are considered common and secure in Ontario (NatureServe, 2015) and are widely available in the greater Project area. Tobacco has not been identified along the replacement pipeline route and was not identified during field investigations.

Additionally, MNCFN are interested in white pine (*Pinus strobus*) that was identified along the replacement pipeline route in multiple woodlands. Enbridge will work with landowners along the pipeline ROW where white pine removal is required for pipeline construction.

4.8.2 Deer

Deer were identified as a species of special interest by Six Nations. White-tailed deer (*Odocoileus virginianus*) are considered common and secure (NatureServe, 2015) in Ontario and are found abundantly throughout. This species, including fawns, have been observed during field investigations along the replacement pipeline route.

5.0 Environmental and Socio-Economic Considerations of Project Changes

This section provides a summary of the changes to the environmental and socio-economic setting provided in Section 5.0 of the ESA [Filing ID A4W2R0] and Appendix 2A of the ESA as a result of the route revisions (see Table 5-1). Appendix 2A of the ESA contains detailed information in addition to the requirements outlined in the Filing Manual for physical and meteorological environment [Filing ID A4W2S3], soil and soil productivity [Filing ID A4W2S3], air emissions [Filing ID A4W2S3], fish and fish habitat [Filing ID A4W2S3], wetlands [Filing ID A4W2S3 and A4W2S8], vegetation [Filing ID A42WS3 and A4W2T2], wildlife and wildlife habitat [A4W2T2, A4W2T6 and A4W2T9], species at risk [Filing ID A4W2T9] and heritage resources [Filing ID A4W2T9].

The environmental and socio-economic setting for the seven route revision locations listed below are considered to be generally consistent with that of the original replacement pipeline route that was described in the ESA, with the exception for those elements outlined below.

Table 5-1. Summary of Environmental and Socio-Economic Considerations Associated with Route Revisions

Start KP	End KP	Land Use	Environmental and Socio-Economic Considerations
6.2	7.3	Treed, cultivated	The environmental and socio-economic setting associated with this route revision is consistent with that previously described in Section 5.0 of the ESA [Filing ID A4W2R0] and Appendix 2A of the ESA for this section of the replacement pipeline route with the exception of the following elements. <u>Water Quality and Quantity</u> This route revision resulted in the addition of four water wells that were not previously located in the LSA defined for the Project (i.e., 500 m of both sides of the centre line) (MOECC, 2013). <u>Wildlife and Wildlife Habitat/Species at Risk</u> The route revision crosses Breeding Bird Habitat identified as Significant Wildlife Habitat for Special Concern and Rare Wildlife Species previously described in Section 5.0 [Filing ID A4W2R0] and Appendix 2A of the ESA [Filing ID A4W2T2, A4W2T6 and A4W2T9] for eastern wood-pewee).
8.6	9.9	Cultivated, shrub, treed	The environmental and socio-economic setting associated with this route revision is consistent with that previously described in Section 5.0 of the ESA [Filing ID A4W2R0] and Appendix 2A of the ESA for this section of the replacement pipeline route with the exception of the following elements. <u>Water Quality and Quantity</u> The pipeline was realigned at several watercourse crossings due to the route revision in this location; however, all watercourse crossings are located in the same environmental setting previously described in Section 5.0 of the ESA [Filing ID A4W2R0] (e.g., the same waterbodies and watershed information). The crossing method for three watercourses changed from isolated open cut to HDD (one HDD encompassing all three watercourses). A summary of the watercourse crossings affected by the route revision from KP 8.6 to KP 9.9 is provided in Table 6-1.

Table 5-1. Summary of Environmental and Socio-Economic Considerations Associated with Route Revisions

Start KP	End KP	Land Use	Environmental and Socio-Economic Considerations
8.6 (cont'd)	See above	See above	Fish and Fish Habitat The pipeline was realigned at several watercourse crossings of tributaries to Big Creek due to the route revision in this location. All realignments due to route revisions are within 30 m of the previously proposed locations and in similar habitat, and are located in the same environmental setting previously described in Section 5.0 of the ESA [Filing ID A4W2R0] (e.g., the same waterbodies and watershed information). The crossing method for three watercourses changed from isolated open cut to HDD (one HDD encompassing all three watercourses). A summary of the watercourse crossings affected by the route revision from KP 8.6 to KP 9.9 is provided in Table 6-1 and physical characteristics of the watercourses are provided in Table 2 of Appendix O in the preliminary EPP [Filing ID A5D8Y1]. Wetlands This route revision crosses one wetland complex that was previously encountered and is now crossed in a different location within the same complex from KP 9.1 to KP 9.2. This wetland is part of the Big Creek Headwaters complex which is described in Section 5.0 of the ESA [Filing ID A4W2R0]. Vegetation This route revision crosses cultivated land which has limited potential to support rare plant habitat. The route revision also encounters shrub and treed vegetation which may provide habitat for rare plants and has been previously described in Section 5.0 of the ESA [Filing ID A4W2R0] and Appendix 2A of the ESA [Filing ID A4W2S8 and A4W2T2]. No new rare plants were identified during 2016 vegetation surveys. Wildlife and Wildlife Habitat/Species at Risk The route revision crosses Breeding Bird Habitat identified as Significant Wildlife Habitat for Special Concern and Rare Wildlife Species for eastern wood-pewee and wood thrush, as well as Significant Amphibian Breeding Habitat (i.e., presence of two or more amphibian species with 20 or more breeding individuals). This habitat is similar to what was previously described in Section 5.0 of the ESA [Filing ID A4W2R0] and Appendix 2A of the ESA [Filing ID A4W2T2, A4W2T6 and A4W2T9].
11.2	12.4	Cultivated, treed, open water	The environmental and socio-economic setting associated with this route revision is consistent with that previously described in Section 5.0 of the ESA [Filing ID A4W2R0] and Appendix 2A of the ESA for this section of the replacement pipeline route with the exception of the following elements. Water Quality and Quantity The pipeline was realigned at the watercourse crossing at Big Creek approximately 200 m downstream in a ponded setting. The crossing method changed from isolated open cut to HDD. The watercourse crossing is located in the same environmental setting previously described in Section 5.0 of the ESA [Filing ID A4W2R0] (e.g., the same waterbodies and watershed information). Fish and Fish Habitat The watercourse crossing of Big Creek for the route revision has been relocated 200 m downstream to a ponded section of the watercourse at KP 11.9 (Appendix 4). A fish habitat assessment was conducted at the new crossing location and physical characteristics of the watercourse at this location are provided in Table 2 of Appendix O of the EPP [Filing ID A5D8Y1]. The realignment is located in the same environmental setting previously described in Section 5.0 of the ESA [Filing ID A4W2R0] (e.g., the same waterbodies and watershed information).

Table 5-1. Summary of Environmental and Socio-Economic Considerations Associated with Route Revisions

Start KP	End KP	Land Use	Environmental and Socio-Economic Considerations
11.2 (cont'd)	See above	See above	Wetlands This route revision encounters one additional wetland. This wetland is associated with Big Creek Headwaters complex from KP 11.8 to KP 11.9 and is described in Section 5.0 of the ESA [Filing ID A4W2R0] and Appendix 2A of the ESA [Filing ID A4W2S3 and A4W2S8]. Vegetation This route revision crosses cultivated land which provides limited rare plant habitat. The route revision also crosses treed vegetation which may provide habitat for rare plants and has been previously described in Section 5.0 of the ESA [Filing ID A4W2R0]. No new rare plants were identified during 2016 vegetation surveys. Wildlife and Wildlife Habitat/Species at Risk The route revision crosses forest and wetland habitat associated with Big Creek, which provides Significant Wildlife Habitat for Special Concern and Rare Wildlife Species (eastern wood-pewee), Significant Woodland Area-Sensitive Bird Breeding Habitat, Significant Turtle Habitat and Significant Habitat for Snapping Turtles. This habitat is similar to what was previously described in Section 5.0 of the ESA [Filing ID A4W2R0] and Appendix 2A of the ESA [Filing ID A4W2T2, A4W2T6 and A4W2T9]. The route revision will avoid interaction with the Stratum 2 deer wintering area associated with the Big Creek wetland complex, previously described in Section 5.0 of the ESA [Filing ID A4W2R0]. This deer wintering area is now crossed by the Project in only one location (KP 14.1 to 14.2) and is similar to what was previously described in Section 5.0 of the ESA [Filing ID A4W2R0] and Appendix 2A of the ESA [Filing ID A4W2T2, A4W2T6 and A4W2T9]. This area is not a provincially designated Significant Wildlife Habitat.
13.0	13.3	Cultivated	The environmental and socio-economic setting associated with this route revision is consistent with that previously described in Section 5.0 of the ESA [Filing ID A4W2R0] and Appendix 2A of the ESA for this section of the replacement pipeline route.
19.6	20.5	Cultivated, tame pasture, treed	The environmental and socio-economic setting associated with this route revision is consistent with that previously described in Section 5.0 of the ESA [Filing ID A4W2R0] and Appendix 2A of the ESA for this section of the replacement pipeline route with the exception of the following elements. Water Quality and Quantity The pipeline was realigned at the watercourse crossing at one tributary (WC 35) to Big Creek approximately 10 m upstream, and the watercourse crossing at another tributary of Big Creek (WC 36) approximately 250 m upstream. The watercourse crossings are located in the same environmental setting previously described in Section 5.0 of the ESA [Filing ID A4W2R0] (e.g., the same waterbodies and watershed information). This route revision resulted in an additional four water wells that were not previously located in the LSA defined for the Project (i.e., 500 m of both sides of the centre line) (MOECC, 2013).

Table 5-1. Summary of Environmental and Socio-Economic Considerations Associated with Route Revisions

Start KP	End KP	Land Use	Environmental and Socio-Economic Considerations
19.6 (cont'd)	See above	See above	Fish and Fish Habitat The pipeline was realigned at two watercourse crossings of tributaries of Big Creek as noted above (see Water Quality and Quantity). The watercourse crossings are located in the same environmental setting previously described in Section 5.0 of the ESA [Filing ID A4W2R0] (e.g., the same waterbodies and watershed information). A fish habitat assessment was conducted WC 36, approximately 250 m upstream of the previously proposed location. Physical characteristics of the watercourse at this location are provided in Table 2 of Appendix O in the preliminary EPP [Filing ID A5D8Y1]. Vegetation This route revision crosses cultivated land which provides limited rare plant habitat. This route revision also encounters tame pasture and treed land which may support rare plants and has been previously described in Section 5.0 of the ESA [Filing ID A4W2R0] and Appendix 2A of the ESA [Filing ID A4W2S8 and A4W2T2]. No new rare plants were identified during 2016 vegetation surveys. Wildlife and Wildlife Habitat/Species at Risk The route revision crosses Significant Wildlife Habitat for Special Concern and Rare Wildlife Species previously described in Section 5.0 of the ESA [Filing ID A4W2R0] and Appendix 2A of the ESA [Filing ID A4W2T2, A4W2T6 and A4W2T9] for eastern wood-pewee, bobolink and eastern meadowlark.
31.3	31.6	Cultivated	The environmental and socio-economic setting associated with this route revision is consistent with that previously described in Section 5.0 of the ESA [Filing ID A4W2R0] and Appendix 2A of the ESA for this section of the anticipated pipeline route.
35.7	35.8	Cultivated and disturbed land	The environmental and socio-economic setting associated with this route revision is consistent with that previously described in Section 5.0 of the ESA [Filing ID A4W2R0] and Appendix 2A of the ESA for this section of the anticipated pipeline route with the exception of the following elements. Water Quality and Quantity The watercourse crossing (WC 69) was initially crossed by a temporary access road and is now crossed by the replacement pipeline route as a result of this route revision. The watercourse crossing is located in the same environmental setting previously described in Section 5.0 of the ESA [Filing ID A4W2R0] (e.g., the same waterbodies and watershed information). This route revision resulted in two fewer water wells and four additional water wells located within the LSA defined for the Project (500 m on both sides of the centre line) (MOECC, 2013). Fish and Fish Habitat Fish habitat at WC 69 was previously assessed when this location was anticipated to be a temporary construction access road. Physical characteristics of the watercourse are provided in Table 2 of Appendix O in the preliminary EPP [Filing ID A5D8Y1]. The watercourse crossing is located in the same environmental setting previously described in Section 5.0 of the ESA [Filing ID A4W2R0] (e.g., the same waterbodies and watershed information). Vegetation This route revision crosses cultivated and disturbed land providing limited rare plant habitat potential.

6.0 Environmental and Socio-Economic Effects Assessment and Cumulative Effects Assessment

The updated information has been reviewed in the context of any potential implications to the conclusion reached in the Application, including the Project effects and cumulative effects assessment (Sections 6.0 and 7.0 of the ESA) [Filing IDs A4W2R0 and A4W2R6].

Changes to the environmental and socio-economic setting resulting from changes to Project details are provided in Section 5.0. However, overall, the environmental and socio-economic setting is generally consistent with that previously described in the ESA.

The results of the effects and cumulative effects assessment conducted for all elements are not anticipated to change as a result of the changes to Project details, updated consultation and engagement, updated mitigation, or from the results of supplemental fieldwork. The 2016 field survey results and route revision locations did not alter the general environmental and socio-economic setting for physical and meteorological environment, air emissions, greenhouse gas emissions, acoustic environment, human occupancy and resource use, social and cultural well-being, human health, infrastructure and services, employment and economy, and navigation and navigation safety. Subsequently, an update to the effects assessment or the cumulative effects assessment for the aforementioned elements as provided in Section 6.0 and Section 7.0 of the ESA [Filing IDs A4W2R0 and A4W2R6] has not been provided.

6.1 Soil and Soil Productivity

Soil and soil productivity along the route revisions is similar to that described in Section 5.0 and Appendix 2A of the ESA [Filing ID A4W2R0 and ID A4W2S3] for the initial replacement pipeline route. The soil characteristics encountered during the 2016 field studies are similar to the characteristics previously described and are provided in Table 1 of Appendix O of the preliminary EPP [Filing ID A5D8Y1].

No new interests or concerns related to soil and soil productivity were identified as a result of the route revision locations (Table 2-1), 2016 soil sampling, recent consultation and engagement conducted, or Project-related Information Request responses. No new potential effects or cumulative effects were identified beyond those discussed in Sections 6.2.2 and 7.0 of the ESA [Filing IDs A4W2R0 and A4W2R6]. Mitigation measures for soil and soil productivity along the replacement pipeline route have recently been filed in the Project-specific preliminary EPP and EAS [Filing ID A5D8Y1 and A5D8Y2] and will be updated prior to construction, as required.

The information gathered since the filing of the Application has been reviewed in the context of the ESA and it was determined there are no anticipated changes to the characterization of potential residual effects or cumulative effects or the evaluation of the significance of these effects and cumulative effects on soil and soil productivity (see Sections 6.2.2 and 7.2 of the ESA) [Filing ID A4W2R0 and A4W2R6].

6.2 Water Quality and Quantity

A summary of watercourse crossings that were updated as a result of the route revision locations and/or field surveys is provided in Table 6-1.

Two watercourse crossings (WC 18 and WC 39) that were previously identified during the desktop review were determined to not exist when field surveys were conducted, and were subsequently removed from the watercourse crossing table provided in Table 2 in Appendix O of the EPP [Filing ID A5D8Y1]. An additional three watercourse crossings (WC 21, 22 and 37) are no longer crossed by the replacement pipeline route as a result of the route revisions and were also removed from the watercourse crossing table (Table 2 in Appendix O of the EPP [Filing ID A5D8Y1]).

One additional ephemeral watercourse (WC 71) and one additional intermittent watercourse (WC 72) were identified as a result of the route revisions and added to the watercourse crossing table provided in Table 2 in Appendix O of the EPP [Filing ID A5D8Y1]. In total, the replacement pipeline route crosses 65 watercourses, including West Spencer Creek, Big Creek, and tributaries to West Spencer Creek, Big Creek, the Welland River and Twenty Mile Creek.

Table 6-1. Summary Updated Watercourse Crossing Realignments and Field Survey Results

Route Revision KP Range	Site No.	Name, New KP	UTM Coordinates (NAD 83)	Comments
Realigned Crossing Locations				
KP 8.6 to KP 9.9	11	Tributary to Big Creek KP 8.65	574241E, 4789738N 17T	Crossing was realigned approximately 30 m downstream.
KP 8.6 to KP 9.9	12	Tributary to Big Creek KP 8.92	574231E, 4879535N 17T	Crossing was realigned approximately 30 m downstream. Previously was isolated open cut, now HDD incorporating crossings 12, 13 and 14.
KP 8.6 to KP 9.9	13	Tributary to Big Creek KP 9.09	574263E, 4789393N 17T	Crossing was realigned approximately 30 m downstream. Previously was isolated open cut, now HDD incorporating crossings 12, 13 and 14.
KP 8.6 to KP 9.9	14	Tributary to Big Creek KP 9.17	574296E, 4789250N 17T	Crossing was realigned approximately 30 m downstream. Previously was isolated open cut, now HDD incorporating crossings 12, 13 and 14.
KP 8.6 to KP 9.9	15	Tributary to Big Creek KP 9.32	574329E, 4789105N 17T	Crossing was realigned approximately 30 m downstream.
KP 8.6 to KP 9.9	16	Tributary to Big Creek KP 9.68	574407E, 4788763N 17T	Crossing was realigned approximately 5 m downstream.
KP 8.6 to KP 9.9	17	Tributary to Big Creek KP 9.83	574439E, 4788619N 17T	Crossing was realigned approximately 5 m downstream.
KP 11.2 to KP 12.4	20	Big Creek KP 11.89	575346E, 4787038N 17T	Crossing was realigned approximately 200 m downstream (in ponded section). Previously was isolated open cut, now HDD.
KP 19.6 to KP 20.5	35	Tributary to Big Creek KP 19.65	578857E, 4780985N 17T	Crossing was realigned approximately 10 m upstream.
KP 19.6 to KP 20.5	36	Tributary to Big Creek KP 20.12	579220E, 4780911N 17T	Crossing was realigned approximately 250 m upstream.

Table 6-1. Summary Updated Watercourse Crossing Realignments and Field Survey Results

Route Revision KP Range	Site No.	Name, New KP	UTM Coordinates (NAD 83)	Comments
KP 35.7 to KP 35.8	69	Tributary to Twenty Mile Creek KP 35.8	592286, 4776859N 17T	The watercourse was initially crossed by a temporary access road and is now crossed by the replacement pipeline route.
Crossing Locations Removed as a Result of Route Revisions and 2016 Field Surveys				
N/A	21	Tributary to Big Creek	575645E, 4787047N 17T	Crossing was removed due to route revision.
N/A	22	Tributary to Big Creek	575648E, 4787036N 17T	Crossing was removed due to route revision.
N/A	37	Tributary to Big Creek	579131E, 4780692N 17T	Crossing was removed due to route revision.
N/A	18	N/A	574515E, 4788485N 17T	Crossing was removed as it was determined not to be a watercourse during updated 2016 fieldwork.
N/A	39	Tributary to Big Creek	579479E, 4780298N 17T	Crossing was removed as it was determined not to be a watercourse during updated 2016 fieldwork.
Crossing Locations Added as a Result of 2016 Field Surveys				
N/A	71	Tributary to West Spencer Creek KP 6.03	574685E, 4791904N 17T	Crossing was added after 2016 field confirmation
N/A	72	Tributary to Welland River KP 31.14	588302E, 4777233N 17T	Crossing was added after 2016 field confirmation.

Additionally, the route revisions resulted in a total of two fewer water wells located within the LSA, however there are an additional 13 water wells located within 500 m of the route revision areas. A search of the Ontario Water Well Information System (MOECC, 2015) identified 322 registered water well record within 500 m of the replacement pipeline route (MOECC, 2013) as a result of the route revisions listed in Table 2-1.

No new issues or concerns related to water quality and quantity were identified as a result of the route revision locations (Table 2-1), recent consultation and engagement conducted, or Project-related Information Request responses. Six Nations and MNCFN expressed interests in items related to water quality and quantity (e.g., watercourse crossing management), however these interests did not result in any new issues or concerns that have not been previously assessed in Section 6.2.3 or Section 7.3 of the ESA [Filing ID A4W2R0 and A4W2R6].

No new Project or cumulative effects were identified beyond those discussed in Sections 6.2.3 and 7.3 of the ESA [Filing IDs A4W2R0 and A4W2R6]. Mitigation measures for water quality and quantity along the replacement pipeline route have recently been filed in the Project-specific preliminary EPP and EAS [Filing IDs A5D8Y1 and A5D8Y2] and will be updated prior to construction, as applicable.

The information gathered since the filing of the Application has been reviewed in the context of the ESA and it was determined that there are no anticipated changes to the characterization of potential residual effects or cumulative effects or the evaluation of the significance of these effects and cumulative effects on water quality and quantity (see Sections 6.2.3 and 7.3 of the ESA) [Filing ID A4W2R0 and A4W2R6].

6.3 Fish and Fish Habitat

Changes in watercourse crossings resulting from the route revisions are provided above in Table 6-1 and an updated summary of all watercourse crossings is provided in Table 2 of Appendix O of the preliminary EPP [Filing ID A5D8Y1]. Changes in watercourse crossing locations were mainly upstream or downstream adjustments varying from 5 m to 250 m affecting similar habitats and fish communities as those previously described. DFO Self-Assessments for watercourses that were evaluated during 2016 surveys concluded that serious harm to fish is not anticipated at these watercourse crossings (Appendix 4).

No new interests or concerns related to fish and fish habitat were identified as a result of the route revision locations (Table 2-1), recent consultation and engagement conducted, or Project-related Information Request responses. No new issues or concerns related to fish and fish habitat were identified as a result of the route revision locations, fish habitat assessment or fish community surveys. Six Nations and MNCFN expressed interests in items related to fish and fish habitat; however, these interests did not result in any new issues or concerns that have not been previously assessed in Section 6.2.7 and Section 7.6 of the ESA [Filing ID A4W2R0 and A4W2R6]. No new Project or cumulative effects were identified beyond those discussed in Sections 6.2.7 and 7.6 of the ESA [Filing IDs A4W2R0 and A4W2R6]. Mitigation measures for fish and fish habitat along the replacement pipeline route have recently been filed in the Project-specific preliminary EPP and EAS [Filing ID A5D8Y1 and A5D8Y2] and will be updated prior to construction, as applicable.

The information gathered since the filing of the Application has been reviewed in the context of the ESA and it was determined that there are no changes to the characterization of potential residual effects or the evaluation of the significance of these effects (see Section 6.2.7 of the ESA) [Filing ID A4W2R0]. In addition, there are no changes to the potential cumulative effects on fish and fish habitat outlined in Section 7.6 of the ESA [Filing ID A4W2R6], or the significance of these potential cumulative effects.

6.4 Wetlands

As a result of the route revisions (Table 2-1), one additional wetland will be encountered by the replacement pipeline route and one wetland complex that was previously encountered is now crossed in a different location within the same complex. The wetlands encountered by the replacement pipeline route will be subject to temporary disturbances. A comprehensive list of wetland crossings is provided in Table 4 of Appendix O of the preliminary EPP [Filing ID A5D8Y1].

There are no new interests or concerns related to wetlands that were identified as a result of the route revision locations (Table 2-1), 2016 field surveys, recent consultation and engagement conducted, or Project-related Information Request responses. Development through wetlands, including the Provincially Significant Wetlands along the replacement pipeline route, is regulated at a local level by the applicable conservation authorities they are located within. Enbridge will continue to engage with the conservation authorities identified in Table 3-1 regarding approvals.

No new potential effects or cumulative effects were identified beyond those discussed in Sections 6.2.8 and 7.7 of the ESA [Filing IDs A4W2R0 and A4W2R6]. Mitigation measures for wetlands encountered along the replacement pipeline route have recently been filed in the Project-specific preliminary EPP and EAS [Filing ID A5D8Y1 and A5D8Y2] and will be updated prior to construction, as applicable.

The information gathered since the filing of the Application has been reviewed in the context of the ESA and it was determined there are no changes to the characterization of potential residual effects or

cumulative effects or the evaluation of the significance of these effects and cumulative effects on wetlands (see Sections 6.2.8 and 7.7of the ESA) [Filing IDs A4W2R0 and A4W2R6].

6.5 Vegetation

Supplemental surveys were completed in late May and June 2016 where suitable habitat was identified along areas where access was not granted in 2013 and where the current pipeline route has been updated since 2013 surveys were completed. Supplemental vegetation surveys recorded the presence and abundance of weeds along the replacement pipeline ROW outside of active agricultural lands. In addition, a map of the potential weed risk was created for the entire route, and additional equipment cleaning sites were recommended. A late-season vegetation survey is planned for 2016. The potential residual effects and cumulative effects on weeds were previously assessed in Section 6.2.9 and Section 7.8 of the ESA [Filing ID A4W2R0 and A4W2R6].

No new issues or concerns related to vegetation were identified as a result of the route revision locations (Table 2-1), 2016 field surveys, recent consultation and engagement conducted, or Project-related Information Request responses. MNCFN expressed an interest in collecting white pine needles in woodland areas prior to construction. As such, Enbridge committed to working with applicable landowners where tree removal is required and to coordinate access where the landowners will allow MNCFN representatives to collect white pine needles prior to pipeline construction.

There are no new potential effects or cumulative effects identified beyond those discussed in Sections 6.2.9 and 7.8 of the ESA [Filing IDs A4W2R0 and A4W2R6]. Mitigation measures for vegetation, including species at risk and weeds, encountered along the replacement pipeline route have recently been filed in the Project-specific preliminary EPP and EAS [Filing ID A5D8Y1 and A5D8Y2] and will be updated prior to construction, as applicable.

The information gathered since the filing of the Application has been reviewed in the context of the ESA and it was determined there are no changes to the characterization of potential residual effects or cumulative effects or the evaluation of the significance of these effects and cumulative effects on vegetation (see Sections 6.2.9 and 7.8 of the ESA) [Filing ID A4W2R0 and Filing ID A4W2R6].

6.6 Wildlife and Wildlife Habitat

All of the route revisions are minor deviations from the initial-filed replacement pipeline route. As a result, the habitat crossed by the route revisions is similar in characteristic and function to that described and assessed in Section 6.2.10 and Section 7.9 of the ESA [Filing IDs A4W2R0 and A4W2R6]. In general, the Project landscape is primarily agricultural, with cultivated and pasture lands comprising most of the habitat along the route revisions. Residual patches of dense forest, wetlands and watercourses are crossed, as described in Table 5-1 and assessed above in Sections 6.2 Water Quality and Quantity, 6.3 Fish and Fish Habitat, 6.4 Wetlands and 6.5 Vegetation.

There are no new potential effects or cumulative effects identified beyond those discussed in Sections 6.2.10 and 7.9 of the ESA [Filing IDs A4W2R0 and A4W2R6].

Although the total length of the Project with the route revisions increases slightly and will have a slightly larger Footprint area (see Table 2-1), the updated Footprint should have a reduced effect on wildlife habitat. This is a result of the proportion of the Footprint in agricultural and disturbed land increasing with the route revisions, while the area of treed land (11.0 ha) and wetlands (5.5 ha) affected is reduced relative to the anticipated replacement pipeline route.

The route revision between KP 11.2 and KP 12.4 and planned HDD crossing technique for Big Creek will reduce forest clearing and avoid habitat disturbance associated with the crossings of Big Creek and tributary to Big Creek along the initial replacement pipeline route. In addition, it is anticipated that the

route revision from KP 8.6 to KP 9.9 and change from isolated crossings of the three watercourses along this segment to an HDD method, will further reduce disturbance to forest and riparian habitat.

Field surveys completed during 2016 confirmed the occurrence of the following Significant Wildlife Habitats along the replacement pipeline route (see Sections 4.4 and 4.5 for a summary of field results):

- Assumed Significant Bat Maternity Roosting Habitat
- Significant Turtle Habitat and Significant Habitat for Snapping Turtle
- Breeding Bird Habitat (Significant Wildlife Habitat for Special Concern and Rare Wildlife Species, Significant Woodland Area-Sensitive Bird Breeding Habitat, and Significant Waterfowl Nesting Habitat and Marsh Breeding Bird Habitat)
- Significant Amphibian Breeding Habitat
- Assumed Jefferson Salamander Habitat

An HDD construction method is proposed to avoid disturbance of the potential Jefferson Salamander habitat (see Section 6.7). The route revision segment of the pipeline between KP 11.2 and 12.4 will avoid interaction with the Stratum 2 deer wintering area associated with the Big Creek wetland complex. The deer wintering area is crossed by the Project in only one location (KP 14.1 to 14.2). This area is not a provincially designated Significant Wildlife Habitat.

The results of field studies completed along the route revisions during spring and summer 2016 (Sections 4.0) and outcomes of consultation (Section 3.0) were used to refine mitigation that will reduce residual effects of the Project on wildlife and wildlife habitat. Updated mitigation was presented in the preliminary EPP and EAS [Filing ID A5D8Y1 and A5D8Y2].

The effect characterizations and significance determinations presented in Sections 6.2.10 and 7.9 of the ESA [Filing ID A4W2R0 and A4W2R6] for residual effects on wildlife and wildlife habitat were reviewed in consideration of the route revisions, proposed HDD construction methods that are anticipated to avoid forest and wetland habitat alteration, and the refined mitigation developed in consultation with MNRF and informed by field results. The assessments of residual changes in wildlife movement, mortality risk, and habitat contamination from inadvertent spills remain unchanged from the ESA (i.e., immediate to short-term duration, low magnitude, reversible and not significant). The magnitude of the residual effect of habitat changes is reduced and in general will be low. However, the Project will affect Significant Wildlife Habitats that support species at risk, as well as more resilient species. Mitigation measures for wildlife and wildlife habitat have recently been filed in the Project-specific preliminary EPP and EAS [Filing ID A5D8Y1 and A5D8Y2]. With implementation of the mitigation measures, the magnitude of the residual effect of the Project on wildlife habitat remains low to medium, which is unchanged from the ESA.

Therefore, the effect characterization and significance conclusion for residual changes to wildlife habitat remain unchanged from the ESA (medium to extended-term duration, low to medium magnitude, reversible and not significant).

6.7 Species at Risk

6.7.1.1 Fish and Fish Habitat

There were no fish species at risk observed during 2016 field work. Although the locations of fish community surveys are within the mapped ranges for grass pickerel, 2016 field work confirmed that there is only one watercourse (WC 52) with the potential to support suitable grass pickerel habitat.

There are no new interests or concerns related to fish and fish habitat identified as a result of the route revision locations (Table 2-1), 2016 field surveys, recent consultation and engagement conducted, or

Project-related Information Request responses. Mitigation measures for aquatic species at risk encountered along the replacement pipeline route have recently been filed in the Project-specific preliminary EPP and EAS [Filing ID A5D8Y1 and A5D8Y2] and will be updated prior to construction, as applicable.

The potential residual effects and cumulative effects on aquatics species at risk were previously assessed in Section 6.2.11 and Section 7.10 of the ESA [Filing ID A4W2R0 and A4W2R6].

The information gathered since the filing of the Application has been reviewed in the context of the ESA and it was determined there are no changes to the characterization of potential residual effects or cumulative effects or the evaluation of the significance of these effects or cumulative effects on aquatic species at risk (see Sections 6.2.11 and 7.10 of the ESA) [Filing ID A4W2R0 and A4W2R6].

6.7.1.2 Vegetation

There were no new plant species at risk observed during the vegetation surveys completed in late May and June 2016. As noted in Section 4, butternut (*Juglans cinerea*), a species at risk, was recorded in multiple locations during the 2016 survey.

The potential residual effects and cumulative effects on butternut were previously assessed in Section 6.2.11 and Section 7.10 of the ESA [Filing ID A4W2R0 and A4W2R6].

The information gathered since the filing of the Application has been reviewed in the context of the ESA and it was determined there are no changes to the characterization of potential residual effects or cumulative effects or the evaluation of the significance of these effects or cumulative effects on vegetation species at risk (see Sections 6.2.11 and 7.10 of the ESA) [Filing ID A4W2R0 and A4W2R6].

6.7.1.3 Wildlife

The updated Project information, results of field surveys completed in 2016, and consultation outcomes were considered in context with the assessment of wildlife species at risk in Sections 6.2.11 and 7.10 of the ESA [Filing IDs A4W2R0 and A4W2R6]. There were no additional species at risk identified that have potential to interact with the Project. However, updated field survey results (Section 4.0) and consultation with MNRF indicates that some species at risk will not be affected by the Project. These are discussed further below.

The ESA assessed the interaction of the Project with proposed critical habitat for eastern whip-poor-will (*Antrogstomus vociferous*) (Sections 6.2.11 and 7.10 of the ESA [Filing IDs A4W2R0 and A4W2R6]). Updated information and general consultation with MNRF confirms that the remnant forest patches in the Project area are densely treed and do not contain the matrix of open and half-treed areas that generally characterize suitable breeding habitat for eastern whip-poor-will (MNRF, 2013). There are no records of eastern whip-poor-will breeding in the LSA. As a result, the residual effect assessment in the ESA for eastern whip-poor-will is no longer valid, since the Project will not interact with this species.

At the time of the ESA, there were no proposed or final critical habitats for any other wildlife species that would potentially interact with the Project (refer to Table 7.10-2 in the ESA [Filing ID A4W2R6]). Since the Project ESA was submitted to the NEB in December 2015, additional recovery strategies have been published. These are summarized in Table 6-2.

Table 6-2. Recently Published Recovery Strategies and Identified Critical Habitat for Federally and Provincially Listed Wildlife Species at Risk Potentially Affected by the Line 10 Replacement Pipeline

Federally and Provincially Listed Wildlife Species	Recovery Strategies, Action Plans, Management Plans	Identified Critical Habitat
Mammals		
Little brown myotis, northern myotis and tri-colored bat	Recovery Strategy for Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), and Tri-colored Bat (*Perimyotis subflavus*) in Canada (Proposed) (Environment Canada 2015a)	Proposed critical habitat has been partially identified for these species. Any site where little brown myotis, northern myotis or tri-colored bat has been observed hibernating during the winter at least once since 1995 has been proposed as critical habitat (Environment Canada 2015a). The Project is not located in a 50 x 50 km standardized UTM square that contains proposed critical habitat (Environment Canada 2015a).
Woodland vole	Management Plan for the Woodland Vole (*Microtus pinetorum*) in Canada (Environment Canada 2015b)	Critical habitat has not been identified for this species.
Birds		
Barn owl	Proposed Recovery Strategy for the Barn Owl (*Tyto alba*) Eastern Population in Canada (Environment Canada 2016a)	Proposed critical habitat for this species is defined as: 1) a nesting or roosting site that has been used by a barn owl or was used by a barn owl at any time during the previous 12 months; 2) a barn, building or other structure, or a tree or other natural feature, on or in which a nesting or roosting site is located; 3) if a nesting or roosting site described in 1) is located on a tree or other natural feature, the area within 25 m of the base of the tree or other natural feature, and 4) those parts of the area within 1 km of an area described in 1) or 2) that provide suitable foresting conditions for barn owl (Environment Canada 2016a). Based on the best available information, there are no known occurrences of a nest or roost within the previous 12 months along the Project. Therefore, the Project does not interact with proposed critical habitat for this species.
Canada warbler	Recovery Strategy for Canada Warbler (*Cardellina canadensis*) in Canada (Environment Canada 2016b)	Critical habitat has not been identified for this species.
Common nighthawk	Recovery Strategy for the Common Nighthawk (Chordeiles minor) in Canada (Environment Canada 2016c)	Critical habitat has not been identified for this species.
Short-eared owl	Management Plan for the Short-eared Owl (*Asio flammeus*) in Canada [proposed] (Environment Canada 2016d)	Critical habitat has not been identified for this species.

Table 6-2. Recently Published Recovery Strategies and Identified Critical Habitat for Federally and Provincially Listed Wildlife Species at Risk Potentially Affected by the Line 10 Replacement Pipeline

Federally and Provincially Listed Wildlife Species	Recovery Strategies, Action Plans, Management Plans	Identified Critical Habitat
Amphibians		
Jefferson salamander	Recovery Strategy for the Jefferson Salamander (*Ambystoma jeffersonianum*) in Canada (Environment Canada 2016e). This federal Recovery Strategy adopts the provincial Recovery Strategy for the Jefferson Salamander (Ambystoma jeffersonianum) in Ontario (Jefferson Salamander Recovery Team 2010) as Part 2 of the strategy. Part 2 is supplemented by a federal addition (Part 1)	Critical habitat for Jefferson salamanders is defined as: (a) a wetland, pond or vernal or other temporary pool that is being used by a Jefferson salamander or Jefferson dominated polyploid or was used by a Jefferson salamander or Jefferson dominated polyploid at any time during the previous five years, (b) an area that is within 300 m of (a) and that provides suitable foraging, dispersal, migration or hibernation conditions for Jefferson salamanders or Jefferson dominated polyploids, (c) a wetland, pond or vernal or other temporary pool that would provide suitable breeding conditions for Jefferson salamanders or Jefferson dominated polyploids, is within 1 km of an area described by (a), and is connected to the area described in (a) by an area described in (d), and (d) an area that provides suitable conditions for Jefferson salamanders or Jefferson dominated polyploids to disperse and is within 1 km of an area described in (a) (Environment Canada 2016e). The Project is located within 10 x 10 km standardized UTM grid squares that contain critical habitat for Jefferson salamander (Environment Canada 2016e). Field studies confirmed there is no critical habitat in the locations surveyed; however, it is assumed suitable habitat exists until pre-construction surveys are complete (see Section 4.6 and further discussion below).
Western chorus frog, Great Lakes/St. Lawrence – Canadian Shield population	Recovery Strategy for the Western Chorus Frog (*Pseudacris triseriata*), Great Lakes/St. Lawrence-Canadian Shield population, in Canada (Environment Canada 2015c)	Critical habitat has been partially identified for the Great Lakes/St. Lawrence – Canadian Shield population of the western chorus frog. The Project is not located in a UTM grid square containing critical habitat for this species (Environment Canada 2015c). There are no records of chorus frog occurrence in the Project area, and field surveys did not detect this species. Therefore, the Project will not interact with this species.
Reptiles		
Blanding's turtle	Recovery Strategy for the Blanding's Turtle (*Emydoidea blandingii*), Great Lakes/St. Lawrence population, in Canada [Proposed] (Environment Canada 2016f)	Proposed critical habitat has been partially identified for the Great Lakes/St. Lawrence population of the Blanding's turtle based on habitat occupancy and habitat suitability (Environment Canada 2016f). The Project is located in a 50 x 50 km standardized UTM square that contains proposed critical habitat (Environment Canada 2016f). Blanding's turtles were not detected during field surveys for the Project (see Section 4.6 and further discussion below).

Table 6-2. Recently Published Recovery Strategies and Identified Critical Habitat for Federally and Provincially Listed Wildlife Species at Risk Potentially Affected by the Line 10 Replacement Pipeline

Federally and Provincially Listed Wildlife Species	Recovery Strategies, Action Plans, Management Plans	Identified Critical Habitat
Eastern musk turtle	Recovery Strategy for the Eastern Musk Turtle (*Sternotherus odoratus*) in Canada [Proposed] (Environment Canada 2016g)	Proposed critical habitat has been defined for eastern musk turtle based on habitat occupancy, habitat suitability and habitat connectivity. The Project is not located in a 50 x 50 km standardized UTM square that contains proposed critical habitat (Environment Canada 2016g). Therefore, the Project does not interact with proposed critical habitat for this species.
Snapping turtle	Management Plan for the Snapping Turtle (*Chelydra serpentine*) in Canada [Proposed] (ECCC 2016)	Critical habitat is not defined for this species.
Spiny softshell	Recovery Strategy for the Spiny Softshell (*Apalone spinifera*) in Canada [Proposed] (Environment Canada 2016h)	Proposed critical habitat has been defined for spiny softshell based on habitat occupancy, habitat suitability, and habitat connectivity. The Project is located in a 50 x 50 km standardized UTM square that contains proposed critical habitat (Environment Canada 2016h). However, general consultation with MNRF has determined that suitable habitat for spiny softshell does not occur along the Project route. Therefore, the Project does not interact with proposed critical habitat for this species.
Wood turtle	Recovery Strategy for the Wood Turtle (*Glyptemys insculpta*) in Canada [Proposed] (Environment Canada 2016i)	Proposed critical habitat has been partially identified for this species, based on habitat occupancy and habitat suitability. Due to the sensitivity of location information, the proposed Recovery Strategy presents proposed critical habitat at a scale of 1:250,000 (NTS grids that contain critical habitat). Although the Project is located in one of these NTS grids containing proposed critical habitat for the wood turtle (Environment Canada 2016i), there is no suitable habitat for this species along the route. Enbridge has confirmed through general consultation with MNRF that the Project does not interact with wood turtle habitat.

The final Recovery Strategy for Jefferson salamander partially delineates critical habitat for this species (Table 6-2). The Project is located within 10 x 10 km standardized UTM grid squares that contain critical habitat for Jefferson salamander (Environment Canada 2016e). Suitable habitat for Jefferson salamander does not exist in the areas where field surveys occurred, however it is assumed that suitable habitat exists where access was restricted. Updated mitigation, developed in consideration of field survey results and in consultation with MNRF, is provided in the preliminary EPP and EAS [Filing ID A5D8Y1 and A5D8Y2], which includes HDD construction methods to avoid potential Jefferson salamander habitat. This approach will avoid residual effects of the Project on potential Jefferson salamander habitat in the event it is identified during pre-construction surveys. In the event a trenched construction method is necessary, the proposed mitigation in the preliminary EPP [Filing ID A5D8Y1] will reduce the residual effects on this species' habitat and movement, and will avoid Project-related mortality risk. Additional field surveys are proposed to confirm habitat for Jefferson salamander where land access was not

previously obtained. In the event that confirmed habitat for Jefferson salamander is affected by the Project, Enbridge will continue to consult with MNRF regarding mitigation. The effects assessment provided in the ESA for Jefferson salamander was reviewed in the context of this updated information. There are no changes to the residual effect characterization or significance conclusions provided in Section 6.11 or Appendix 2B of the ESA for this species [Filing ID A4W2R0 and A4W2T9].

The Project is located in a 50 x 50 km standardized UTM square that contains proposed critical habitat for Blanding's turtle (Environment Canada 2016f). Field surveys were completed for the Project using the Blanding's Turtle Protocol provided by the MNRF. This species was not detected during field surveys for the Project (see Section 4.4). Mitigation to protect Significant Turtle Habitat was developed in consultation with the MNRF and is provided in the preliminary EPP and EAS [Filing ID A5D8Y1 and A5D8Y2]. Mitigation includes trenchless (HDD) crossings of wetlands with confirmed over-wintering habitat for other turtle species. The effects assessment provided in the ESA for Blanding's turtle was reviewed in the context of this updated information. There are no changes to the residual effect characterization or significance conclusions provided in Section 6.11 or Appendix 2B of the ESA for this species [Filing ID A4W2R0 and A4W2T9].

Updated Project details, recovery planning information, results of field studies and general consultation were used to refine mitigation that will reduce residual effects of the Project on wildlife species at risk and their habitat. Mitigation measures for wildlife species at risk and associated habitat have recently been filed in the Project-specific preliminary EPP and EAS [Filing ID A5D8Y1 and A5D8Y2] including specific measures to mitigate Project effects on Significant Wildlife Habitats and potential habitat for species at risk identified during field surveys.

The information gathered since the filing of the Application has been reviewed in the context of the ESA and it was determined that there are no changes to the characterization of potential residual effects or cumulative effects or the evaluation of the significance of these effects and cumulative effects on wildlife species at risk (see Sections 6.2.3 and 7.3 and Appendix 2B of the ESA) [Filing ID A4W2R0, A4W2R6 and A4W2T9].

6.8 Heritage Resources

Archaeological fieldwork continues to be conducted along the anticipated replacement pipeline route, including the route revisions outlined in Table 2-1. Ongoing archaeological fieldwork will continue to be conducted in accordance with MTCS guidelines. Results of the Stage 2 and Stage 3 assessments will be used to update or develop resource-specific mitigation measures as needed; therefore, there are no changes anticipated to the potential effects on heritage resources that were previously identified in Section 6.0 of the ESA [Filing ID A4W2R0]. Similar to Section 7.0 of the ESA [Filing ID A4W2R6], no potential cumulative effects on heritage resources were identified.

Mitigation measures used to reduce potential effects on heritage resources are also outlined in Section 6.0 of the ESA as well as the Project-specific preliminary EPP [Filing ID A5D8Y1] and will be updated to include recommendations resulting from the archaeological assessments in order to reduce any potential effects, in the event heritage resources are discovered during construction.

6.9 Traditional Land and Resource Use

Enbridge has implemented and continues to conduct Aboriginal engagement programs for the Project. Interests discussed during engagement opportunities and open houses since April 2016 are outlined in Section 3.0 and include deer hunting areas, medicinal plants, wildlife and vegetation species at risk, and water quality.

The potential effects included in the ESA on traditional land and resource use [Filing ID A4W2R0] associated with construction and operations of the replacement pipeline were identified by the

assessment team and supported by the initial interests raised by Aboriginal groups, including interests outlined above in Section 4.8 (i.e., white pine needles and deer). Ongoing consultation and engagement efforts will continue to support Project planning, including any updates to the mitigation measures provided in the preliminary EPP. Considering that eastern white pine and deer are considered secure in Ontario (NatureServe, 2015), no new mitigation is warranted. Should protection measures be identified or suggested, Enbridge will consider the recommendations from Aboriginal groups, to the extent practicable. In the event that a traditional land and resource use site is discovered during construction, the Traditional Land and Resource Use Sites Discovery Contingency Plan in Appendix D12 of the preliminary EPP [Filing ID A5D8Y1] will be implemented.

The information, including all interests outlined during recent engagement efforts (see Section 3), were reviewed in the context of the potential effects previously assessed and it was determined there are no anticipated changes to the identification or characterization of potential residual effects or the evaluation of the significance of these effects (see Section 6.2.14 of the ESA) [Filing ID A4W2R0].

7.0 Summary

The intent of this filing is to provide a summary of Project changes and their impact on the effects and cumulative effects assessment completed for the Project.

7.1 Supplemental Studies

In addition to the Environmental Studies outlined in Section 4.0, Enbridge plans to conduct remaining supplemental studies along the entire replacement pipeline route throughout 2016, as well as additional surveys at select locations where access was previously restricted. Additional surveys are listed below.

- A late summer vegetation survey along the replacement pipeline ROW is planned for late August or early September 2016 to document locations containing vegetation species at risk and/or weeds.
- An additional watercourse assessment will be completed in August 2016 to confirm flow permanency at WC 19, WC 71, and WC 72.
- Soil, vegetation (e.g., rare plant and weed) and wildlife habitat (e.g., Jefferson salamander, bat cavity and turtle basking) surveys are planned in five locations where access has been previously restricted.

Results of the additional surveys will be included in the EPP and EAS prior to construction, if warranted.

7.2 Updates to Mitigation

Since the Project-specific preliminary EPP was filed on July 15, 2016 [Filing ID A5D8Y1], there have been no updates to resource- or site-specific mitigation measures along the replacement pipeline route. In the event that there are new or updated mitigation measures as a result of ongoing consultation and engagement or as a result of the supplemental studies planned along the route, Enbridge will file an updated copy of the EPP and EAS, if required.

8.0 Conclusions

The information gathered since the filing of the Application has been reviewed in the context of the ESA and it was determined that the significance conclusions of the ESA remain unchanged for the potential Project effects and cumulative effects. Public consultation and aboriginal engagement are ongoing for the Project and if any new interests or concerns related to environmental or socio-economic elements are brought forward, Enbridge will consider the implications in the context of the ESA and re-evaluate the assessment, as warranted.

9.0 References

9.1 Literature Cited

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Environment Canada. 2015b. Management Plan for the Woodland Vole (*Microtus pinetorum*) in Canada. Species at Risk Act Management Plan Series. Canadian Wildlife Service. Ottawa, ON. iv + 18 pp.

Environment Canada. 2015c. Recovery Strategy for the Western Chorus Frog (*Pseudacris triseriata*). Great Lakes/St. Lawrence – Canadian Shield population, in Canada. *Species at Risk Act* Recovery Strategy Series. Environment Canada. Ottawa, ON. vi + 50 pp.

Environment Canada. 2016a. Recovery Strategy for the Barn Owl (*Tyto alba*) Eastern Population in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada. Ottawa, ON. 24 pp + Annexes.

Environment Canada. 2016b. Recovery Strategy for the Canada Warbler (*Cardellina canadensis*) in Canada. *Species at Risk Act* Recovery Strategy Series. Environment Canada. Ottawa, ON. vii + 56 pp.

Environment Canada. 2016c. Recovery Strategy for the Common Nighthawk (Chordeiles minor) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada. Ottawa, ON. vii + 49 pp.

Environment Canada. 2016d. Management Plan for the Short-eared Owl (*Asio flammeus*) in Canada [Proposed]. *Species at Risk Act* Management Plan Series. Environment Canada. Ottawa, ON. v + 35 pp.

Environment Canada. 2016e. Recovery Strategy for the Jefferson Salamander (*Ambystoma jeffersonianum*) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada. Ottawa, ON. 26 pp + Annexes.

Environment Canada. 2016f. Recovery Strategy for the Blanding's Turtle (Emydoidea blandingii), Great Lakes/St. Lawrence population, in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada. Ottawa, ON. vii + 49 pp.

Environment Canada. 2016g. Recovery Strategy for the Eastern Musk Turtle (*Sternotherus odoratus*) in Canada [Proposed]. *Species at Risk Act* Recovery Strategy Series. Environment Canada. Ottawa, ON. viii+ 58 pp.

Environment Canada. 2016h. Recovery Strategy for the Spiny Softshell (Apalone spinifera) in Canada [Proposed] Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. viii + 57 pp.

Environment Canada. 2016i. Recovery Strategy for the Wood Turtle (*Glyptemys insculpta*) in Canada [Proposed]. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. v + 48 pp.

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Appendix 1
Figure 1 - Route Revisions

ENBRIDGE

August 2016

FIGURE 1A

ROUTE REVISIONS AT KP 6.2 - 7.3

ENBRIDGE PIPELINES INC.
PROPOSED LINE 10
WESTOVER SEGMENT REPLACEMENT PIPELINE PROJECT

664756

- Kilometre Post (KP) (Route filed December 2015)
- Kilometre Post (KP) (Route filed August 2016)
- Line 10 Replacement Pipeline Route (Route filed December 2015)
- Line 10 Replacement Pipeline Reroute (Route filed August 2016)
- Highway (892)
- Paved Road
- Gravel/Dirt/Loose Surface
- Conservation Authority Boundary
- Construction Right-of-Way
- Temporary and Extra Workspace

SCALE: 1:8,000
50 0 50 m
(All Locations Approximate)

ch2m

UTM Zone 17N
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Roads,Municipal Boundaries: Ontario Ministry of Natural Resources, 2015.

Although there is no reason to believe that there are any errors associated with the data used to generate this product or in the product itself, users of these data are advised that errors in the data may be present.

Mapped By: SL | Checked By: LA

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ENBRIDGE

August 2016

FIGURE 1B

ROUTE REVISIONS AT KP 8.6 - 9.9

ENBRIDGE PIPELINES INC.
PROPOSED LINE 10
WESTOVER SEGMENT REPLACEMENT
PIPELINE PROJECT

664756

- Kilometre Post (KP) (Route filed December 2015)
- Kilometre Post (KP) (Route filed August 2016)
- Line 10 Replacement Pipeline Route (Route filed December 2015)
- Line 10 Replacement Pipeline Reroute (Route filed August 2016)
- 892 Highway
- Paved Road
- Gravel/Dirt/Loose Surface
- Conservation Authority Boundary
- Construction Right-of-Way
- Temporary and Extra Workspace

SCALE: 1:8,000
m
50 0 50
(All Locations Approximate)

ch2m

UTM Zone 17N
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Roads,Municipal Boundaries: Ontario Ministry of Natural Resources, 2015.

Although there is no reason to believe that there are any errors associated with the data used to generate this product or in the product itself, users of these data are advised that errors in the data may be present.

Mapped By: SL | Checked By: LA

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ENBRIDGE

August 2016

FIGURE 1C

ROUTE REVISIONS AT KP 11.2 - 12.4

**ENBRIDGE PIPELINES INC.
PROPOSED LINE 10
WESTOVER SEGMENT REPLACEMENT
PIPELINE PROJECT**

664756

- Kilometre Post (KP) (Route filed December 2015)
- Kilometre Post (KP) (Route filed August 2016)
- Line 10 Replacement Pipeline Route (Route filed December 2015)
- Line 10 Replacement Pipeline Reroute (Route filed August 2016)
- Highway
- Paved Road
- Gravel/Dirt/Loose Surface
- Conservation Authority Boundary
- Construction Right-of-Way
- Temporary and Extra Workspace

SCALE: 1:5,000
50 0 50 m
(All Locations Approximate)

ch2m

UTM Zone 17N
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Roads,Municipal Boundaries: Ontario Ministry of Natural Resources, 2015.

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Mapped By: SL | Checked By: LA

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ENBRIDGE

August 2016

FIGURE 1D

ROUTE REVISIONS AT KP 13.0 - 13.3

ENBRIDGE PIPELINES INC.
PROPOSED LINE 10
WESTOVER SEGMENT REPLACEMENT PIPELINE PROJECT

664756

- Kilometre Post (KP) (Route filed December 2015)
- Kilometre Post (KP) (Route filed August 2016)
- Line 10 Replacement Pipeline Route (Route filed December 2015)
- Line 10 Replacement Pipeline Reroute (Route filed August 2016)
- 892 Highway
- Paved Road
- Gravel/Dirt/Loose Surface
- Conservation Authority Boundary
- Construction Right-of-Way
- Temporary and Extra Workspace

SCALE: 1:5,000
50 0 50 m
(All Locations Approximate)

ch2m

UTM Zone 17N
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Roads,Municipal Boundaries: Ontario Ministry of Natural Resources, 2015.

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ENBRIDGE

August 2016

FIGURE 1E

ROUTE REVISIONS AT KP 19.6 - 20.5

ENBRIDGE PIPELINES INC.
PROPOSED LINE 10
WESTOVER SEGMENT REPLACEMENT PIPELINE PROJECT

664756

- Kilometre Post (KP) (Route filed December 2015)
- Kilometre Post (KP) (Route filed August 2016)
- Line 10 Replacement Pipeline Route (Route filed December 2015)
- Line 10 Replacement Pipeline Reroute (Route filed August 2016)
- 892 Highway
- Paved Road
- Gravel/Dirt/Loose Surface
- Conservation Authority Boundary
- Construction Right-of-Way
- Temporary and Extra Workspace

SCALE: 1:5,000

50 0 50 m

(All Locations Approximate)

ch2m

UTM Zone 17N

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Roads,Municipal Boundaries: Ontario Ministry of Natural Resources, 2015.

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ENBRIDGE

August 2016

FIGURE 1F

ROUTE REVISIONS AT KP 31.3 - 31.6

ENBRIDGE PIPELINES INC.
PROPOSED LINE 10
WESTOVER SEGMENT REPLACEMENT PIPELINE PROJECT

664756

- Kilometre Post (KP) (Route filed December 2015)
- Kilometre Post (KP) (Route filed August 2016)
- Line 10 Replacement Pipeline Route (Route filed December 2015)
- Line 10 Replacement Pipeline Reroute (Route filed August 2016)
- 892 Highway
- Paved Road
- Gravel/Dirt/Loose Surface
- Conservation Authority Boundary
- Construction Right-of-Way
- Temporary and Extra Workspace

SCALE: 1:5,000
50 0 50 m
(All Locations Approximate)

ch2m

UTM Zone 17N
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Roads,Municipal Boundaries: Ontario Ministry of Natural Resources, 2015.

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ENBRIDGE

August 2016

FIGURE 1G

ROUTE REVISIONS AT KP 35.7 - 35.8

ENBRIDGE PIPELINES INC.
PROPOSED LINE 10
WESTOVER SEGMENT REPLACEMENT PIPELINE PROJECT

664756

- Kilometre Post (KP) (Route filed December 2015)
- Kilometre Post (KP) (Route filed August 2016)
- Line 10 Replacement Pipeline Route (Route filed December 2015)
- Line 10 Replacement Pipeline Reroute (Route filed August 2016)
- 892 Highway
- Paved Road
- Gravel/Dirt/Loose Surface
- Conservation Authority Boundary
- Construction Right-of-Way
- Temporary and Extra Workspace

SCALE: 1:5,000
m
50 0 50
(All Locations Approximate)

ch2m

UTM Zone 17N
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; Roads,Municipal Boundaries: Ontario Ministry of Natural Resources, 2015.

Although there is no reason to believe that there are any errors associated with the data used to generate this product or in the product itself, users of these data are advised that errors in the data may be present.

Mapped By: SL | Checked By: LA

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