Natural Gas Pipeline to Serve Southern Bruce: Environmental Protection Plan

FINAL REPORT

June 24, 2019

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Prepared for:

EPCOR Natural Gas Limited Partnership
39 Beech Street East
Aylmer, ON N5H 3J6

Prepared by:

Stantec Consulting Ltd.
300W-675 Cochrane Drive
Markham, ON L3R 0B8

Sign-off Sheet

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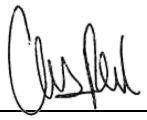
Prepared by 
(signature)

Chris Revak, B.Sc., CISEC
Environmental Scientist

Reviewed by 
(signature)

Rob Rowland, M.Sc., P.Geo.
Associate

Approved by 
(signature)

Rob Rowland, M.Sc., P.Geo.
Associate

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Abbreviations

AA	Archaeological Assessment
CHAR	Cultural Heritage Assessment Report
cm	centimetre
DFO	Fisheries and Oceans Canada
EASR	Environmental Activity and Sector Registry
EPCOR	EPCOR Natural Gas Limited Partnership
EPP	Environmental Protection Plan
ER	Environmental Report
ESA 2007	*Endangered Species Act, 2007*
ESC	erosion and sediment control
HDD	horizontal directional drilling
HDPE	high density polyethylene
HP	high pressure
Hydro One	Hydro One Networks Inc.
km	kilometre
LTC	Leave to Construct
m	metre
MBCA	*Migratory Bird Convention Act, 1994*
MECP	Ministry of the Environment, Conservation and Parks
MNRF	Ministry of Natural Resources and Forestry
MTCS	Ministry of Tourism, Culture and Sport

MVCA	Maitland Valley Conservation Authority
NPA	*Navigation Protection Act*
NPS	Nominal Pipe Size
OEB	Ontario Energy Board
OEB Environmental Guidelines (2016)	Ontario Energy Board's Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario, 7th Edition (2016)
OHA	Ontario Heritage Act
PSW	Provincially Significant Wetland
PTTW	Permit to Take Water
ROW	right-of-way
SAR	species at risk
SCN	soybean cyst nematode
Stantec	Stantec Consulting Ltd.
SVCA	Saugeen Valley Conservation Authority
TC	Transport Canada
TLU	traditional land use
TWE	temporary work easement

1.0 INTRODUCTION

Stantec Consulting Ltd. (Stantec), on behalf of EPCOR Natural Gas Limited Partnership (EPCOR) has developed this Environmental Protection Plan (EPP) for the installation of a natural gas pipeline in Southern Bruce and Grey County, Ontario, the “Project”.

This EPP outlines the required environmental protection measures and commitments to avoid and/or reduce the potential for construction to result in adverse effects upon the environment. These measures shall be carried out by EPCOR, their contractor and sub-contractors during construction (pre-construction, construction and post-construction) of the Project.

1.1 PROJECT SUMMARY

EPCOR has received a Leave to Construct (LTC) from the Ontario Energy Board (OEB) to construct a 75 km of Nominal Pipe Size (NPS) 8 to 6-inch steel high pressure (HP) pipe and approximately 52 km of NPS 6-inch high density polyethylene (HDPE) pipe (the Project natural gas pipeline in Southern Bruce and Grey Counties, Ontario.

The pipeline will originate from the Enbridge Dornoch Meter and Regulator Station in the Township of Chatsworth and terminate in the community of Lucknow in the Township of Huron-Kinloss. The pipeline will initially run west to service the communities of Chesley and Paisley and continue west to the Bruce Energy Centre. The pipeline will then travel south servicing the communities of Tiverton, Inverhuron, Kincardine, Lurgan Beach and Point Clark. Finally, the pipeline will then travel east, inland along Concession 4 to service the community of Ripley and terminate in the community of Lucknow .

The pipeline will be located within existing road allowances along the route (see Figure 1). A 5 metre (m) wide temporary working easement (TWE) is required along portions of the proposed route to accommodate construction activities.

1.2 PROJECT SCHEDULE

Pending the acquisition of approvals and permits, construction is expected to commence in Quarter 2 of 2019 and is anticipated to be completed in sections through 2019 to 2021. It is estimated to take approximately three years to complete.

Stantec

EPCOR

Legend

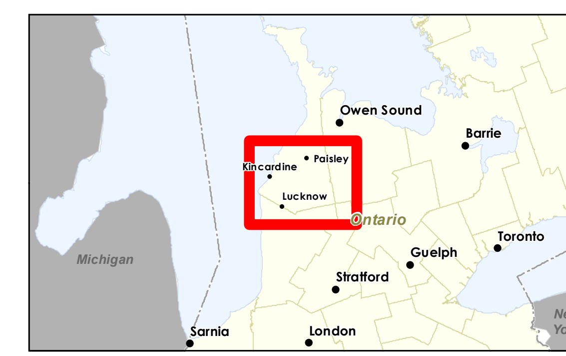
- Stage 1: 2019 Construction
- Stage 2: 2020 Construction
- Stage 3: 2021 Construction
- Expressway / Highway
- Major Road
- -UG- - Union Gas Pipeline (Approximately)
- Watercourse
- Municipal Boundary - Lower Tier
- MECP Boundary
- Waterbody

0 5 10 Kilometers

1:275,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2019.



Project Location
Counties Of Bruce,
Grey and Huron

160951129
Prepared by SPE on 2019-06-07
Technical Review by BCC on 2019-06-07

Client/Project
EPCOR NATURAL GAS LIMITED PARTNERSHIP (ENGLP)
NATURAL GAS SERVICE SOUTHERN BRUCE

Figure No.
1

Title
Location Map

1.3 BACKGROUND AND METHODOLOGY

This EPP includes both general and site-specific environmental protection measures which have been developed based on past project experience and current industry best management practices and consistency with the OEB Environmental Guidelines (2016): *Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario*, 7th Edition (2016). Specifically, the EPP:

- Outlines environmental protection measures related to Project activities.
- Provides instructions for carrying out construction activities to minimize environmental effects.
- Serves as reference information for the EPCOR Inspection Team to support decision making and provide links to more detailed information.

The EPP is written in construction specification format and should be read in conjunction with the Environmental Alignment Sheets (Appendix A). This EPP provides Project-related environmental mitigation measures and commitments to be addressed during the construction and post-construction reclamation phases. The EPP is based on information gathered through a combination of desktop review, field work and permitting documentation, including:

1. Proposed Natural Gas Pipeline to Serve Southern Bruce: Environmental Report (ER; Stantec 2018).
2. Professional experience.

1.4 PROJECT DESCRIPTION

The pipeline construction process includes various activities as described below.

1. **Site Preparation:** The first crew to enter the construction site is typically the survey and staking crew who delineate the boundaries of the road allowance and temporary work areas. Safety fence is installed at the edge of the construction road allowance where public safety considerations are required, and aspects of the traffic management plan are implemented (i.e., signs and vehicle access). Alternative access to sidewalks and trails are established, where necessary.
2. **Clearing:** The clearing crew clears brush and other vegetation within the road allowance and temporary work areas to permit construction of the pipeline.
3. **Stripping and ROW Preparation:** The contractor will prepare the road allowance for access by construction equipment. At this stage, the topsoil will be stripped where applicable and segregated so it will not be mixed with the subsoil later removed from the trench.
4. **Trenching:** Once the road allowance has been graded, a hydraulic hoe will excavate the trench for the installation of the new pipeline. Laneways and trails are left over the trench as long as feasible where requested by the landowner.

5. **Stringing:** The stringing crew lays pipe on wooden skids adjacent to the trench area.

6. **Pipe Fabrication and Lowering:** The pipe is bent as required and the welding crew welds the pipe into continuous lengths. The pipe welds are subjected to non-destructive testing and coated then inspected before the pipeline is lowered into the trench. Crews also install pipes under obstacles such as roads or watercourses by horizontal directional drilling (HDD). The welds are documented with global positioning system locations identified on the weld map along with the identification of each pipe section for future identification.

7. **Backfilling:** The backfilling crew backfills the originally excavated subsoil over the pipe in the trench. In shallow water table areas, the pipeline may be weighted to provide negative buoyancy. The trench line will be crowned to allow for soil settlement. Surplus backfill material will be removed from the road allowance.

8. **Pressure Testing:** The pipeline is then pressure tested hydraulically or pneumatically. If tested hydrostatically, water may be drawn from a suitable local source based on discussions with the appropriate authorities and will be disposed of appropriately (e.g., discharged to land or sanitary sewer, or removed by an approved waste disposal provider). Upon completion of hydrostatic testing, the pipeline is dried, purged of air and filled with natural gas.

9. **Clean-Up and Restoration**: The clean-up crew is responsible for the restoration of the road allowance and temporary work areas. In natural areas, the restoration includes re-seeding of the right-of-way (ROW) and restoring ditch banks, watercourse crossings and wetland areas, and removing erosion and sediment controls. In developed areas the clean-up crew undertakes landscaping plans developed for site restoration.

2.0 SCOPE OF ENVIRONMETAL PROTECTION PLAN

This EPP addresses the construction mitigation and reclamation of the Project and applies to the ROW, TWE, permanent or temporary access roads, staging areas, construction yards and pipe storage areas.

2.1 ORGANIZATION

The EPP is intended to provide an understanding of the general environmental setting of the Project; outline the extent and limitations of the EPP; document site-specific environmental protection measures of the Project identified during field survey and permitting; and provide general environmental protection measures or best management practices that are typically applied to pipeline projects. Environmental protection measures are identified in accordance with the progression of construction activities and are intended to be read in conjunction with the Environmental Alignment Sheets (Appendix A) and construction drawings. The Environmental Alignment Sheets identifies specific locations where environmental protection measures will be applied. The following outlines what is included in this EPP:

- **Sections 1-2** “Introduction and Scope of the Environmental Protection Plan”, outlines the general project description, scope of the EPP, and where information can be found in the EPP.
- **Section 3** “Environmental Compliance”, provides information about the tools and processes to facilitate compliance with regulatory approvals, permits, commitments and the requirements of the EPP. Section 3 also provides details on activities to be followed so that relevant stakeholders are notified of Project activities before the commencement of construction and the resolution mechanisms to address issues, non-compliances or revised construction requirements.
- **Section 4** “Preconstruction Measures”, outlines activities to complete the appropriate studies prior to commencing construction, review permits, identify other potential constraints (e.g., hot lines) and updating the EPP.
- **Section 5** “Resource-Specific Protection and Management Measures”, outlines procedures to be undertaken to protect site-specific environmental and cultural features (Section 2.2) that were identified pursuant to the ER for the Project (Stantec 2018). This information is documented and displayed on the Environmental Alignment Sheets (Appendix A). This section also includes the Erosion and Sediment Control (ESC) Plan for the Project and mitigation measures for “Found Resources” identified during construction.
- **Section 6** “General Environmental Protection Measures”, outlines general environmental protection measures required during construction of the Project.
- **Section 7** “Construction Mitigation Measures” outlines the environmental protection measures associated with vegetation clearing, topsoil handling and grading, pipe installation, watercourse and wetland crossings, backfilling, hydrostatic testing, clean-up and restoration.

- **Section 8** “References” outlines the references and permit documents accessed to complete the EPP.

Appendices to the EPP include the Environmental Alignment Sheets, typical drawings and Toronto Region Conservation Authority HDD Guidelines (TRCA, 2010).

2.2 SITE-SPECIFIC ENVIRONMENTAL AND CULTURAL FEATURES

Non-routine environmental protection measures that require site and species- specific mitigation have been developed for areas and species which require special attention regarding the protection of environmental resources including:

- Sensitive wetlands and watercourses
- Turtle nesting areas
- Bat maternal colony habitat
- Snake nesting areas
- Special conditions in CA permits
- Historical resource buildings
- Mitigation associated with vegetation clearing in potential bird nesting areas

2.3 SOURCES

Industry guidelines and regulations have been considered in the creation of the EPP include:

- OEB, Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario, 7th Edition (2016)
- Ministry of the Environment, Conservation and Parks (MECP) Waste Management Regulations (O. Reg 347)
- Authorization under the *Fisheries Act*, 1985. Following determination of final crossing methods, a fish habitat impact screening (self-assessment) should be completed to determine if Department of Fisheries and Oceans (DFO) review/authorization will be required
- Clearing of Vegetation under the *Migratory Bird Convention Act*, 1994 (MBCA)
- Review and Authorization under the *Navigation Protection Act*, 1985 (NPA)
- Encroachment Permit from Grey County
- Archaeological clearance under the *Ontario Heritage Act* (OHA)

- Review of Built Heritage and Cultural Landscape under the OHA
- Encroachment Permit under the *Highways Act*
- Tree Removal Permit from the Township of Huron-Kinloss
- Road Use Agreement from the Township of Huron-Kinloss
- Bruce County Forest Conservation By-Law No, 4071 (Exemption Permit)
- Crossing Permit from Hydro One Networks Inc. (Hydro One)
- Noise by-laws for the Municipality of Arran-Elderslie, Municipality of Kincardine, Township of Huron-Kinloss
- Species at Risk (SAR) Overall Benefit Permit under the *Endangered Species Act, 2007* (ESA 2007)
- Ministry of Natural Resources and Forestry (MNRF) Endangered Species Act Regulation (O. Reg. 230/08)
- Permits under *Ontario Regulations 169/06 and 164/06* (Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses), as per the *Conservation Authorities Act, 1990 from Saugeen Valley Conservation Authority (SVCA) and Maitland Valley Conservation Authority (MVCA)*
- Register water taking activities on the MECP Environmental Activity and Sector Registry (EASR) or Permit to Take Water (PTTW) as per the Ontario *Water Resources Act*, 1990

2.4 LIMITS AND DISPUTE RESOLUTION PROCESS

There may be a need to revise specific measures outlined in the EPP from ongoing consultation and landowner discussions, permitting requirements or to address unforeseen site-specific conditions that may arise during construction. If this were to occur, EPCOR will resolve the issue with the Project Manager, the Construction Manager, the EPCOR Environmental Lead and the Environmental Inspector in consultation with the appropriate regulators. The resolution and/or revision will be documented and communicated to the appropriate parties.

3.0 ENVIRONMENTAL COMPLIANCE

Introduction

Environmental compliance is facilitated through sharing of information, providing environmental orientations/training, hiring qualified staff and providing onsite inspection of activities through a pro-active and adaptive inspection program.

The EPP serves as the construction guide for environmental issues and commitments and includes pertinent environmental information from the ER (Stantec 2018).

Objectives

The objectives of these mitigation measures are:

- Relevant environmental regulatory requirements, approved environmental protection measures, and approved measures are known and consistently applied.
- Processes are in-place that allow access to Project environmental information to aid in decision making at the field level.
- Environmental Inspectors assigned to the Project are qualified and properly trained.

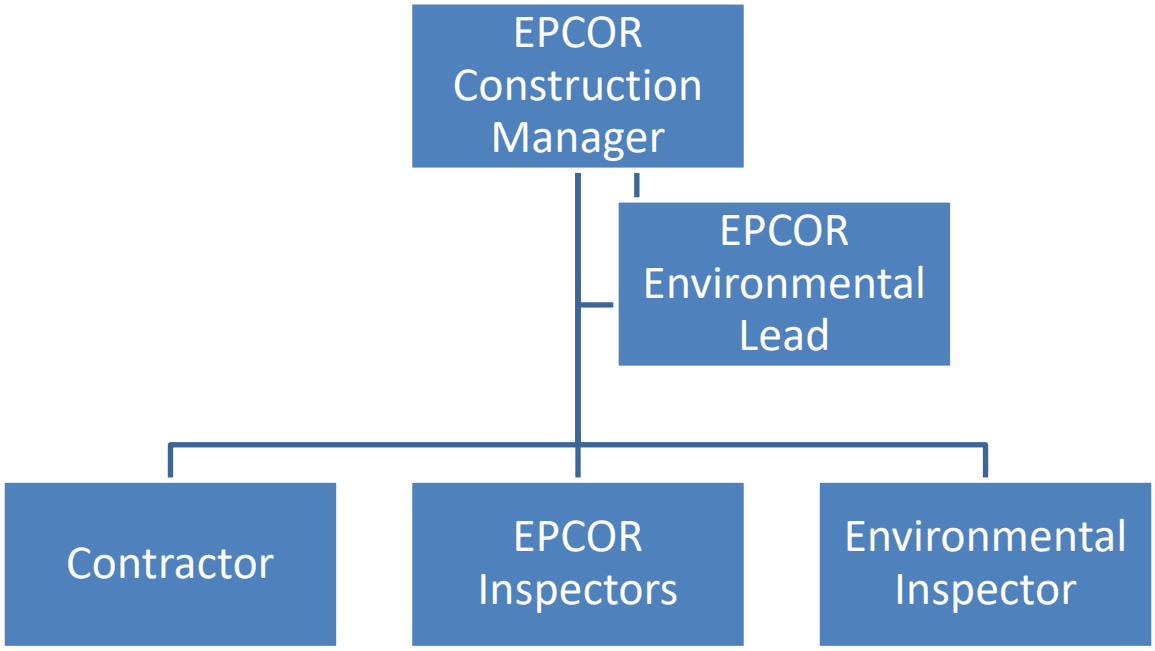
3.1 ENVIRONMENTAL MONITORING PROGRAM

The following table outlines the approach to the environmental monitoring during the Project:

Activity	Preparation Measures
Approvals and Licenses	1. Licenses/approvals/permits should be acquired prior to the commencement of construction. Conditions as presented on permits, approvals, licences, certificates and Project-specific management plans will be adhered to. Inconsistencies between permit conditions and contract documents shall be addressed prior to the commencement of construction. If there are conflicting mitigation measures identified, the most stringent will be followed.
Environmental Lead and Environmental Inspector	2. EPCOR will designate an Environmental Lead for the Project with an Environmental Inspector made available to assist with maintaining environmental compliance during work around sensitive areas.
Environmental Lead and Environmental Inspector's Qualifications	3. The EPCOR Environmental Lead and Environmental Inspector should have experience in pipeline planning/environmental inspection and will understand pipeline construction techniques.
Environmental Lead and Environmental Inspector's Responsibilities	4. The EPCOR Environmental Lead and the Environmental Inspector are responsible for overseeing that environmental commitments, undertakings and conditions of authorizations are met. In addition, the EPCOR Environmental Lead and the Environmental Inspector will monitor that work is completed in compliance with applicable environmental regulations and EPCOR policies, procedures and specifications in the most efficient and effective way possible.

Activity	Preparation Measures
Environmental Lead and Environmental Inspector's Responsibilities (cont'd)	5. Other responsibilities for the Environmental Inspector include: • providing expert advice and guidance on major decisions or courses of action to deal with issues that affect environmental features; • reporting spills in accordance with federal, provincial and municipal regulations and notification protocols and advising EPCOR management on the clean-up and disposal of the material and affected soils or vegetation; • preparing daily reports for submission to EPCOR as required; • review Project-related information prior to the commencement of construction; • preparing, collecting, organizing, and disseminating environmentally-related information and documentation that arises during construction as required by the EPCOR Environmental Lead; • liaise with appropriate government agencies in co-operation with the EPCOR Environmental Lead; • supervising and supporting environmental resource specialists that may be required to support the Project; • reviewing construction methodologies with the Construction Manager; and • collecting environmental information throughout construction for documentation and Project reporting.
EPP and Distribution	6. The EPP will be distributed to EPCOR inspection staff and responsible construction personnel prior to construction. Should updates be required, the EPCOR Environmental Lead will distribute as necessary.
Environmental Alignment Sheets	7. The Environmental Alignment Sheets (**Appendix A**) provide information regarding environmental requirements and will serve as detail to the Engineered Pipeline Construction Drawings.
Preconstruction Environmental Surveys	8. Contractor and Project inspection staff shall be provided with relevant results of preconstruction surveys to identify known locations of environmentally sensitive features (e.g., rare plants and animals, nests, dens, etc.). Site-specific mitigation measures for new sites should be identified on the Environmental Alignment Sheets.
Information Sharing	9. The EPCOR Environmental Lead or Environmental Inspector will facilitate the transfer of environmental information and updates to EPCOR field staff and the Contractor in a timely manner.
	10. A complete set of Environmental Alignment Sheets and environmental documents (i.e., EPP, permits and conditions, etc.) will be kept at the construction field office for the duration of the Project.
Environmental Communication	11. See Figure 2 for a flow chart of the environmental communication for the Project.

Figure 2: Environmental Communication



3.2 ISSUE RESOLUTION

During procedures such as pipeline excavation, HDD, etc., there may be non-compliances or construction techniques that require alteration in construction procedure and approval. Should it be necessary to report non-compliances or modify (create new environmental protection procedures) to address site conditions not anticipated in the EPP, the following processes will be followed.

Activity	Preparation Measures
Non-Compliances and Resolution	12. The EPCOR Environmental Lead or Environmental Inspector will be notified by the responsible person onsite when a non-compliance is identified, and it will be his/her responsibility to contact the Construction Manager. If the Construction Manager is not available during a non-compliance situation, the EPCOR Environmental Lead or the Environmental Inspector has the authority to modify work procedures or initiate work stoppage.
	13. The Construction Manager will either modify the work practice or shut the activity down until corrective actions are determined and implemented. The EPCOR Environmental Lead or the Environmental Inspector will assist in this decision-making process.
	14. If the work is shut-down, it will resume only when corrective actions have been developed and approved by EPCOR. Once approved by EPCOR, the Contractor can proceed utilizing the corrective action plan.
Non-Compliances and Resolution Documentation	15. The EPCOR Environmental Lead or Environmental Inspector will be responsible for daily documentation of procedure modifications to environmental protection measures included in this EPP, environmental non-compliances and providing notification of non-compliances and/or procedural modification to appropriate regulatory agencies.

3.3 NOTIFICATION OF CONCERNED PARTIES AND LANDOWNER ISSUES OR COMPLAINTS

Introduction

Notification of the construction schedule, denoting the timing of specific construction activities, will be provided to concerned parties and affected landowners. This allows regulatory agencies and affected landowners to plan, as appropriate, for construction activities in their area.

Objectives

The objectives of these mitigation measures are:

- Relevant regulatory agencies are kept informed throughout construction.
- Affected stakeholders are aware of Project activities.
- Landowners' issues are documented and addressed as appropriate.

Contacts	Measures
Federal, Provincial and Municipal Agencies	16. The Environmental Inspector or designate will inform appropriate federal and provincial resource agencies and interested municipal officials of the Project developments, as warranted.
Conservation Authority Consultation	17. Consultation should occur with SVCA staff and MVCA staff to determine appropriate mitigation and protective measures.
Landowner Consultation	18. Consultation has been initiated, and will continue, with landowners along the preferred pipeline route to identify methods of minimizing disturbance to their property and maintain access to agricultural fields to the extent possible.
Landowner Issues Log	19. Landowner requests and concerns as they arise in the field will be reviewed to confirm conformance with the environmental commitments. Landowner requests and concerns will be recorded in a Landowner Issues Log which will include the following: • times and dates of requests and complaints received; • the substance of each complaint; • actions taken in response; and • the reasons underlying such actions.
Flooding Notification	20. If flooding necessitates a change in the construction schedule, affected landowners and regulatory agencies should be notified and construction should continue at non-affected locations.
Municipal/Provincial Services Consultation	21. EPCOR should undertake direct consultation with schools and emergency services to communicate construction details and to determine where adjustments to construction logistics or mitigation measures may be warranted. Consultation should also occur with municipal personnel and the Kincardine Golf and Country Club to determine appropriate mitigation and protective measures.
Indigenous Consultation Log	22. Consultation with indigenous communities must be documented in an indigenous consultation log similar to the landowner issues log (Mitigation Measure #19).

4.0 PRECONSTRUCTION MEASURES

Introduction

The following measures will be implemented by EPCOR's Contractor(s) and subcontractor(s) before the initiation of clearing, ground disturbance or other construction activities.

Objectives

The objectives of these mitigation measures are:

- Appropriate surveys, sampling and permitting is completed prior to construction.
- Resources are properly identified and marked in the field before the initiation of ground disturbance to avoid or minimize potential Project effects.
- The construction TWE/ROW is properly delineated to prevent inadvertent trespass onto lands outside of the Project area.
- Access to and from the work sites are properly marked.

Activity/Concern	Mitigation Measures
Butternut Survey	23. Prior to tree removals. it is recommended that a Butternut survey be completed to confirm the presence or absence of this species in (or within 25 m of) the work area, in particular within the TWE. In the event that Butternut is found, a Butternut Health Assessment will be conducted and, if required, obtain authorization under the ESA 2007.
SVCA and MVCA Permits	24. Where work is to occur within conservation authority regulated areas, EPCOR will apply to the SVCA and MVCA for permits as per O. Reg. 16/09 and O. Reg. 164/06.
Stage 2 Archaeological Assessment	25. A Stage 2 Archaeological Assessment (AA) is required for the areas of the TWE if the work easements occur outside of the ROW, as well as for parts of the preferred pipeline route within the existing ROW to determine the presence of archaeological resources. Locations of archaeological resources are identified on the Environmental Alignment Sheets (**Appendix A**).
Heritage Assessment	26. Prior to construction, the Cultural Heritage Assessment Report (CHAR) will be undertaken and submitted to the Ministry of Tourism, Culture and Sport (MTCS) for their review and comment. Locations of CHAR are identified on the Environmental Alignment Sheets (**Appendix A**).
Water Well Monitoring Program	27. EPCOR may seek independent professional analysis to assess the need for, and to develop, a well monitoring program, if required.
SAR Awareness Program	28. Prior to activities, a work awareness program will be implemented that includes SAR identification and habitat characteristics.
Road Crossings	29. Approvals will be obtained from the municipalities and the Ontario Ministry of Transportation(MTO) for road crossings.

Activity/Concern	Mitigation Measures
Utility Lines	30. Necessary permits and conditions of the utilities infrastructure must be met and abided by (e.g., Hydro One). The contractor will be responsible for locating and exposing (as required) existing pipelines and utilities on lands which will be affected by trench excavation.
Staking	31. To prevent inadvertent trespass, stake the ROW, TWE, staging areas, etc., to clearly delineate boundaries.
Soybean Cyst Nematode	32. Soil sampling for Soybean Cyst Nematode (SCN) is recommended where construction activity is planned on agricultural crop lands to identify if the lands affected by the Project are already impacted with SCN as a result of past land use.
Environmental Protection Plan Update	33. Prior to construction, the EPP should be updated to add mitigation measures identified during permitting.

5.0 RESOURCE-SPECIFIC PROTECTION AND MANAGEMENT MEASURES

Introduction

This section of the EPP describes the specific environmental protection measures that will be used on the Project to protect identified sensitive environmental features; describe the specific ESC measures to be utilized to limit erosion and protect environmentally sensitive features; and the response in the event of biophysical or cultural resources are discovered.

Objectives

The objectives of these environmental protection measures are to:

- Identify and protect biophysical and cultural resources identified in the ER (Stantec 2018), by Indigenous groups and environmental regulatory agencies.
- Develop and implement the ESC Plan for the Project that minimizes risk of sedimentation to sensitive features during construction and after restoration.
- Describes the specific response measures should historical or Indigenous artifacts, human remains and/or SAR are identified during the construction phase of the Project.

5.1 SENSITIVE RESOURCES

Activity/Concern	Mitigation Measures
Timing Restrictions: Watercourses	34. In-water works for coldwater habitats is typically permitted from July 15 to September 1 (no work from September 2 to July 14). The SVCA also has an in-water construction window of June 1st to September 15th. In-water works for warmwater habitats is typically permitted from July 1 to March 14, i.e., no work from March 15 to July 14 (MNRF 2013).
Timing Restrictions: Migratory Birds	35. Construction activities such as vegetation clearing (within meadows, hay fields, woodlots, vegetated road ditches and pastures, etc.) with the potential to remove or disturb nesting birds or migratory bird habitat protected under the *Migratory Bird Convention Act* (MBCA), should be avoided to the extent possible during the breeding season which is generally from April 1- August 31 in southern Ontario (Environment Canada, 2014). Removals could take place during this restricted time period only if the requirements of the MBCA are met by completing nest clearing surveys by qualified individuals no more than seven days prior to clearing activities. See Mitigation Measure #44 (*Nest Searches)* in Section 5.1.
Timing Restrictions: Amphibians	36. Where practical avoid construction within 20 m of wetland communities during the amphibian breeding season (March 1 – June 30). See Environmental Alignment Sheets (**Appendix A)** for potential locations. Where construction occurs through wetlands via trenching silt fence will be installed on both sides of the road to prevent amphibians entering the construction area. See Environmental Alignment Sheets (**Appendix A)** for locations.

Activity/Concern	Mitigation Measures
Timing Restrictions: Bats	37. To mitigate disturbance or potential harm to roosting bats, tree clearing is to be completed outside the roosting timing window for bats (May 1 and August 31).
Timing Restrictions: Snakes	38. Where possible, removal of vegetation should be conducted between November 1 and April 15 when snakes are hibernating.
Environmental Resource Delineation	39. Minimize clearing and disturbance to natural areas to the extent possible, including sensitive areas such as unstable soils, wetlands, and areas of significant groundwater recharge or discharge. Trench plugs will be installed in areas adjacent to provincially and/or locally significant wetland and the Saugeen and Teeswater Rivers. Location of trench plugs are identified on the Environmental Alignment Sheets (**Appendix A**). Typical drawings of trench plug composition and installation are provided in **Appendix B**.
	40. Clearly mark sensitive resources, setbacks from watercourses, etc., identified on the Environmental Alignment Sheets (**Appendix A**) within the immediate vicinity before the start of clearing. Posts and rope or snow fencing may be necessary to delineate sensitive environmental resources along the TWE/ROW.
	41. Post signs in the vicinity of sensitive environmental features to alert workers of these items.
Wetlands and Riparian Zone Identification	42. A screening field program of wetlands and riparian areas should be undertaken prior to construction.
Watercourse/Wetland Crossings	43. Follow mitigation measures outlined in Sections 7.5 and 7.6 of this EPP, and conservation authority permits.
Nest Searches	44. In instances where vegetation clearing within the migratory bird restricted timing window is unavoidable, a nest search of the area to be cleared can be undertaken to identify nests of species protected under the MBCA. Nest searches in trees, shrubs and ground vegetation on and adjacent to the ROW will be conducted by a qualified wildlife biologist a maximum of 7 days before clearing activities commence. The results of the survey will be reported to the Environmental Inspector. In the event that an active nest is observed on or off the ROW, a species-specific setback distance to vegetation clearing will be recommended and adhered to. If construction does not commence within 7 days, another survey must be completed prior to construction activities.
Breeding Bird Setbacks	45. Restrict activities to a species-specific radius of an active nest in consultation with a qualified biologist.
Bat Maternity Colony Habitat	46. Construction activities are not anticipated to impact existing structures; however, if it is determined that a structure is required to be removed or altered during project construction, mitigation measures will be developed and implemented prior to building removal.
Avian Species at Risk	47. Vegetation removal should be avoided to the extent possible in adjacent grassland (i.e. hay, pasture or meadow), woodland or marsh habitat to avoid damage to potential avian species at risk habitat. Furthermore, construction equipment traffic adjacent to these habitats should be kept to the minimum necessary to complete the pipeline construction.
Wildlife/Livestock Encounters	48. If wildlife or livestock is discovered in the trench, or in other construction areas, report to the EPCOR Environmental Lead or the Environmental Inspector who will contact the applicable regulatory authorities, as required. In the case of livestock, the land agent assigned to the Project will contact the landowner.

Activity/Concern	Mitigation Measures
	49. Precautionary mitigation measures to be implemented in the unlikely event that a wildlife encounter occurs include: • Equipment and vehicles are to yield the right-of-way to wildlife; and • If wildlife is encountered during construction, personnel are required to move away from the animal and wait for the animal to move off the construction site on its own accord.
Wildlife Encounters Reporting	50. Report incidents with nuisance wildlife or collisions with wildlife to the Environmental Inspector, who will notify local wildlife authorities and the police as appropriate.
Nuisance Wildlife	51. Nuisance and large wildlife encounters (e.g., nuisance bears) or incidents involving wildlife should be reported to the MNRF.
Reptiles	52. Brush and trees felled should be removed immediately from the Project footprint to discourage use of these features by snakes.
	53. To mitigate project interaction with reptiles, a thorough visual search of the work area should be conducted by construction contractors before work commences each day during the reptile active season (April 15 – November 1). Visual searches will include inspection of machinery and equipment, prior to starting equipment. If reptiles are encountered during construction, work at that location will stop until the reptiles leave the project area on their own accord.
	54. Standard environmental protection measures for erosion and sediment control will also serve as a wildlife barrier where construction borders areas of natural vegetation.
Species at Risk Observation	55. If a SAR is observed, work should be stopped in the immediate vicinity to prevent harm or harassment of the individual and allow the species to passively remove themselves from the worksite. If the species does not remove themselves passively, it may potentially be removed by a qualified ecologist using approved MNRF handling protocols and relocated away from the construction area to prevent incidental harm as advised by the EPCOR Environmental Lead or the Environmental Inspector.
Wildlife Movements	56. Leave gaps in windrows (i.e., grubbing piles, topsoil, grade spoil, strung pipe) at obvious drainages and wildlife trails. Locations where wildlife gaps are appropriate will be determined in the field by the Environmental Inspector.

Activity/Concern	Mitigation Measures
Phragmites australis	57. In the event Phragmites is encountered, the following environmental mitigation and protective measures are recommended by the MNRF (2011) and Peterborough Stewardship Council Ontario Invasive Plant Council (Halloran et. al. 2013): • Avoid activities in phragmites area to the extent possible, demarcate areas of phragmites adjacent to the roadside and identify with appropriate signage. • In areas where phragmites cannot be avoided, clean machinery post construction. • Remove large accumulations of dirt using a compressed air device, high pressure hose or other device as necessary. Clean the vehicle starting at the top and working down, with attention to the undersides, wheels, wheel arches, guards, chassis, engine bays, grills and other attachments. • Clean vehicles, equipment and heavy machinery in an area where risk of contamination is low, ideally on a mud free hard surface, at least 30 m away from watercourses, waterbodies and wetlands, if possible. Cleaning should be completed adjacent to the source area to avoid contamination of other areas. • Place and seal Phragmites material removed during cleaning in a plastic bag and deposit it in a landfill. Locations of Phragmites have been identified on the Environmental Alignment Sheets (**Appendix A**).
Riparian Zones	58. Flag the edge of the riparian buffer zone before site disturbance occurs adjacent to wetlands and implement the appropriate mitigation measures (see Section 7.5).
Water Wells	59. Should a private water well be affected by project construction, a potable water supply should be provided, and the water well should be required or restored as required.
Archaeological Resources	60. The collection of Indigenous or historical resources by Project personnel is prohibited.

5.2 EROSION AND SEDIMENT CONTROL PLAN

Activity/Concern	Mitigation Measures
Sediment and Erosion Control Requirements	61. As an initial stage of construction, standard ESC methods should be implemented on active areas.
	62. Where there is potential for soil erosion, ESC measures should be determined by a qualified inspector.
	63. Where evidence of erosion exists, implementing corrective control measures as soon as conditions permit.
Permit Requirements	64. ESC measures required by regulatory authorities must be implemented as approved.
Natural Feature Preservation	65. Natural features should be preserved to the extent practical.
Soil Exposure	66. When land is exposed, the exposure should be kept to the shortest practical time.
Environmental Inspector's Recommendations	67. During the construction phase, the Environmental Inspector or the EPCOR Environmental Lead, in consultation with the Construction Manager and, if required, the appropriate regulatory authority, will determine appropriate procedures to be implemented to control/prevent soil erosion and sedimentation due to precipitation and wind throughout construction.
Watercourses/ Waterbodies/Wetlands	68. Exposed soils surrounding watercourses, waterbodies or wetlands should be seeded immediately following construction in consultation with the landowner or per regulatory specifications.
Temporary ESC	69. Temporary ESC measures should be maintained and kept in place until work within or near sensitive features has been completed and stabilized.
	70. ESC features should be improved or added to in areas requiring more protection.
	71. Temporary sediment control measures should be removed at the completion of the work but not until permanent ESC measures have been established.

Activity/Concern	Mitigation Measures
Water Erosion	72. Mitigation measures to protect against water erosion should be implemented and maintained as per this EPP and regulatory permits. ESC mitigation measures which may be utilized during construction include: • suspend construction until the risk of erosion has been reduced or the conditions improve; • construct temporary berms of subsoil, sandbags or bales during construction activities; • construct temporary cross ditches, if approved by landowner; • seed with annual cereal crop or sterile hybrid if approved by the landowner; • install sediment fence; • install cross ditches and diversion berms; • install Silt Soxx™; • armour berms and ditches with sediment control logs, polyethylene tarps or sandbags; • apply hydromulch, tackifier, terraseed or erosion control growth media blanket; • seed an annual cover crop; • plant native shrubs or willow cuttings; • crimp straw on exposed soil; • install netting, erosion control blanket; and/or • install and stake sod.
High Winds	73. During construction activities, weather should be monitored to identify the potential onset of high wind conditions which can cause wind erosion. Should high winds occur, protective measures such as the following should be implemented: • suspend earth moving operations; • apply dust suppressants; and/or • protect soil stockpiles with a cover, barrier or windscreen. In conjunction with the above measures, required materials and equipment should be readily accessible and available for use as required.
	74. Watering for dust control must not result in the formation of puddles, rutting by equipment or vehicles, the tracking of mud onto roads or the siltation of watercourses.
Slopes	75. Place ESC measures at intervals along the slopes where necessary.
ESC Typicals	76. ESC Typicals are included in Appendix B of this EPP.
Additional ESC Measures	77. ESC features should be improved or added to in areas requiring more protection.
Duration of ESC Measures	78. ESC measures should be maintained until disturbed ground has been permanently stabilized.
Re-vegetation	79. Final landscaping and vegetation should be installed as soon as practical (see Section 7.6 of this EPP).
Slope Re-establishment	80. Re-establishing slopes and applying hydro-mulching and hydroseeding with quick germinating seed mixture appropriate to surrounding vegetation immediately following construction and watercourse crossing.
Maintenance	81. ESC features should be regularly inspected and maintained. Repairs to ESC measures and structures must be completed within 48 hours if damage occurs.

Activity/Concern	Mitigation Measures
Monitoring Post-Restoration	82. Monitoring and maintaining ESCs during construction, restoration and rehabilitation until vegetative cover is established.
Clean-up and Reclamation	83. Remove sediment barriers that remain after disturbed areas are appropriately stabilized and revegetated.

5.3 UNPLANNED DISCOVERY OF ARCHAEOLOGICAL OR ENVIRONMENTAL RESOURCES AND HUMAN REMAINS

Activity/Concern	Mitigation Measures
Historical Resource and Traditional Land Use (TLU) Discovery	84. Should previously unknown archeological resources be uncovered or suspected of being uncovered during construction: • ground disturbance in the find location should cease immediately. • MTCS and an archaeologist licensed in the Province of Ontario should be notified immediately. • A site-specific response plan should then be employed following further investigation of the find. The response plan would indicate under which conditions the ground disturbance activity in the find location may resume. • Work shall not resume until Construction Manager provides approval. • The Environment Inspector will mark areas that are required to be avoided if applicable.
Discovery of Human Remains	85. If human remains are uncovered or suspected of being uncovered during ground disturbance, the following authorities should be notified: • local police; • the coroner's office; and • the Cemeteries Regulation Unit of the Ontario Ministry of Government and Consumer Services (1-800-889-9768).
Rare Plants / Rare Ecological Communities	86. If rare plants or ecological communities are discovered during vegetation studies, clearing, construction activities, etc., notify the EPCOR Environmental Lead or the Environmental Inspector. The plant or ecological community will be assessed for the location, relative rarity of the plant, local abundance, growth habitat and propagation strategy and the habitat preferences. Appropriate mitigative measures will be determined by the resource specialist and may include delineation and avoidance, temporary cover, extending HDDs, realigning route or the propagation and transplanting. Appropriate mitigation measure will be determined by the resource specialists.
Sensitive Species or SARs	87. Report sightings of sensitive species or SARs to the Environmental Inspector. Sightings of SARs are to be reported to MNRF within 24 hours. Specific protection measures may be implemented and the sighting will be recorded in daily reports and located on the environmental as-built alignment sheets. See Mitigation Measure #50; *Wildlife Encounters Reporting* in Section 5.1 (*Sensitive Resources*).

6.0 GENERAL ENVIRONMENTAL PROTECTION MEASURES

Introduction

The general environmental protection measures provided below are applicable to work areas throughout the construction phase. These general measures are followed by detailed specifications for each phase of new pipeline construction.

Objective

The objective of these mitigation measures is to avoid and reduce the potential environmental effects associated with general pipeline construction activities.

Activity/Concern	Mitigation Measures
Work Hours	88. To the greatest extent practical, actives that could create noise should be restricted to daylight hours and adhere to local noise by-laws.
Construction Duration	89. Construction should be conducted as expeditiously as possible, to reduce duration of activities.
Waste Disposal	90. Construction debris and other waste materials will be collected by the Contractor and disposed of at a landfill.
Invasive Species Management Plan	91. An invasive species management plan should be developed, as measures (e.g., equipment washing before site access) may be necessary to mitigate the spread of invasive species and weeds.
Public Access	92. Access to residential properties must be maintained.
	93. Discourage unauthorized public vehicle access within the TWE/ROW using signs and gates, where required.
Public Safety	94. Safety fence will be installed at the edge of the construction TWE/ROW where public safety considerations are required.
	95. Safety fencing will be installed where necessary to separate the work area, and signs will be placed as necessary to direct pedestrian's safety around the work area.
ATV Use	96. Recreational use of all-terrain vehicles (ATVs) by construction personnel on the TWE/ROW is prohibited.
Local Procurement	97. EPCOR should make reasonable efforts where practicable to procure services and materials from local suppliers, where services or materials are available in required quantity and at competitive prices.
Fire Prevention	98. Project personnel must be made aware of the proper disposal methods for welding rods, cigarette butts, and other hot or burning material.
	99. Smoke only in designated areas.
	100. Appropriate emergency fire suppressant equipment should be stored on site for each piece of equipment.
Wildlife Harassment	101. Project personnel are not permitted to hunt or fish on the work site. Construction personnel will not threaten, harass of injure wildlife.
Use of Workspace	102. Construction activities and traffic will be restricted to the approved TWE/ROW, existing roads and planned access.

Activity/Concern	Mitigation Measures
Demolition of Existing Structures	103. Construction activities are not anticipated to impact existing structures; however, if it is determined that a structure is required to be removed or altered during project construction, mitigation measures will be developed and implemented prior to building removal.
Significant Precipitation Event	104. Work should be limited or stopped during and immediately following significant precipitation events (i.e. 100-year storm event), at the discretion of on-site environmental personnel.
Climatic Conditions	105. To reduce construction impacts associated with wet climatic conditions, the other components of the construction are recommended to occur during dry soil conditions.
	106. Lands affected by heavy rainfall events and wet soil conditions should be monitored, to avoid the potential for topsoil and subsoil mixing.
	107. Following periods of excessive rainfall or saturated soil conditions, construction activities on agricultural lands should be suspended. During wet soil conditions heavy tracked and rubber-tired vehicles should be restricted from movement on agricultural soils. Usually, construction may continue from gravel or existing roadside work surfaces during wet soil conditions.
Wet Weather Shutdown	108. Construction activities should be temporarily halted on lands where excessively wet soil conditions are encountered. EPCOR's on-site inspection team should determine when construction activities may be resumed.
Wet Weather Conditions	109. Soils are considered excessively wet when the planned activity could cause damage to soils either due to rutting by traffic through the topsoil layer into the subsoil; soil structure damage during soil handling; loss of topsoil due to erosion, compaction and associated pulverization of topsoil; and topsoil structure damage due to heavy traffic.
Construction During Wet Conditions	110. If a situation develops that necessitates construction during wet soil conditions, soil protection measures should be implemented, such as: confining construction activity to the narrowest area practical, installing surface protection measures, and using wide tracked or low ground pressure vehicles.
Agricultural Drains	111. Although not anticipated in the road ROW in the event fields with tile drainage are encountered along the route, the following mitigation measures should be followed: • Excavate the pipeline trench to a depth that would allow clearance between the top of the pipeline and the bottom of existing drainage systems. • Record and flag severed or crushed tile drains. • Temporarily repair main drains, header drains, or large diameter drains, if severed, to maintain drainage and prevent flooding of the TWE and adjacent lands. • Cap the downstream side of the severed drains that cross the trench to prevent entry of soil, debris and rodents. • Repair damaged and severed drains following construction. • Before backfilling, invite the landowner to inspect and approve the repair(s).
Traffic Laws	112. Construction traffic will adhere to safety and road closure regulations, and the appropriate traffic control management procedures.

Activity/Concern	Mitigation Measures
Vehicle Requirements	113. During construction, motorized construction equipment should be equipped with mufflers and silencers as available.
	114. Company and construction personnel should avoid idling of vehicles; vehicles or equipment should be turned off when not in use unless required for operation of the vehicle or equipment.
	115. The contractor should implement site practices during construction that are in line with the Environmental Canada document 'Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities' (Cheminfo Services Inc., 2005), which may include: • Maintaining equipment in compliance with regulatory requirements. • Protecting stockpiles of friable material with a barrier or windscreen in the event of dry conditions and dust. • Dust suppression of source areas. • Covering loads of friable materials during transport.
Road Closures	116. If a road closure is necessary, EPCOR will work with the appropriate representatives to develop a plan to maintain access and for communication.
Traffic Management Plan	117. A traffic management plan will be implemented for roads affected by construction, which at a minimum, outlines measures to: • Control the movement of materials and personnel to and from the construction site • Post signs to warn oncoming motorists of construction activity • Control traffic at road crossings • Reduce on-road disturbance and land closures • Store equipment as far from the edge of the road as practical • Install construction barricades at road crossings
	118. If road crossings via open cut are required a Traffic Management Plan will be developed.
Hazardous Substance Storage	119. Deleterious substances (fuel, oil, spoil) should be stored >30 m from the watercourse. A deleterious material that inadvertently enters a watercourse should be removed in a manner satisfactory to the environmental inspector
Welhead Protection Area	120. Fuel should not be stored within an Wellhead Protection Area (WHPA-A). See Environmental Alignment Sheets (Appendix A) for details.
Refuelling and Maintenance	121. Equipment maintenance and refueling should be controlled to prevent entry of petroleum products or other deleterious substances, including debris, waste, rubble or concrete material, into a watercourse, unless otherwise specified in the contract.
	122. Refueling of equipment should be undertaken 50 m from wetland areas identified during field surveys, watercourses (particularly Lake Huron and its nearby tributaries), significant groundwater recharge areas and WHPAs to reduce potential impacts to surface water and groundwater quality in the event that an accidental spill occurs.
	123. Refueling of equipment should be undertaken using a two-person refueling system with one worker at each end of the hose.
	124. Fuel nozzles should be equipped with automatic shut-offs.

Activity/Concern	Mitigation Measures
	125. The contractor should implement management protocols such as secondary containment of temporary fuel storage and preparation of a spill response plan.
	126. Bulk fuel trucks, service vehicles and pick-up trucks equipped with box-mounted fuel tanks shall carry spill prevention, containment and clean-up materials that are suitable for the volume of fuels or oils carried. Spill contingency material carried on bulk fuel and service vehicles shall be suitable for use on land and water.
	127. Inspect hydraulic, fuel and lubrication systems of equipment to confirm systems are in good working condition and free of leaks. Equipment to be used in or adjacent to a watercourse or waterbody during emergency response during an HDD will be clean or otherwise free of external grease, oil or other fluids, mud, soil, and vegetation.
	128. An impervious tarp shall be in place underneath equipment/vehicles when servicing equipment/vehicles with the potential for accidental spills (e.g., oil changes, servicing of hydraulic systems, etc.) in accordance with regulatory conditions.
Pets	129. No pets are permitted on the work site.
Noise	130. Contractor should adhere to local noise by-laws and take reasonable measures to control construction related noise near residential areas. Alter equipment, erect noise barriers, or change the work schedule if excessive noise becomes a nuisance to nearby residents.
	131. Where pipeline installation will take an extended time to complete, such as watercourse and road crossings, an assessment should be undertaken to determine the suitability and effectiveness of temporary noise barriers adjacent to residential or business properties.
	132. Sources of continuous noise, such as portable generators, should be shielded or located to reduce disturbance to residents and businesses
Private Access	133. Where agricultural land adjacent to the ROW is typically accessed by crossing the ROW alternate access to the fields will be provided for the farm operator for the short period of time during construction that access across the ROW is not possible.
Emergency Services Consultation	134. EPCOR should undertake direct consultation with schools and emergency services to communicate construction details and to determine where adjustments to construction logistics or mitigation measures may be warranted.
Washing Equipment	135. Equipment or machinery shall not be washed within 100 m of watercourses or wetlands.
Air Quality / Emissions	136. The contractor must have well-maintained equipment during construction and maintenance activities to reduce emissions.
	137. Where practical, use multi-passenger vehicles for the transport of crews to and from the job sites.
	138. The contractor should implement site practices during construction that are in line with the Environment Canada document 'Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities' (Cheminfo Services Inc. 2005.), which may include: • Maintaining equipment in compliance with regulatory requirements. • Protecting stockpiles of friable material with a barrier or windscreen in the event of dry conditions and dust. • Dust suppression of source areas. • Covering loads of friable materials during transport.

Activity/Concern	Mitigation Measures
Dust Control	139. Where Project traffic creates a hazardous or irritating level of dust to nearby residents, dust control on existing access roads will be achieved through the application of calcium carbonate (or equivalent) or water.
	140. Speeds for vehicles should be controlled and reduced in high wind conditions.
Contaminated/ Suspect Soils Notification	141. Should potentially contaminated soils be encountered during construction, EPCOR should notify the EPCOR Environmental Lead immediately. The EPCOR Environmental Lead in consultation with the Environmental Inspector will determine if conditions are suitable to resume work.
Dewatering Within Contaminated Soil Trench	142. If dewatering is required in a contaminated soil area, see Section 7.4.
Spill Notification	143. In the unlikely event of a spill, spills containment and clean-up procedures should be implemented immediately. EPCOR will contact the MECP Spills Action Centre. The MECP Spills Action Centre is the first point of contact for spills at the provincial and federal level.at **1 (800) 268-6060** for reportable spills.
	144. In the event of a spill or inadvertent drilling mud release in a CA regulated area; the CA should be contacted immediately.
Spill Response Plan	145. Following initial response of a spill of a hazardous material, the following containment procedures should be carried out: • Notify supervisor immediately and warn others working near the spill. • Identify the product, stop the release at the source and physically contain the spill as soon as safe to do so. • Avoid use of water or fire extinguishing chemicals on non-petroleum product spills since many chemicals react violently with water and chemical extinguishing agents may release toxic fumes. In addition, chemicals may be soluble in water and dispersal makes containment and clean-up more difficult. • Spilled petroleum product is contained. • The contaminated area is cleaned-up. • Dispose of sorbent pads, contaminated soil and vegetation at an approved facility.
Spill Containment Within or Adjacent to Wetlands and Watercourses	146. Follow the general guidelines listed below for spills adjacent to or in a watercourse or wetland (in addition to mitigation measures listed in Mitigation Measure #148): • Construct berms and/or trenches to contain spilled product prior to entry into a watercourse or wetland. • Deploy booms, skimmers, sorbents, etc., if feasible, to contain and recover spilled material from a watercourse or wetland. • Clean up spilled product. • Implement additional clean-up measures resulting from consultation with the appropriate regulatory authorities.

Activity/Concern	Mitigation Measures
Waste Management	147. The construction contractor should implement a site-specific waste collection and disposal management plan, which may include: • Waste materials, sanitary waste and recycling transported off-site by private waste contractors licensed by the MECP • The responsible management of fill. • Labelling and storage of hazardous and liquid wastes in a secure area that would contain material in the event of a spill. • Implementation of a waste management program consisting of reduction, reuse, and recycling of materials.

7.0 PIPELINE CONSTRUCTION

Pipeline construction includes general environmental protection measures to be considered throughout new pipeline construction, survey and foreign utility locates, vegetation clearing, topsoil salvage and grading, pipe activities, watercourse and wetland crossings, hydrotesting, backfill and clean-up.

7.1 SURVEY AND LOCATES

Introduction

The mitigation measures outlined in this section apply to the ROW and TWE prior to ground disturbance. Identification of foreign crossings such as other pipelines, utility lines (buried, laying on the ground or overhead), communication cables, roads, railway lines and other underground structures will also be identified prior to construction.

Objectives

The objectives of these environmental protection measures are to:

- Limit the Project footprint to the approved workspace.
- Avoid or reduce the potential disturbance of site-specific environmental resources.
- Locate utility line crossings in consideration of environmental resources.

Activity/Concern	Mitigation Measures
TWE/ROW Staking	148. The limits of clearing should be surveyed and clearly staked in the field.
	149. Maintain staking, fencing, flagging and signage during construction.
	150. The Construction Manager should verify the final alignment and areas of environmental concern have been properly flagged, staked and/or fenced.
Flagging HDD Drillpath	151. Before starting HDD operations, the drilling contractor or surveyor will clearly flag the expected drill path on both sides of the watercourse.
TWE/ROW Locations	152. Workspaces, unless necessary for watercourse crossings, should be located above the floodplain to the extent practical.
	153. Minimize clearing and disturbance to natural areas to the extent possible, including sensitive areas such as unstable soils, wetlands, and areas of significant groundwater recharge or discharge.
Work around Above and Below Ground Infrastructure	154. Existing pipelines and utilities on lands which will be affected by trench excavation and or drilling will be located, flagged and/or exposed.
	155. Lines that may interfere with the operation of construction equipment will be identified with warning poles strung together with rope and suspended red flags. In addition, crossing agreements and the conditions required with utilities, including Hydro One, etc., will be adhered to at all times.

Activity/Concern	Mitigation Measures
Clean-up of Flagging/Stakes	156. After reclamation is complete, remove stakes, flagging and fencing, and dispose of at an approved landfill facility or re-use as suitable.
Hydrovacing	157. On agricultural land, salvage topsoil over the foreign line(s) prior to exposing with a hydrovac where possible.
	158. Empty the hydrovac truck at approved locations in adherence to local provincial and municipal regulations. Hydrovac material should be contained within the designated release area (i.e., will not migrate to a waterbody or onto topsoil). Backfill holes with clean fill when work is completed.

7.2 VEGETATION CLEARING

Introduction

The following measures will be implemented by EPCOR's Contractor(s) and subcontractor(s) during the clearing phase of pipeline construction.

Objectives

The objectives of these environmental protection measures are to:

- Limit the disturbance to wildlife, watercourses and wetlands.
- Reduce the potential for erosion that facilitates reclamation of disturbed areas.

Activity/Concern	Mitigation Measures
Timing	159. Avoid clearing during the bird breeding and nesting window (see Section 5.1 Sensitive Resources). If clearing is required during the breeding season, nest searches and a habitat assessment for bat SAR must be completed. See Mitigation Measure #44 in Section 5.1.
	160. Clearing should be done during frozen or dry soil conditions to the extent practical to limit disturbance to vegetation and terrain.
Tree Permits	161. Tree cutting should be done in consideration of municipal bylaws relating to tree preservation throughout the preferred pipeline route.
Limits	162. Vegetation removal should be avoided in adjacent grassland (i.e. hay, pasture or meadow), woodland or marsh habitat to avoid damage to potential avian SAR habitat.
	163. The limits of the construction footprint should be identified in the field, to allow for the protection of off-site natural areas and vegetation.
	164. Do not allow clearing or grubbing beyond the staked and/or flagged construction TWE/ROW boundaries.
Bird Nest Discovery	165. If trees and/or grass/meadow area within or directly adjacent to the TWE/ROW is to be cleared and contains an active bird nest, immediately suspend the work activity near the nest. Fence and/or flag off the area with the appropriate set-back see Section 5.1 *Sensitive Resources*.
Tree Removal	166. Brush and trees felled should be removed immediately from the Project footprint to discourage use of these features by snakes.

Activity/Concern	Mitigation Measures
Tree Replacement Program	167. If trees are required to be removed, tree replacement should be undertaken satisfactory to the landowner, and consistent with municipal requirements.
Clearing on Slopes	168. On erosion-prone or steep slopes, consider postponing grubbing and stumping until immediately prior to the pipeline grade activity, leaving a temporary buffer zone extending back from the crest of the slope, implementing hand clearing, or using equipment capable of harvesting on slopes which leave stumps and roots in place.
Clearing Near Watercourses	169. Clearing of vegetation or grading should not occur within the limit specified in the applicable permits, or within 15 m if the watercourse is not regulated.
	170. Postpone clearing near watercourses and wetlands until immediately prior to crossing construction except, if necessary, to install vehicle travel routes through wetlands. Where the EPCOR Environmental Lead approves earlier clearing, leave the vegetative ground mat and root structure intact.

7.3 TOPSOIL SALVAGE AND GRADING

Introduction

Construction is scheduled to occur during non-frozen conditions. Topsoil will be salvaged during construction and stored for restoration, ensuring that appropriate material handling procedures are implemented as required.

Objectives

The objectives of these mitigation measures are to:

- Conserve soil resources and maintain post-construction soil productivity.
- Reduce impacts on agricultural productivity, surface drainage patterns and aquatic, wetland and wildlife habitat.

Activity/Concern	Mitigation Measures
Topsoil Stripping	171. To avoid loss of soil, topsoil from lands directly affected by construction of the pipeline should be stripped.
	172. Topsoil should be stripped and salvaged during dry soil conditions and stockpiled for use during cleanup and rehabilitation.
	173. Identification of the topsoil and subsoil interface should be carefully monitored so that topsoil with limited subsoil is stripped from the easement.
	174. Two-lift (topsoil/spoil) soil salvage will occur in areas where topsoil is present along the TWE/ROW.
Environmental Inspection	175. The Environmental Inspector should oversee topsoil salvage in areas where: • there is poor colour change between topsoil and subsoil; • there are erodible soils; • a three-lift soils handling method is required; and/or • there is uncertainty about the depth of topsoil salvage.

Activity/Concern	Mitigation Measures
Stripping Width	176. Topsoil stripping on the ROW should be sufficiently wide so that topsoil will be stockpiled on topsoil and subsoil will be stockpiled on subsoil.
Erosion and Sediment Controls	177. ESC measures must be installed where practical at sensitive features (watercourses and wetlands) prior to stripping and monitored throughout construction (see Section 5.2 for specific measures).
Soil Stockpiles	178. In locations prone to erosion, soil stockpiles should be protected with silt fencing. At least 1 m should separate soil piles to avoid mixing topsoil with subsoil. On agricultural lands, subsoil should be stored on lands stripped of topsoil (subsoil on subsoil).
	179. Topsoil or spoil material should not be stored under the drip lines of trees, including spoil.
	180. On agricultural lands, spoil should be stored on lands stripped of topsoil (i.e., spoil on subsoil).
Landowner Requests	181. Accommodate topsoil salvage preferences of the landowner, if feasible. Record locations where the landowner has requested topsoil handling which differs from original plans.
Graded Material Storage	182. Do not store or push graded materials in to treed areas. Graded material must not spread off the construction TWE/ROW.
	183. At locations where topsoil salvage occurs to accommodate grading requirements, differentiate the soil piles/windrows from the graded materials with a suitably marked survey stake or sign.

7.4 PIPE ACTIVITIES (EXCAVATION, STRINGING, WELDING, COATING, DEWATERING)

Introduction

The general mitigation measures provided below are applicable to work areas throughout the TWE/ROW where pipe activities are occurring.

Objectives

The objectives of these mitigation measures are to:

- Minimize landowner and wildlife disruptions.
- Avoid impacts during dewatering of trenches and hydrostatic test.
- Not leaving waste and garbage onsite.

Activity/Concern	Mitigation Measures
Trench Construction Duration	184. Trench construction should be limited in duration and followed as closely as practical with backfill operations, to facilitate the minor occurrences of wildlife movement across the trench.
Landowner Disruptions	185. Coordinate with landowners to reduce access disruption caused by trenching or pipe stringing.
Landowner Access	186. Where agricultural land adjacent to the TWE/ROW is typically accessed by crossing the TWE/ROW, an alternate access to the fields or additional compensation should be provided for gored lands.
Gaps	187. If requested by the landowner, under permit requirements or the appropriate regulatory authority, leave gaps in strung pipe, welded pipe and spoil windrows at regular intervals to allow passage of vehicles and wildlife.
Pipe Caps	188. Cap pipe ends to prevent wildlife from becoming trapped or confined. If pipe caps are not installed, check for confined or trapped animals prior to pipe movement/ installation.
Welding and Coating	189. Do not leave spent welding rods, filings/shavings from end preparation, or cut off pipe rings on the ground or in the trench. During bevelling operations, collect pipe bevel shaving debris to prevent wildlife from ingesting the shavings.
Sandblasting	190. Clean-up of sandblasting material should occur to the extent practical.
Overspray of Coating	191. Where spray or paint-on coatings are applied, place a tarp of sufficient size to block overspray from contacting the ground under the operation.
Daily Inspections	192. Inspect the trench at the start of each day and coordinate with the Environmental Inspector to remove trapped animals from the trench before commencing construction activities.
Excavation Instability	193. Where excavations of the trenches occur in immediate proximity to the roads or road embankments, the use of a temporary shoring system such as trench boxes (or a more rigorous shoring system for deeper sections) will be required to mitigate potential disturbance/damage to the road and existing infrastructure.
	194. The open cut excavations must be conducted in accordance with the requirements of the *Occupational Health and Safety Act* and Regulations.
Permit to Take Water	195. PTTW or ESAR will be required from the MECP if it is anticipated that groundwater dewatering may exceed 50,000 litres/day.
Dewatering	196. Visually inspect trench water for debris (e.g., floating solids, visible foam) and/or hydrocarbon sheen prior to dewatering. Remove floating debris, if feasible, prior to release. If a hydrocarbon sheen is observed, implement the mitigative measures presented under the '*De-Watering Trench with Potential Contaminants'* heading below. If evidence of contamination is present, contact the Environmental Inspector or the EPCOR Environmental Lead immediately.
	197. To reduce the potential for erosion and scouring at dewatering points, energy dissipation techniques should be used.
	198. At dewatering points, discharge piping should be free of leaks and should be properly anchored to prevent bouncing or snaking during surging. Protective measures may include dewatering at low velocities, dissipating water energy by discharging into a filter bag or equivalent and utilizing protective riprap or equivalent. If energy dissipation measures are found to be inadequate, the rate of dewatering should be reduced or dewatering discontinued until satisfactory mitigation measures are in place.

Activity/Concern	Mitigation Measures
	199. Use a floating suction hose equipped with a screen and elevated intake, or other measures, to prevent sediment from being sucked from the bottom of the trench.
Secondary Containment of Pumps	200. Place equipment (e.g., pumps, generators) on polyethylene sheeting or other suitable containment to prevent spills. Where possible, place equipment above the normal high-water mark of watercourses or wetlands.
Discharge Area	201. Dewatering should be a minimum distance of 30 m from a watercourse or wetland with the flow path not occurring directly into either a wetland or a watercourse. Discharged water should not enter a wetland or watercourse.
	202. Discharged water must be retained on the property where it was encountered.
	203. Obtain approval from municipality and downstream landowner(s) if water is to be discharged into a bar ditch or could otherwise leave the property.
Dewatering Discharge Entering Waterbody	204. If dewatering discharge reaches a local watercourse, waterbody or wetland, discharge water must not exceed the least stringent criterial of 8 Nephelometric Turbidity Units (NTUs) above or 10% above the background levels of the nearest water body.
Dewatering in Wetlands	205. Do not dewater wetlands. Although temporary dewatering may be required during trenched wetland crossings, water should not be permanently removed from the wetland. Options for trench dewatering within wetlands should be discussed with the Environmental Inspector, the EPCOR Environmental Lead and the appropriate regulatory authority to develop the appropriate plans.
Dewatering Trench with Potential Contaminants	206. If anticipation of dewatering a trench with suspected potential contaminants which could become dissolved, the EPCOR Environmental Lead must be immediately notified and will provide guidance.

7.5 WATERCOURSE AND WETLAND CROSSINGS

Introduction

Pipeline construction has the potential to affect habitat, hydrologic and water quality functions of wetlands and watercourses. Construction activities may be minimized in wetlands and/or special construction techniques may be necessary to reduce disturbance to plants, soils and wetland function (e.g., hydrologic, water quality and habitat).The mitigation measures outlined in this section apply to watercourses and wetland crossings on or near the ROW and TWE.

Objectives

The objectives of these mitigation measures are to:

- Avoid or reduce adverse effects to watercourses.
- Comply with the CA and other regulatory, permit, and approval conditions.
- Employ environmentally and economically responsible construction practices in accordance with applicable industry standards.

- Protect riparian areas in proximity to watercourse crossings.
- Maintain the ecosystem function of riparian areas.
- Minimize siltation.
- Maintain wetland function.
- Prevent water pollution/contamination during construction in/near wetlands.

Activity/Concern	Mitigation Measures
Watercourse Crossing Methods	207. To the extent possible, watercourses and wetlands will be crossed using HDD methods.
In-water Work Timing Conditions	208. In-water work for coldwater habitats is typically permitted from July 15 to September 1 (no work from September 2 to July 14) (MNRF 2013). . In water works for warmwater habitats is typically permitted from July 1 to March 14 (no work from March 15 to July 14) (MNRF 2013).Consult the Environmental Alignment Sheets (Appendix A) for timing restrictions during an HDD.
Permit Conditions	209. Conditions of water crossing permit(s), if applicable, will be adhered to (see Environmental Alignment Sheets in Appendix A for watercourse crossing with permits).
Permit Review	210. CA permits will be reviewed prior to construction with applicable parties and will be kept onsite for the duration of the HDD. Conditions of water crossing permit(s), if applicable, will be followed. The SVCA also has an in-water construction window of June 1st to September 15th.
DFO Requirements	211. DFO's website (http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/measures-mesures-eng.html) should be consulted immediately prior to construction to confirm that the construction plan is consistent with the most up-to-date list of DFO avoidance measures.
Notification	212. Notifications will be completed in accordance with permits and authorizations issued for the Project.
Watercourse Obstruction	213. Watercourses should not be obstructed in a way that impedes the free movement of water and fish.
Sediment and Erosion Control	214. Prior to removal of the vegetation cover, effective mitigation techniques for ESC should be in place to protect water quality.
	215. Standard ESC measures should be implemented around drill and pipe staging areas.
	216. Disturbance to the area during construction should be limited and grubbing activities should be delayed until immediately prior to grading operations.
	217. Soil exposure should be reduced prior to commencing construction, and the period that soil remains exposed for grading should be limited. Exposed soils surrounding watercourses should be seeded immediately following construction.
	218. Temporary ESC measures should be maintained and kept in place until work within or near a watercourse has been completed and stabilized. Temporary sediment control measures should be removed at the completion of the work but not until permanent erosion control measures have been established.

Activity/Concern	Mitigation Measures
	219. Where erosion potential is elevated (i.e., steep slopes, coarse textured soils, etc.), secondary and tertiary erosion control measures will be put in place at the discretion of the Environmental Inspector.
Vehicle Crossings	220. Do not ford watercourses. Watercourses will be crossed using existing municipal infrastructure (culverts, bridges, etc.). No new vehicle or equipment crossing structures will be implemented over watercourses during construction.
Environmental Inspection	221. Environmental inspectors should be present during crossing of the watercourses supporting aquatic SAR (see Appendix A). The Environmental inspectors will be present to monitor for accidental mud release into these watercourses during HDD activities.
Construction Material Storage	222. Construction material, excess material, construction debris and empty containers should be stored away from watercourses and watercourse banks.
Trenchless Crossings (HDD)	223. Before the installation of the water crossing and the commencement of in-water activity, the Contractor will confirm that necessary equipment and materials, including those necessary for contingency measures are available and onsite.
Trenchless Crossings (HDD) (cont'd)	224. For pipeline crossings conducted using a trenchless crossing method, follow the mitigation measures outlined in TRCA's Horizontal Directional Drill Guidelines (2010; see Appendix C).
Entry/Exist Pit Setbacks	225. Setback distances for the drill entry and exits pits will be established at least 30 m from the bankfull width of aquatic SAR habitat.
Entry/Exist Pit Setbacks	226. Drilling equipment (e.g., drill rig, support equipment, sump) should be set up a minimum of 30 m from the edge of watercourses.
	227. Clearing of vegetation or grading of watercourse banks should not occur within 30 m from the edge of watercourses if possible.
Entry/Exit Pit Containment	228. Install appropriate berms, silt fencing and secondary containment measures (i.e. plastic tarp) around drilling and drilling mud management equipment at both bore entry and bore exit locations to contain operational spills.
	229. Berms or check dams should be installed downslope from drill entry and anticipated exit points to contain the release of drilling mud.
Drill Path Design	230. Alternative drill paths should be evaluated to minimize exposure to challenging soil materials.
	231. Design the HDD so that drilling slurry pressure is minimized, and the drilling rate is reduced in porous materials to minimize the chance of loss of circulation of the drilling slurry.
Drilling	232. Suitable drilling mud tanks or sumps should be installed to prevent contamination of watercourses.
	233. Maintain smooth operation of the drilling string and slurry pumping systems to avoid pressure surges.
	234. Reduce slurry viscosity through appropriate filtering of drilled material to reduce the pressure gradient along the drill path due to frictional effects.
	235. Drilling mud should be maintained in the borehole until the pipeline is installed. This can be facilitated by positioning the entry and exit points in areas with cohesion less soils (e.g., silt-sand zones).
Drilling Mud	236. Bentonite-based drilling mud should be used without the use of additives (except with approval from appropriate regulatory authorities).

Activity/Concern	Mitigation Measures
Monitoring	237. Fluid volumes, annular pressure and cutting returns should be strictly monitored to safeguard against bore hole plugging and that fluid losses are detected and addressed immediately.
	238. Continually monitor slurry volumes to enable a quick response to indications of lost circulation.
General Drilling Mud Disposal	239. Drilling mud should be disposed in accordance with the appropriate regulatory authority requirements.
Drilling Mud Release Contingency Plan: Response Equipment	240. Additional supplies should be maintained on-site, in a readily accessible location, for maintenance and contingency purposes. Prior to construction, adequate quantities of the materials listed below, or comparable substitutions, should be on site to control erosion and sediment deposition: • Sediment control fencing • Sediment control logs (i.e., SiltSoxx™) • Straw bales • Wooden stakes • Sand bags • Water energy dissipater • Filter cloth • Water pumps (including stand-by pumps and sufficient lengths of hose) • Culvert
Drilling Mud Release Contingency Plan: Operation Spills	241. Clean up operational spills daily to prevent mobilization of drilling mud off site during rain events.
Drilling Mud Release Contingency Plan: Drilling Modification	242. If the environment is threatened, fluid pressure will be reduced and operations will be suspended to assess the extent of the release and to implement other possible corrective actions.
Drilling Mud Release Contingency Plan: Drilling Mud Release (Inadvertent Returns) Notification	243. If a release of drilling fluid occurs within a waterway, the Environmental Inspector will notify the Construction Manager or designate and EPCOR will contact the Spills Action Centre, CA, and/or other appropriate agencies immediately and inform them of potential threats to the environment.
Drilling Mud Release Contingency Plan: Drilling Mud Release on Land	244. Immediately contain drilling mud that escapes onto land and transfer it onto an on-site containment system.
	245. Drilling fluid can be removed directly from roadside drainage ditches via vacuum truck, with care taken to remove as little of the existing ditch material and vegetation as possible.
	246. If the amount of drilling fluid from an on-land release does not allow practical collection, the drilling fluid will be diluted with fresh water and removed with a vacuum truck. Steps will be taken (such as berm, silt fence and/or hay bale installation) to prevent silt laden water from escaping the affected area.

Activity/Concern	Mitigation Measures
Drilling Mud Release Contingency Plan: Drilling Mud Release in a Watercourse	247. When possible, the location of the inadvertent return will be isolated from watercourse flows by: • Installing the sediment control fencing and straw bales or Silt Soxx, extending from the bank immediately upstream of the inadvertent return, into the channel and around the mud to prevent water from flowing over the source or installing a vertical culvert to isolate the release location. • If drilling mud continues to flow from the inadvertent return location and cannot be contained by the silt fence or culvert, EPCOR will employ appropriate measures to remove drilling mud (i.e., extending hydrovac equipment into the isolated area).
	248. Relief holes should be considered along the drill path on the floodplain a minimum of 5 m from the bankfull width to relieve pressure from the in-channel inadvertent return on the approval of the Environmental Inspector.
Drilling Mud Release Contingency Plan: Resumption of Drilling	249. After sufficient time has passed, and drilling mud is expected to have formed a seal at the inadvertent return release point, drilling will resume at lower pressures and will maintain suction at the relief hole until confident regular drilling can resume without risk of repeated in-channel release.
	250. Directional drilling will only be resumed if the potential for significant adverse impacts to the environment is low, as determined by the Environmental Inspector, site inspection staff, qualified aquatic specialist/qualified environmental specialist, drilling or geotechnical consultant (if warranted) and the drilling Contractor.
	251. The following measures will progressively be implemented to prevent the further release of drilling mud into the watercourse or onto land, while ensuring adequate containment and control of the previous release: • Appropriate structures, materials, equipment and personnel should be in place and available in the event of a subsequent release of drilling mud; • Reduce drilling mud pressures, if practical; and • Plug fissures/fracture with inert sealers or plugging agents pumped into the drill hole and leave undisturbed for an appropriate period of time whereupon drilling will be resumed. If the sealing agents are not successful, drilling will be suspended and the plan reviewed and revised.
HDD Reclamation	252. Upon completion of the crossing, disturbed areas shall be immediately stabilized until such time that permanent reclamation activities are complete. Permanent reclamation measures to re-establish riparian vegetation and fish habitat shall be implemented as part of backfilling or as soon as possible following completion of construction at the crossing location.

Activity/Concern	Mitigation Measures
Wetland Crossings	253. Wetlands will be crossed using HDD technology. In addition to the HDD measures outlined in this section, the following recommendations are to be employed: • Construction material, excess material, construction debris and empty containers should be stored away from adjacent wetlands. • TWE area width should be minimized when working within 30 m of wetlands, where practical. • Staging areas should be located at least 30 m away from the edge of wetlands. • Construction dewatering should be discharged to sediment removal basins if discharge to a well-vegetated dry area is not feasible. The sediment removal basin should be located to maximize the distance to the nearest surface water feature and minimize the slope of the surrounding buffer area. The basin should consist of a temporary enclosure constructed with hay bales, silt fence or both.
Open Cut Crossing: Contingency Planning and Permitting	254. The contingency method for HDD crossings is an open cut crossing.
	255. Following finalization of plans, a Self-Assessment should be completed for project-related activities that have the potential to cause serious harm to fish. If it is determined that serious harm is likely to occur because of project-related activities, a Request for Review should be completed and submitted to DFO to determine approvals requirements under the Fisheries Act.
	256. The proposed pipeline will be located within the boundary of the SVCA and MVCA. Permits under Ontario Regulation 169/06 and 164/06, respectively, will be required prior to construction activities in the regulated boundaries.
Open Cut Crossing: In-water Work	257. If in-water works are required, the work area will be isolated from the remainder of the surface water feature and the following sequence will occur: • Downstream flows will be maintained using dam and pump techniques. • When dewatering the work area, dewatering operations will be managed to prevent erosion and/or release of sediment laden or contaminated water to the waterbody (e.g. settling basin, filter bag, energy dispersion measures). • An isolation/contamination plan will be designed and implemented to isolate temporary in-water work zones and maintain flow around the work zone. • Maintenance of downstream flow will avoid potential upstream flooding and desiccation of downstream aquatic habitat and organisms.
Open Cut Crossing: Fish Rescue Plan	258. Prior to dewatering the work zone, fish trapped in the construction area will be collected and moved using capture, handling, and release techniques to reduce harm and stress.
	259. Fish rescue plans will be developed on a site specific basis and implemented by qualified professionals with the appropriate permitting in place (i.e. MNRF Licence to Collect Fish for Scientific Purposes).
Open Cut Crossing: Pump Screens	260. The intakes of pumping hoses will be equipped with an appropriate device to avoid entraining and impinging fish (see Measures to Avoid Causing Harm to Fish and Fish Habitat (2013) at the following DFO website http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/measures-mesures-eng.html).

Activity/Concern	Mitigation Measures
Open Cut Crossing: Restoration	261. Following construction, the bed and banks of the crossing locations will be restored to pre-construction conditions to the extent possible in accordance with environmental permits. Bank slopes will be restored to match existing grades; however, alterations may be made to maintain slope stability and limit future erosion. Exposed banks will be re-vegetated with native plants to provide riparian cover and aid in erosion and sediment control. Stream beds will be restored to maintain slopes and tie in with existing grades. Bed material will be replaced to match pre-construction conditions.

7.6 BACKFILL, HYDROSTATIC TESTING, CLEAN-UP AND RESTORATION

Introduction

The purpose of this Section is to provide mitigation measures during backfill and initial clean-up procedures.

Objectives

The objectives of these environmental protection measures are to:

- Maintain compliance during the hydrostatic tests.
- Return excavated spoil to the trench and restore preconstruction grades along the trench line.
- Control subsurface drainage and potential erosion concerns along the trench line.

Specific Measures

Activity/Concern	Mitigation Measures
Hydrostatic Test Permits and Approvals	262. EPCOR Environment Lead will be responsible for obtaining appropriate approvals and notifications for hydrostatic test water diversion and release (e.g., the water will be withdrawn from sources/waterbodies other than those listed above).
	263. Appropriate testing and treatment measures should be implemented in accordance with applicable regulations related to discharging hydrostatic test water if test water is released into a natural waterbody. If hydrostatic test water is to be discharged onto land, obtain soil chemistry analysis, if required by the appropriate regulatory authority, prior to discharging.
Hydrostatic Test Water Discharge	264. Discharge the water at an acceptable location onsite in a manner that does not cause erosion and does not allow unfiltered or silted water to directly re-enter a watercourse. Collect pigging debris and dispose of at an acceptable location (e.g., landfill).
	265. To reduce the potential for erosion and scouring at dewatering points, energy dissipation techniques should be used. At dewatering points, discharge piping should be free of leaks and should be properly anchored to prevent bouncing or snaking during surging.

Activity/Concern	Mitigation Measures
	266. Protective measures may include dewatering at low velocities, dissipating water energy by discharging into a filter bag or equivalent and utilizing protective riprap or equivalent.
Hydrostatic Test Water Discharge	267. If energy dissipation measures are found to be inadequate, the rate of dewatering should be reduced or dewatering discontinued until satisfactory mitigation measures are in place.
	268. To assess the potential for introduction of contaminated water to soils or waterbodies, testing of discharged water should be considered. EPCOR shall consult with contamination experts to determine what testing is necessary for the discharged water and implement a testing program.
	269. Test water which is withdrawn from one drainage basin must not enter surface waters in another drainage basin to prevent inter-basin transfer of aquatic organisms.
Frozen Conditions	270. Segments trenched during frozen conditions should be backfilled prior to spring break-up.
	271. Avoid mixing snow with spoil material during backfill.
Backfilling	272. Prior to backfilling, inspect the trench for wildlife, skids, refuse, welding rods and other debris, and remove if present.
	273. Large clods of soil should be broken-up prior to, or during backfilling.
	274. Backfill the trench without mixing spoil with the topsoil pile. Do not walk machinery on the topsoil pile while backfilling spoil.
	275. To the extent practical, backfill and compact the trench in lifts where no trench crown will be permitted.
	276. After completion of pipe tie-ins, backfill the bell hole and compact the spoil. Backfill and compact the spoil in the reverse order that the material was excavated. A crown may be left to allow for subsidence of the bell hole.
	277. Import additional or replacement backfill, if warranted, from locations approved by the appropriate land authority.
Crown	278. Crown deep excavations with remaining spoil to allow for settlement after thawing. In addition, a higher crown on forested lands may be acceptable provided drainage and wildlife are unaffected.
	279. If a crown is left over the trench in wetlands to account for settling of frozen backfill, leave periodic breaks to prevent ponding and restore the preconstruction contours during clean-up the following spring or summer.
Excess Spoil	280. Feather-out excess spoil over the salvaged portion of the construction TWE/ROW on non-forested lands to minimize the creation of a permanent mound for pipelines constructed during non-frozen soil conditions. Excess spoil should not be feathered-out over the salvaged area to an extent that may cause excessive subsidence of the trench.
	281. Should excess soil be generated on-site during construction activities that will require off-site management, or if contaminated soils are suspected (e.g., if observed material contains anthropogenic substances, petroleum hydrocarbons, odours/staining, and debris/waste), representative soil samples should be collected and submitted for chemical analysis to determine management options and appropriate handling and health and safety guidelines.

Activity/Concern	Mitigation Measures
Permit Conditions	282. Wetlands/watercourses will be restored to a condition consistent with permit conditions.
Scheduling (Non-Frozen Conditions)	283. If clean-up is not practical during the construction year, it should be undertaken in the year following construction, starting in May or June once the soils have sufficiently dried. Interim soil protection measures should be undertaken in sensitive areas to stabilize the ROW for over-wintering.
Landowner Consultation	284. Consult with the landowner through the EPCOR ROW Agent for special environmental concerns before completing reclamation.
Wet Conditions	285. Postpone clean-up activities on wet ground until soils dry out.
Grading	286. Recontour the TWE/ROW and restore the preconstruction grades and drainage channels. Where restoration of the preconstruction grade is not feasible due to risk of failure of fill on slopes, recontour to grades not exceeding 1:3 (rise over run), or as directed by a geotechnical engineer.
Slope Restoration	287. Re-establishing existing contours and drainage upon completion of construction.
Subsoil Compaction (agricultural land)	288. Rip compacted subsoils, temporary access trails and soils damaged during wet weather to a depth of 30 cm (1 foot) prior to topsoil replacement. If soils are moist, postpone ripping until soils dry so that the soils fracture when ripped. Employ a subsoiler plow (e.g., Paratiller) along segments of the construction TWE/ROW where topsoil salvage did not occur and subsoil compaction is severe.
Stony Subsoils	289. Remove stones from disturbed subsoil to achieve equivalence with the surrounding off TWE/ROW subsoil. Also remove stones from the upper 30 cm (1 foot) of the trench and grade spoil that will interfere with topsoil replacement or cultivation (i.e., stones larger than 10 cm [4 inches] in diameter). Dispose of stones at locations approved by the appropriate land/regulatory authority.
Damaged Soils (agricultural land)	290. Disc, till or cultivate ripped subsoils to break up lumps and to smooth the surface. To reduce further compaction, limit discing to what is necessary to break up clods. Till or cultivate fields and severely compacted or rutted areas to loosen compacted soils.
Topsoil Testing for SCN (agricultural land)	291. Topsoil imported for cleanup activities should be analyzed for SCN by collecting a composite sample, sending it to a lab for analysis and reviewing results before imported topsoil is placed on the easement. Imported suitable fill (not containing topsoil) or granular materials do not need to be tested for SCN.
Topsoil Replacement	292. Replace topsoil as evenly as possible over areas of the TWE/ROW where topsoil salvage was conducted. Postpone replacing topsoil during wet weather or high winds to prevent damaging soil structure or erosion of topsoil.
Stony Topsoil	293. Remove stones from disturbed topsoil to achieve equivalence with the surrounding off TWE/ROW topsoil. Dispose of stones at locations approved by the landowner or appropriate regulatory authority.
Seed Preparation	294. Create microsites on steep slopes to retain moisture and enhance seed germination success by aligning the final pass of dozers straight up and down the slope.
Track Cleat Imprinting on Droughty Soils	295. Land imprinting may be used as an erosion control and reclamation measure on drought prone non-cultivated lands, as advised by the Environmental Inspector, in situations where other measures, such as straw crimping, are not desirable. Sufficient soil moisture is required for the imprinting to crust over and hold its shape. Soil moisture conditions will be evaluated by the Environmental Inspector to determine the suitability of an area for imprinting.

Activity/Concern	Mitigation Measures
Track Cleat Imprinting on Steep Slopes	296. As an alternative to straw crimping on slopes, conduct track cleat imprinting following drill seeding or prior to broadcast seeding to provide a rough surface on steep slopes for trapping water in microsites. Conduct track cleat imprinting prior to tackifier/mulch applications or as advised by the Environmental Inspector. Track cleat imprints should be perpendicular to the fall line of the slope and spaced sufficiently to provide uniform coverage of the ground surface.
Revegetation	297. A re-vegetation program appropriate to the land use should be initiated for work areas disturbed during construction.
	298. Reclamation in residential/commercial land areas traversed by the road allowance, should involve seeding (or sodding) the disturbed areas and replacement of ornamental trees and shrubs.
Seeding	299. Seed CA regulated areas with a native seed mix as per SVCA and MVCA permit conditions.
	300. Seed should be applied during an appropriate time of year to allow germination and establishment of vegetation.
Seed Mixes	301. The following criteria are recommended to be taken into consideration when selecting a seed mix for use in natural vegetation areas: • Site specific conditions such as climate, soil types and terrain should be considered. • Only local native species should be included. • A fast-growing seed mixture requiring little or no maintenance should be selected. • Seed mixture should be consistent with the land use of the area. • If no suitable local native seed mix is available but seeding is deemed desirable to promote rapid revegetation of an area, a non-invasive annual nurse crop such as annual ryegrass should be used instead. • Purchased seed should be certified free of weeds.
Trees	302. In the event that trees are required to be removed, a tree replacement program should be undertaken, satisfactory to the landowner, and consistent with municipal requirements.
Wetlands	303. Natural recovery is the preferred method of reclamation (i.e., do not seed wetland areas). In areas where invasive species are of significant concern (as indicated by regulatory authorities), or where natural revegetation is not anticipated to be successful, seed wetland areas with an appropriate native seed mix provided by the CA.
Temporary Erosion and Sediment Control	304. Use temporary ESC measures as required to stabilize disturbed areas (see Section 5.2).
Post-Construction	305. Remove sediment barriers that remain after the disturbed area is revegetated and the area is stable.
Post-Construction Monitoring	306. One year following construction, planted vegetation should be inspected for survival, in areas of severe dieback, dead of diseased planted vegetation should be replaced.

8.0 REFERENCES

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APPENDIX A
Environmental Alignment Sheets

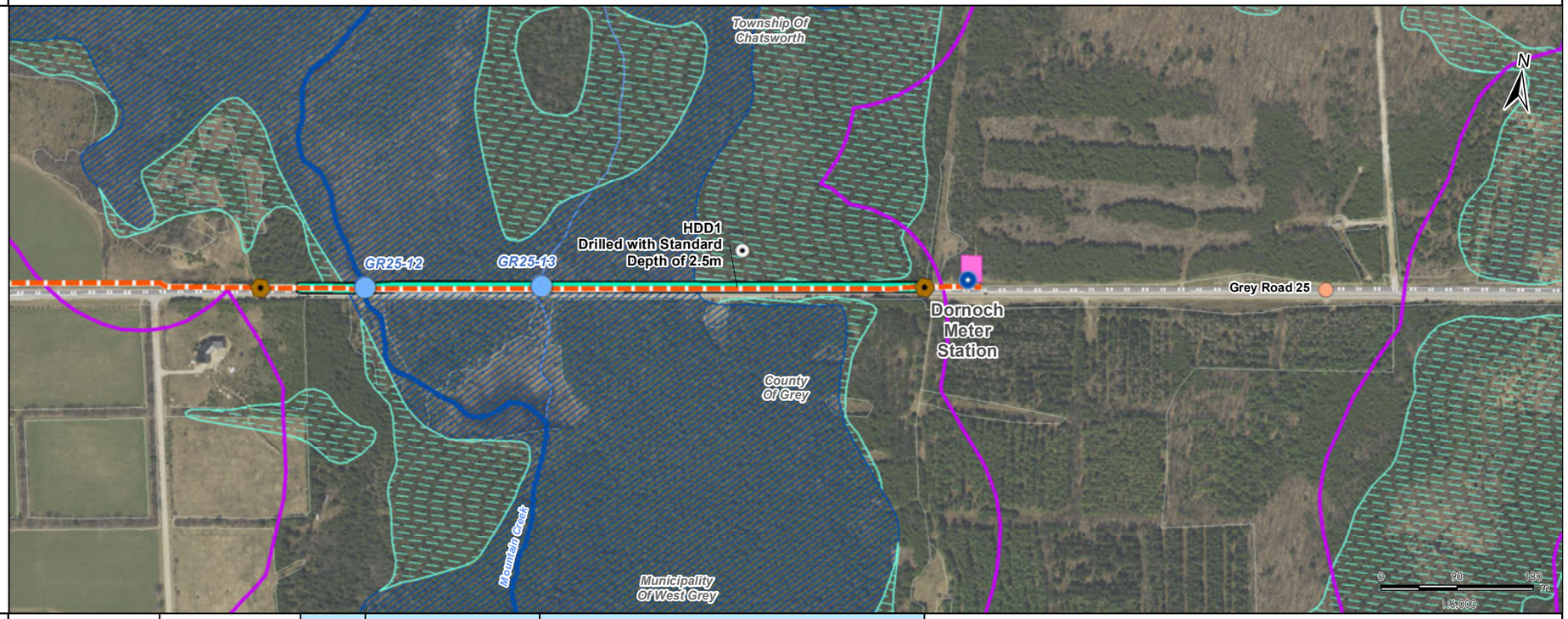
Resources

CONSERVATION AUTHORITY REGULATED AREA	SVCA
WETLAND WATERCOURSE	Watercourse - Mountain Creek; Watercourse - Mountain Creek; Wetland - Mountain Creek; Wetland
VEGETATION	
WATER WELL WITHIN 50 m	Well Present
LINEAR FEATURES	Road
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:

Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
Note 3: Crossing permit from Hydro One Networks Inc. (HONI) needed.
Note 4: No clearing activities during the migratory breeding bird restricted activity period (April 1 – August 31) without preconstruction nesting surveys. Refer to Sections 5.1 and 7.2 of the EPP.
Note 5: Groundwater wells present – Refer to Sections 5.1, 6.0, 7.1 and 7.4 of the EPP.
Note 6: Water well monitoring program recommended. Refer to Sections 4.0 and 5.1 of the EPP.
Note 7: Permit from MVCA or SVCA required. Refer to Sections 2.3, 3.3 and 4.0 of the EPP.
Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
Note 9: Maintain emergency egress. Refer to Sections 3.3, 6.0 and 7.4 of the EPP.
Note 10: Implement Suspect Soils Program. Refer to Sections 6.0 and 7.4 and 7.6 of the EPP.
Note 11: Coldwater watercourse crossing - In-water work permitted from July 1 to September 15. Refer to Sections 5.1 and 7.5 of the EPP.
Note 12: Warmwater watercourse crossing - In-water work permitted from July 1 to March 14. Refer to Sections 5.1 and 7.5 of the EPP.
Note 13: Overall Benefit Permit under the Endangered Species Act, 2007 from the MNRF may be required if the species, or protected habitat, are impacted by project activities. Refer to Section 5.1 of the EPP.

Acronyms List:
EPP: Environmental Protection Plan (Stantec 2019)
MVCA: Maitland Valley Conservation Authority
SVCA: Saugeen Valley Conservation Authority
MNRF: Ministry of Natural Resources and Forestry



Construction Mitigation

CONSTRUCTION REQUIREMENTS	Note 9; Note 2; Note 2; Note 1
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11; Note 11
PIPELINE CROSSING METHODS	Note 2; Note 2
VEGETATION RESTRICTIONS	
PERMITTING REQUIREMENTS	Note 7
MONITORING	Notes 5 & 6
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

Stantec

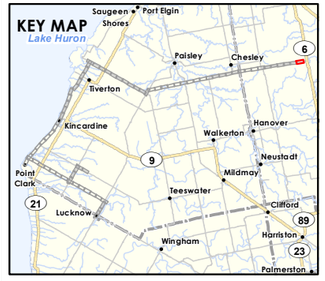
EPCOR

Legend

- Meter Station
- Preferred Pipeline Route
- HDD Areas - Conservation
- Proposed Station
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Phragmites
- Trench Plug
- Cold Water Thermal Regime
- Watercourse
- Provincially Significant Wetland
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area



Notes

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Figure No.	Rev.
A-1	-

June 2019
160950831

Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-1

Title
Environmental Alignment Sheets - Map 1

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Revised: 2019-06-21 By: aeories

Resources	
CONSERVATION AUTHORITY REGULATED AREA	SVCA; SVCA; SVCA
WETLAND WATERCOURSE	Watercourse; Waterbody; Watercourse
VEGETATION	
WATER WELL WITHIN 50 m	
LINEAR FEATURES	Driveways; Road; Driveway; Road; Driveways; Road
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:

Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
Note 3: Crossing permit from Hydro One Networks Inc. (HONI) needed.
Note 4: No clearing activities during the migratory breeding bird restricted activity period (April 1 – August 31) without preconstruction nesting surveys. Refer to Sections 5.1 and 7.2 of the EPP.
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Note 6: Water well monitoring program recommended. Refer to Sections 4.0 and 5.1 of the EPP.
Note 7: Permit from MVCA or SVCA required. Refer to Sections 2.3, 3.3 and 4.0 of the EPP.
Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
Note 9: Maintain emergency egress. Refer to Sections 3.3, 6.0 and 7.4 of the EPP.
Note 10: Implement Suspect Soils Program. Refer to Sections 6.0 and 7.4 and 7.6 of the EPP.
Note 11: Coldwater watercourse crossing - In-water work permitted from July 1 to September 15. Refer to Sections 5.1 and 7.5 of the EPP.
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Acronyms List:
EPP: Environmental Protection Plan (Stantec 2019)
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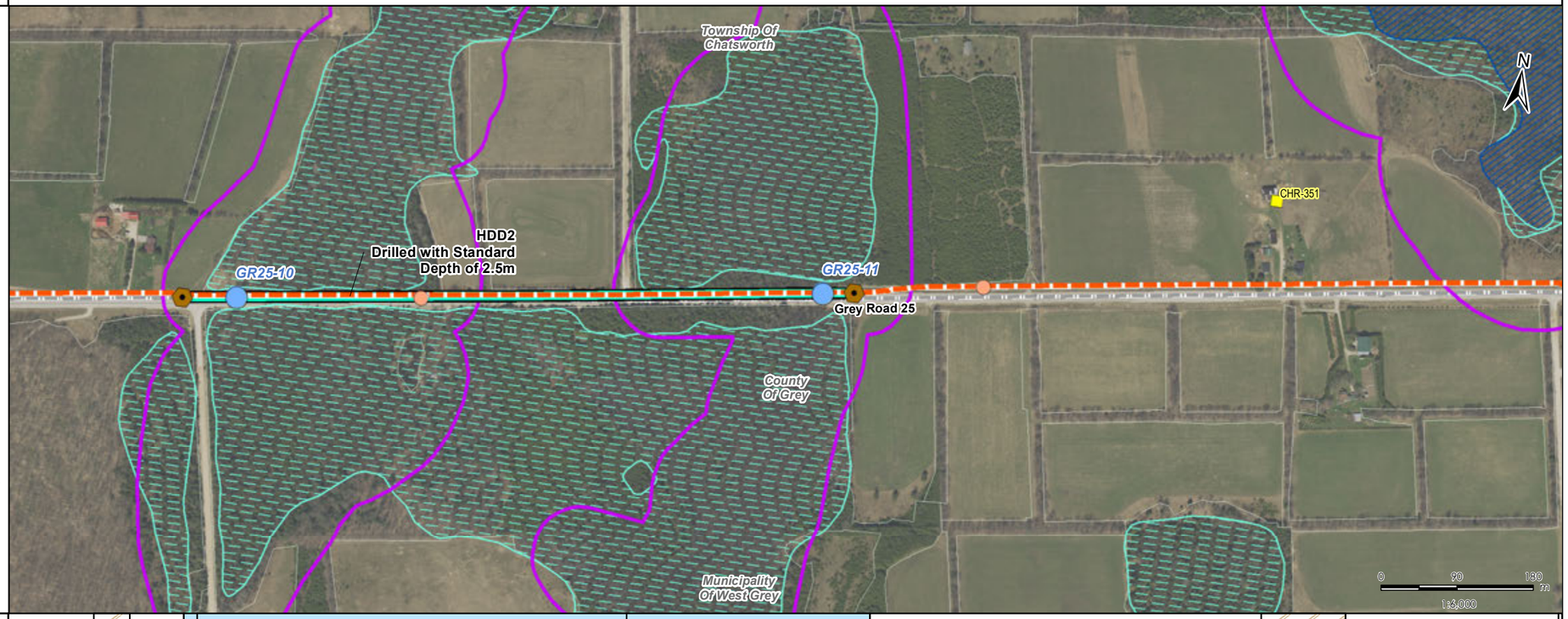
SVCA: Saugeen Valley Conservation Authority
MNRF: Ministry of Natural Resources and Forestry



Construction Mitigation	
CONSTRUCTION REQUIREMENTS	Note 9; Note 9; Note 1; Note 9; Note 9; Note 9
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11; Note 11
PIPELINE CROSSING METHODS	
VEGETATION RESTRICTIONS	Note 4
PERMITTING REQUIREMENTS	
MONITORING	Note 7; Note 7; Note 7
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

Stantec

EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Conservation
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Identified Cultural Heritage Resource
- Phragmites
- Trench Plug
- Cold Water Thermal Regime
- Watercourse
- Provincially Significant Wetland
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area

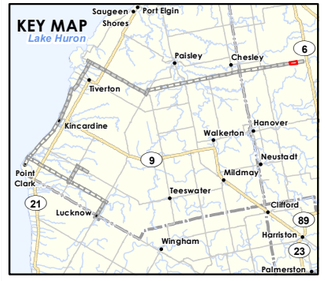


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Figure No.	Rev.
A-2	-

June 2019
160950831

Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-2

Title
Environmental Alignment Sheets - Map 2

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Revised: 2019-06-21 By: aeories

Resources

CONSERVATION AUTHORITY REGULATED AREA	SVCA
WETLAND WATERCOURSE	Waterbody
VEGETATION	
WATER WELL WITHIN 50 m	
LINEAR FEATURES	Driveway, Driveway, Road, Driveway
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:

Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
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Note 6: Water well monitoring program recommended. Refer to Sections 4.0 and 5.1 of the EPP.
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Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
Note 9: Maintain emergency egress. Refer to Sections 3.3, 6.0 and 7.4 of the EPP.
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Note 11: Coldwater watercourse crossing - In-water work permitted from July 1 to September 15. Refer to Sections 5.1 and 7.5 of the EPP.
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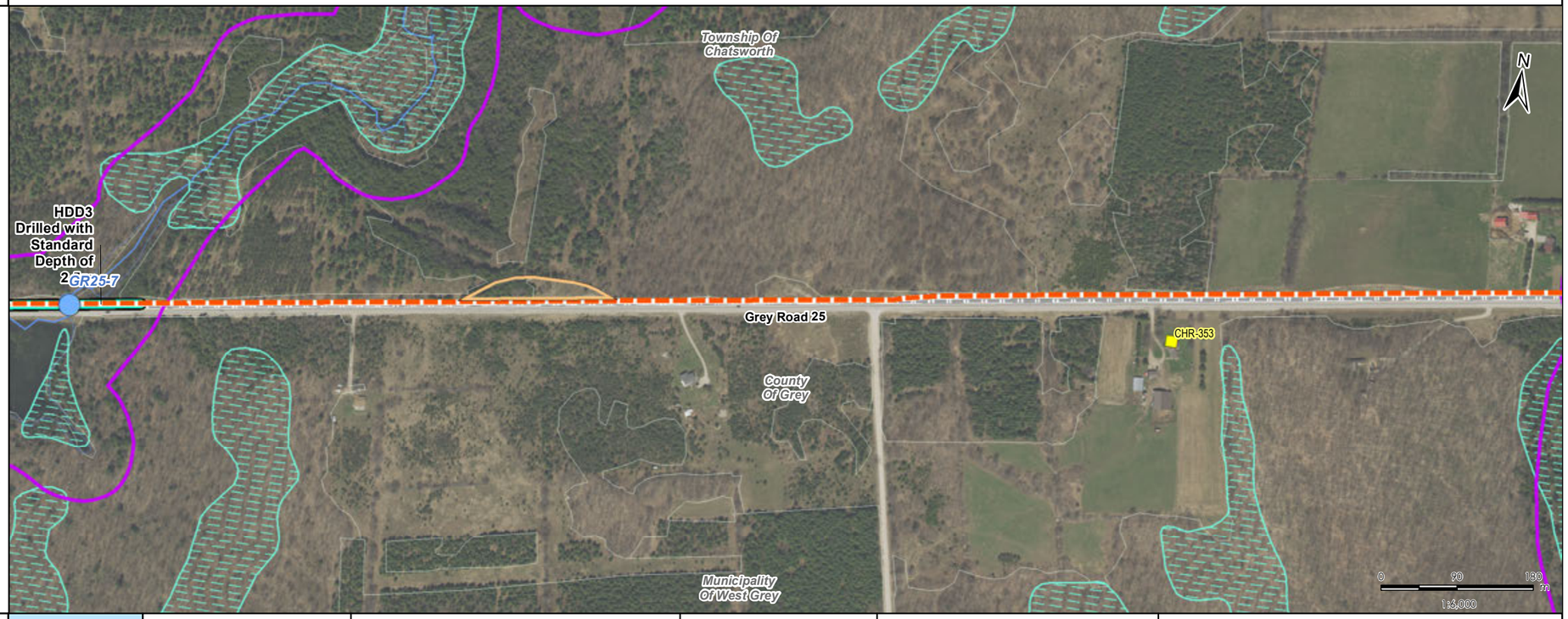

Construction Mitigation

CONSTRUCTION REQUIREMENTS	Note 1, Note 9, Note 9, Note 9, Note 9
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11
PIPELINE CROSSING METHODS	Note 1
VEGETATION RESTRICTIONS	Note 4
PERMITTING REQUIREMENTS	Note 7
MONITORING	
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

Stantec

EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Conservation
- Temporary Workspace
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Identified Cultural Heritage Resource
- Watercourse
- ANSI, Life Science;Provincial
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area

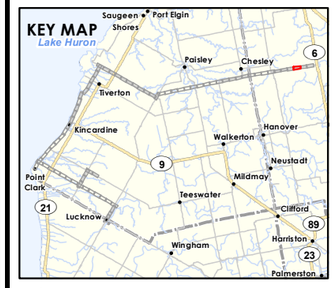

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Figure No.	Rev.
A-3	-

June 2019
160950831

Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-3

Title
Environmental Alignment Sheets - Map 3

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Revised: 2019-06-21 By: aeories

Resources

Resource	Entries (west to east along route)
CONSERVATION AUTHORITY REGULATED AREA	SVCA; SVCA; SVCA
WETLAND WATERCOURSE	Wetland - Kinghurst Swamp; Wetland; Wetland; Wetland; Watercourse; Waterbody
VEGETATION	Woodland; Woodland
WATER WELL WITHIN 50 m	
LINEAR FEATURES	Driveway; Road; Driveways; Road
ENVIRONMENTALLY SENSITIVE AREA / ANSI	ANSI
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:
Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
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Note 6: Water well monitoring program recommended. Refer to Sections 4.0 and 5.1 of the EPP.
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Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
Note 9: Maintain emergency egress. Refer to Sections 3.3, 6.0 and 7.4 of the EPP.
Note 10: Implement Suspect Soils Program. Refer to Sections 6.0 and 7.4 and 7.6 of the EPP.
Note 11: Coldwater watercourse crossing - In-water work permitted from July 1 to September 15. Refer to Sections 5.1 and 7.5 of the EPP.
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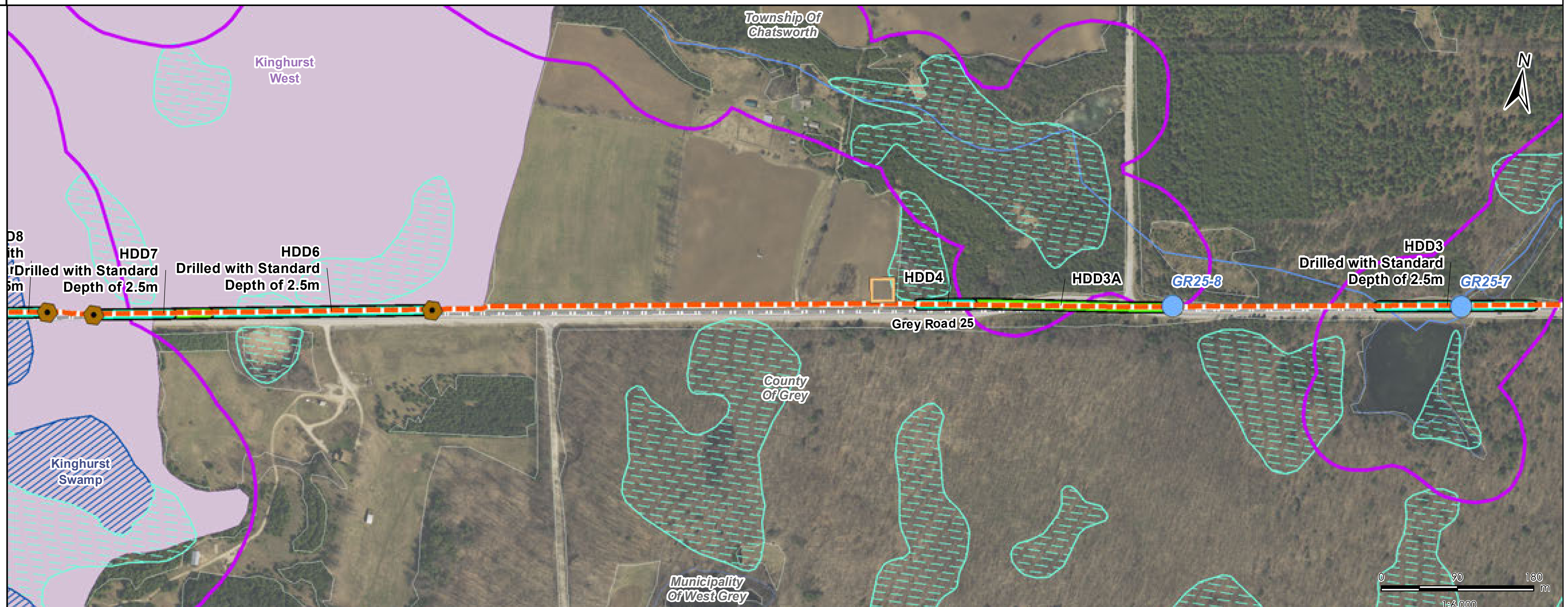

Construction Mitigation

Item	Entries (west to east along route)
CONSTRUCTION REQUIREMENTS	Note 1; Note 1; Note 9; Note 9; Note 9; Note 1; Note 9; Note 1
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11; Note 11
PIPELINE CROSSING METHODS	Note 1; Note 1; Note 1; Note 1
VEGETATION RESTRICTIONS	Note 4; Note 4
PERMITTING REQUIREMENTS	Note 7; Note 7; Note 7
MONITORING	
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	Note 13

Stantec EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Conservation
- HDD Areas - Constructability
- Temporary Workspace
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Trench Plug
- Watercourse
- ANSI, Life Science;Provincial
- Provincially Significant Wetland
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area

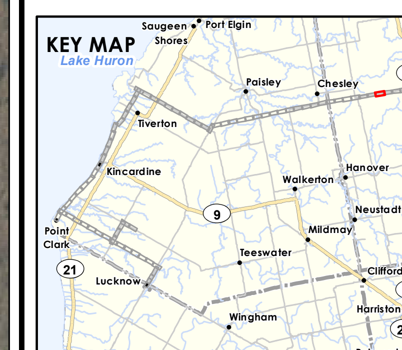

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Figure No.	Rev.
A-4	-

June 2019
160950831

Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-4

Title
Environmental Alignment Sheets - Map 4

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Revised: 2019-06-21 By: searles

Resources		
	CONSERVATION AUTHORITY REGULATED AREA	SVCA
	WETLAND WATERCOURSE	Watercourse; Watercourse; Wetland - Kinghurst Swamp; Watercourse; Wetland
	VEGETATION	
	WATER WELL WITHIN 50 m	
	LINEAR FEATURES	Driveways; Road; Driveway; Driveways; Driveway
	ENVIRONMENTALLY SENSITIVE AREA / ANSI	ANSI
	SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:
Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
Note 3: Crossing permit from Hydro One Networks Inc. (HONI) needed.
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Note 7: Permit from MVCA or SVCA required. Refer to Sections 2.3, 3.3 and 4.0 of the EPP.
Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
Note 9: Maintain emergency egress. Refer to Sections 3.3, 6.0 and 7.4 of the EPP.
Note 10: Implement Suspect Soils Program. Refer to Sections 6.0 and 7.4 and 7.6 of the EPP.
Note 11: Coldwater watercourse crossing - In-water work permitted from July 1 to September 15. Refer to Sections 5.1 and 7.5 of the EPP.
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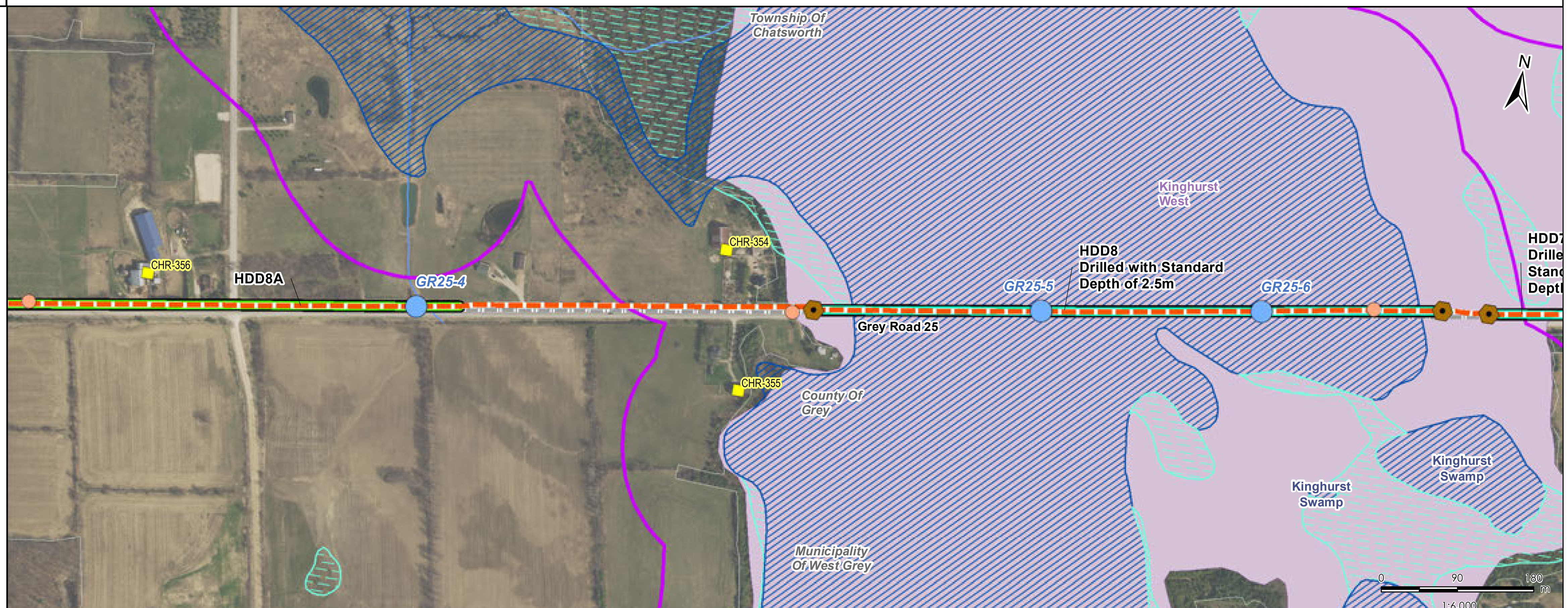

Construction Mitigation		
	CONSTRUCTION REQUIREMENTS	Note 9; Note 1; Note 9; Note 9; Note 9; Note 9; Note 1; Note 1
	FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11; Note 11; Note 11
	PIPELINE CROSSING METHODS	Note 1; Note 1; Note 1
	VEGETATION RESTRICTIONS	Note 4
	PERMITTING REQUIREMENTS	Note 7
	MONITORING	
	SEED MIX	
	POTENTIALLY CONTAMINATED SITES	
	SPECIES AT RISK (SAR) HABITAT	Note 13

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Revised: 2019-06-21 By: searles

Stantec EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Conservation
- HDD Areas - Constructability
- Watercourse Crossing Location

Existing Features
- Water Well (MOECC)
- Identified Cultural Heritage Resource
- Phragmites
- Trench Plug
- Watercourse
- ANSI, Life Science;Provincial
- Provincially Significant Wetland
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area

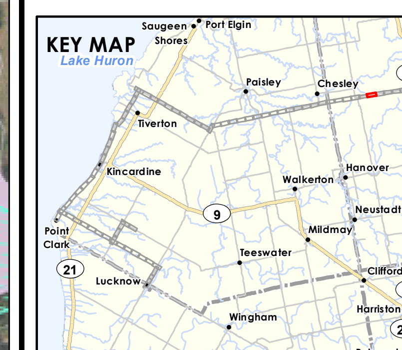

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Figure No.	Rev.
A-5	-

June 2019
160950831

Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-5

Title
Environmental Alignment Sheets - Map 5

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Revised: 2019-06-21 By: searles

Stantec
EPCOR

Resources

CONSERVATION AUTHORITY REGULATED AREA	SVCA; SVCA
WETLAND WATERCOURSE	Waterbody; Wetland; Watercourse
VEGETATION	
WATER WELL WITHIN 50 m	Well Present
LINEAR FEATURES	Driveways; Driveways
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:

Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
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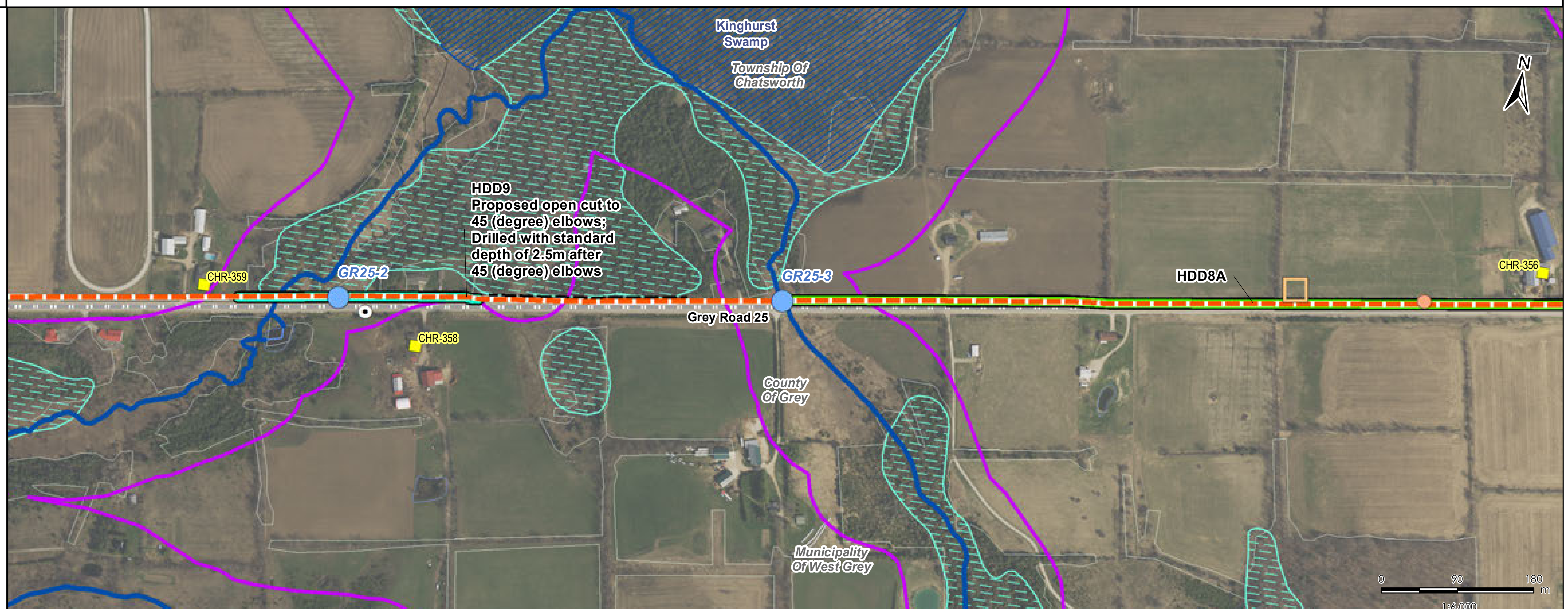

Construction Mitigation

CONSTRUCTION REQUIREMENTS	Note 9; Note 1; Note 8; Note 2; Note 1
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11; Note 11
PIPELINE CROSSING METHODS	Note 1; Note 3; Note 1
VEGETATION RESTRICTIONS	Note 4
PERMITTING REQUIREMENTS	Note 7; Note 7
MONITORING	Notes 5 & 6
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

Legend

- Preferred Pipeline Route
- HDD Areas - Conservation
- HDD Areas - Constructability
- Temporary Workspace
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Identified Cultural Heritage Resource
- Phragmites
- Silt Fencing
- Cold Water Thermal Regime
- Watercourse
- Provincially Significant Wetland
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area

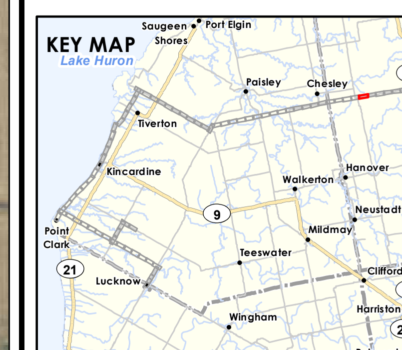

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Figure No.	Rev.
A-6	-

June 2019
160950831

Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-6

Title
Environmental Alignment Sheets - Map 6

Resources

CONSERVATION AUTHORITY REGULATED AREA	SVCA; SVCA
WETLAND WATERCOURSE	Wetland; Watercourse; Watercourse; Wetland; Watercourse; Wetland
VEGETATION	
WATER WELL WITHIN 50 m	Well Present; Well Present
LINEAR FEATURES	Driveway; Hydro Line; Road; Driveway; Road; Driveway
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:
Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
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SVCA: Saugeen Valley Conservation Authority
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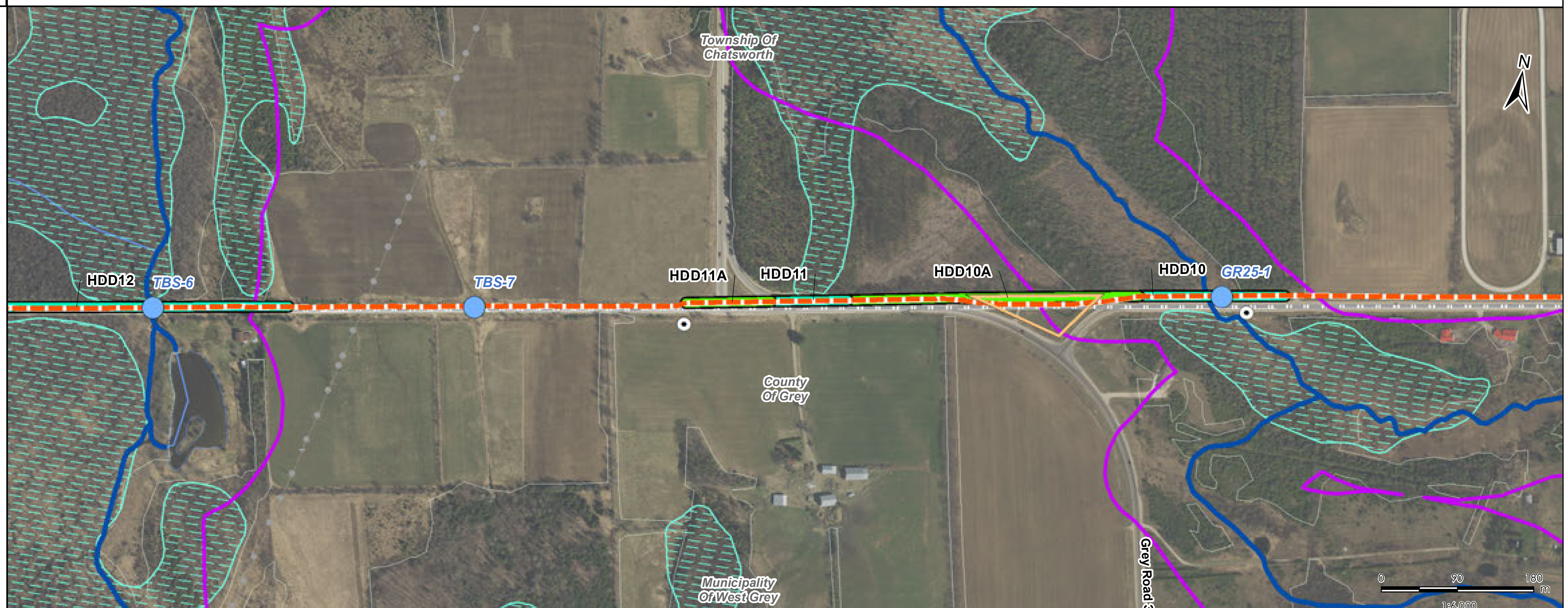

Construction Mitigation

CONSTRUCTION REQUIREMENTS	Note 1; Note 9; Note 3; Note 9; Note 9; Note 1; Note 9; Note 9
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11; Note 11; Note 11
PIPELINE CROSSING METHODS	Note 1; Note 1
VEGETATION RESTRICTIONS	
PERMITTING REQUIREMENTS	Note 7; Note 7
MONITORING	Notes 5 & 6; Notes 5 & 6
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

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Revised: 2019-06-21 By: searles

Stantec EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Conservation
- HDD Areas - Constructability
- Temporary Workspace
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Cold Water Thermal Regime
- Hydro Line
- Watercourse
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N.
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3. Orthoimagery © First Base Solutions, 2015.
4. MOECC Water well locations are approximate and have been positioned based on published UTM coordinates © Queen's Printer for Ontario, 2018.
5. Conservation Authority data provided under license from Saugeen Valley Conservation Authority and Maitland Valley Conservation Authority (2016).
6. All driveway crossings will allow for emergency services access.

Figure No.	Rev.
A-7	-

June 2019
160950831

Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-7

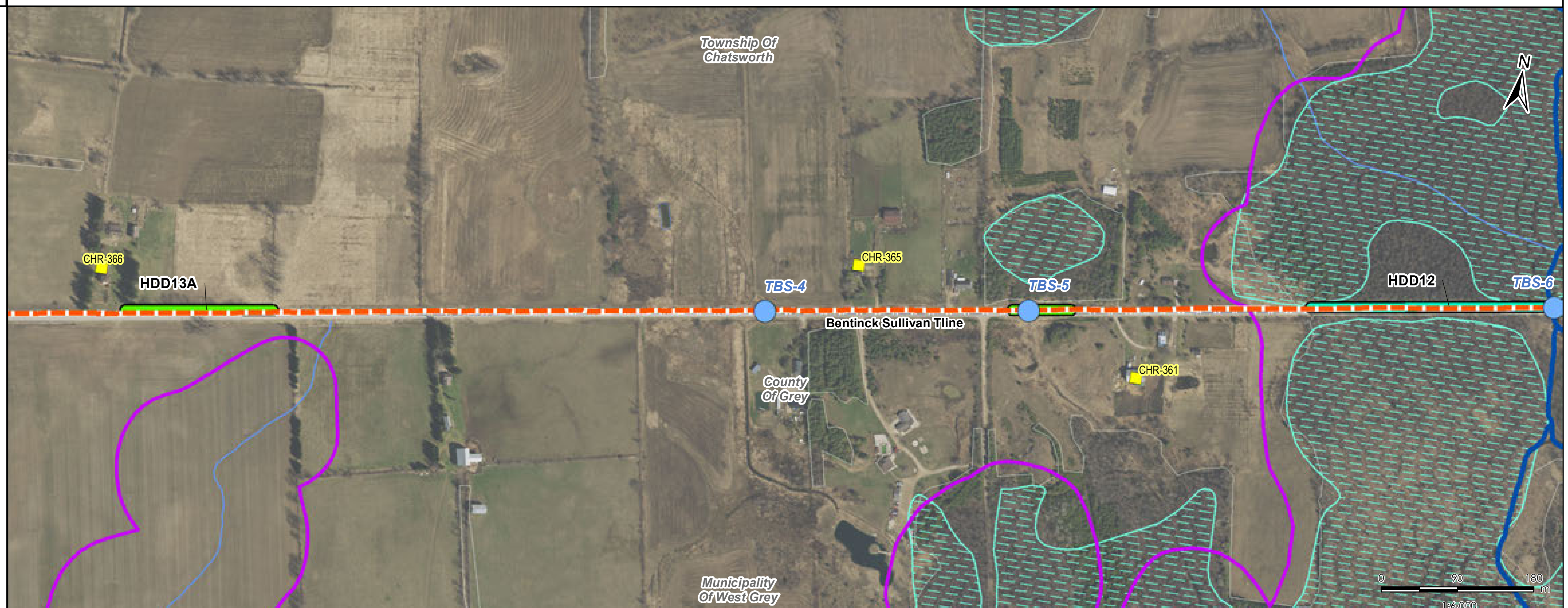
Title
Environmental Alignment Sheets - Map 7

Resources

Resource	Details
CONSERVATION AUTHORITY REGULATED AREA	SVCA
WETLAND WATERCOURSE	Watercourse → ; Watercourse → ; Wetland ; Watercourse →
VEGETATION	
WATER WELL WITHIN 50 m	
LINEAR FEATURES	Driveway → ; Driveway → ; Driveways
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:
Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
Note 3: Crossing permit from Hydro One Networks Inc. (HONI) needed.
Note 4: No clearing activities during the migratory breeding bird restricted activity period (April 1 – August 31) without preconstruction nesting surveys. Refer to Sections 5.1 and 7.2 of the EPP.
Note 5: Groundwater wells present – Refer to Sections 5.1, 6.0; 7.1 and 7.4 of the EPP.
Note 6: Water well monitoring program recommended. Refer to Sections 4.0 and 5.1 of the EPP.
Note 7: Permit from MVCA or SVCA required. Refer to Sections 2.3, 3.3 and 4.0 of the EPP.
Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
Note 9: Maintain emergency egress. Refer to Sections 3.3, 6.0 and 7.4 of the EPP.
Note 10: Implement Suspect Soils Program. Refer to Sections 6.0 and 7.4 and 7.6 of the EPP.
Note 11: Coldwater watercourse crossing - In-water work permitted from July 1 to September 15. Refer to Sections 5.1 and 7.5 of the EPP.
Note 12: Warmwater watercourse crossing - In-water work permitted from July 1 to March 14. Refer to Sections 5.1 and 7.5 of the EPP.
Note 13: Overall Benefit Permit under the Endangered Species Act, 2007 from the MNRF may be required if the species, or protected habitat, are impacted by project activities. Refer to Section 5.1 of the EPP.

Acronyms List:
EPP: Environmental Protection Plan (Stantec 2019)
MVCA: Maitland Valley Conservation Authority
SVCA: Saugeen Valley Conservation Authority
MNRF: Ministry of Natural Resources and Forestry



Construction Mitigation

Item	Details
CONSTRUCTION REQUIREMENTS	Note 9 ; Note 1 ; Note 9 ; Note 2 → ; Note 9 ; Note 1 ; Note 1
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	← Note 11 ; ← Note 11
PIPELINE CROSSING METHODS	Note 1 ; Note 2 → ; Note 1 ; Note 1
VEGETATION RESTRICTIONS	Note 4
PERMITTING REQUIREMENTS	Note 7
MONITORING	
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

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Revised: 2019-06-21 By: searles

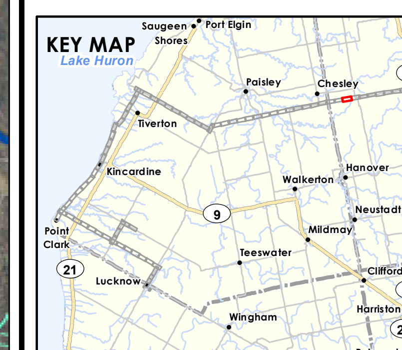
Stantec
EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Conservation
- HDD Areas - Constructability
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Identified Cultural Heritage Resource
- Cold Water Thermal Regime
- Hydro Line
- Watercourse
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area



Notes

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3. Orthoimagery © First Base Solutions, 2015.
4. MOECC Water well locations are approximate and have been positioned based on published UTM coordinates © Queen's Printer for Ontario, 2018.
5. Conservation Authority data provided under license from Saugeen Valley Conservation Authority and Maitland Valley Conservation Authority (2016).
6. All driveway crossings will allow for emergency services access.

Figure No.	Rev.
A-8	-

June 2019
160950831

Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-8

Title
Environmental Alignment Sheets - Map 8

Resources

- CONSERVATION AUTHORITY REGULATED AREA: SVCA
- WETLAND / WATERCOURSE: Wetland; Watercourse; Watercourse
- VEGETATION
- WATER WELL WITHIN 50 m
- LINEAR FEATURES: Driveways; Road; Driveways; Road; Driveway
- ENVIRONMENTALLY SENSITIVE AREA / ANSI
- SPECIES AT RISK (SAR) HABITAT

Construction Mitigation Notes:
Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
Note 3: Crossing permit from Hydro One Networks Inc. (HONI) needed.
Note 4: No clearing activities during the migratory breeding bird restricted activity period (April 1 – August 31) without preconstruction nesting surveys. Refer to Sections 5.1 and 7.2 of the EPP.
Note 5: Groundwater wells present – Refer to Sections 5.1, 6.0; 7.1 and 7.4 of the EPP.
Note 6: Water well monitoring program recommended. Refer to Sections 4.0 and 5.1 of the EPP.
Note 7: Permit from MVCA or SVCA required. Refer to Sections 2.3, 3.3 and 4.0 of the EPP.
Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
Note 9: Maintain emergency egress. Refer to Sections 3.3, 6.0 and 7.4 of the EPP.
Note 10: Implement Suspect Soils Program. Refer to Sections 6.0 and 7.4 and 7.6 of the EPP.
Note 11: Coldwater watercourse crossing - In-water work permitted from July 1 to September 15. Refer to Sections 5.1 and 7.5 of the EPP.
Note 12: Warmwater watercourse crossing - In-water work permitted from July 1 to March 14. Refer to Sections 5.1 and 7.5 of the EPP.
Note 13: Overall Benefit Permit under the Endangered Species Act, 2007 from the MNRF may be required if the species, or protected habitat, are impacted by project activities. Refer to Section 5.1 of the EPP.

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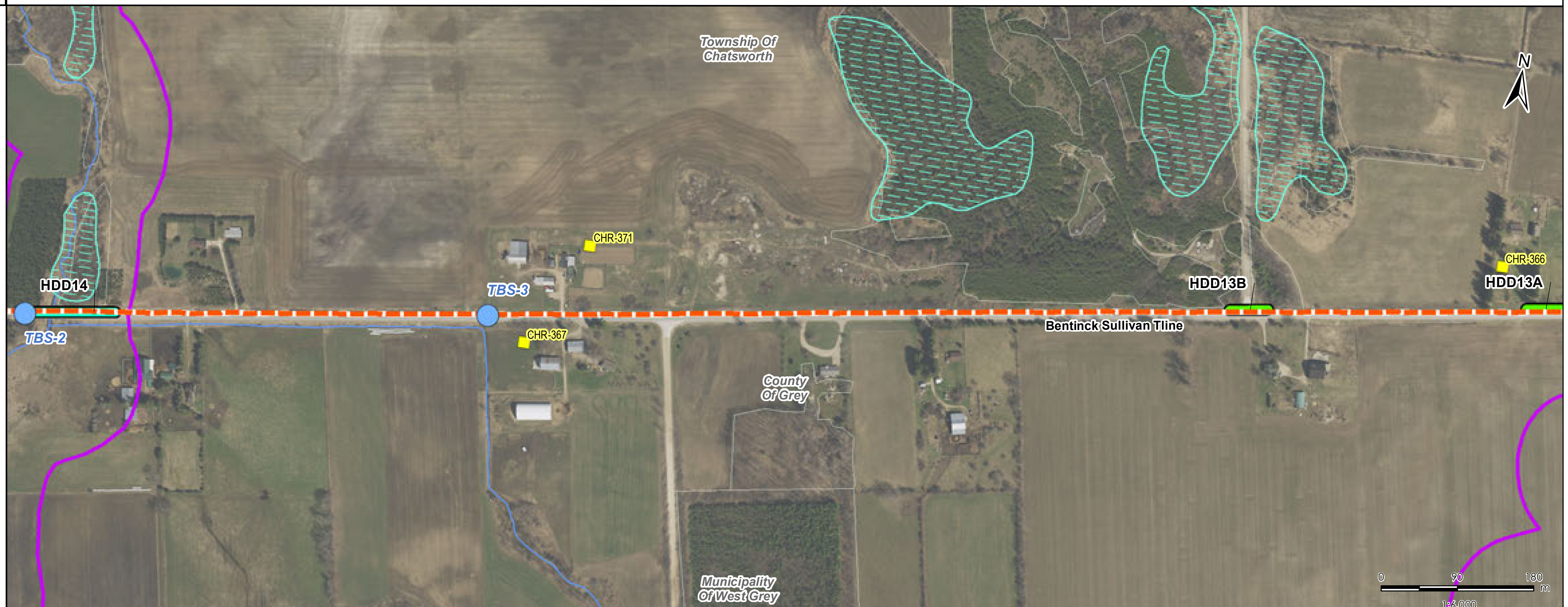

Construction Mitigation

- CONSTRUCTION REQUIREMENTS: Note 1; Note 9; Note 2; Note 9; Note 1; Note 9; Note 9; Note 1
- FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN): Note 11; Note 11
- PIPELINE CROSSING METHODS: Note 1; Note 2; Note 1; Note 1
- VEGETATION RESTRICTIONS: Note 4; Note 4
- PERMITTING REQUIREMENTS: Note 7
- MONITORING
- SEED MIX
- POTENTIALLY CONTAMINATED SITES
- SPECIES AT RISK (SAR) HABITAT

Stantec EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Conservation
- HDD Areas - Constructability
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Identified Cultural Heritage Resource
- Watercourse
- Unevaluated Wetland (per OWES)
- Wooded Area
- Saugeen Valley Conservation Screening Area

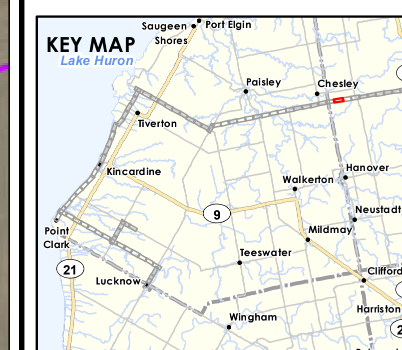

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Figure No.	Rev.
A-9	-

June 2019
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Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-9

Title
Environmental Alignment Sheets - Map 9

Resources		
	CONSERVATION AUTHORITY REGULATED AREA	SVCA
	WETLAND WATERCOURSE	Watercourse; Watercourse / Wetland
	VEGETATION	
	WATER WELL WITHIN 50 m	
	LINEAR FEATURES	Road; Driveways; Driveways
	ENVIRONMENTALLY SENSITIVE AREA / ANSI	
	SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:

Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
Note 3: Crossing permit from Hydro One Networks Inc. (HONI) needed.
Note 4: No clearing activities during the migratory breeding bird restricted activity period (April 1 – August 31) without preconstruction nesting surveys. Refer to Sections 5.1 and 7.2 of the EPP.
Note 5: Groundwater wells present – Refer to Sections 5.1, 6.0, 7.1 and 7.4 of the EPP.
Note 6: Water well monitoring program recommended. Refer to Sections 4.0 and 5.1 of the EPP.
Note 7: Permit from MVCA or SVCA required. Refer to Sections 2.3, 3.3 and 4.0 of the EPP.
Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
Note 9: Maintain emergency egress. Refer to Sections 3.3, 6.0 and 7.4 of the EPP.
Note 10: Implement Suspect Soils Program. Refer to Sections 6.0 and 7.4 and 7.6 of the EPP.
Note 11: Coldwater watercourse crossing - In-water work permitted from July 1 to September 15. Refer to Sections 5.1 and 7.5 of the EPP.
Note 12: Warmwater watercourse crossing - In-water work permitted from July 1 to March 14. Refer to Sections 5.1 and 7.5 of the EPP.
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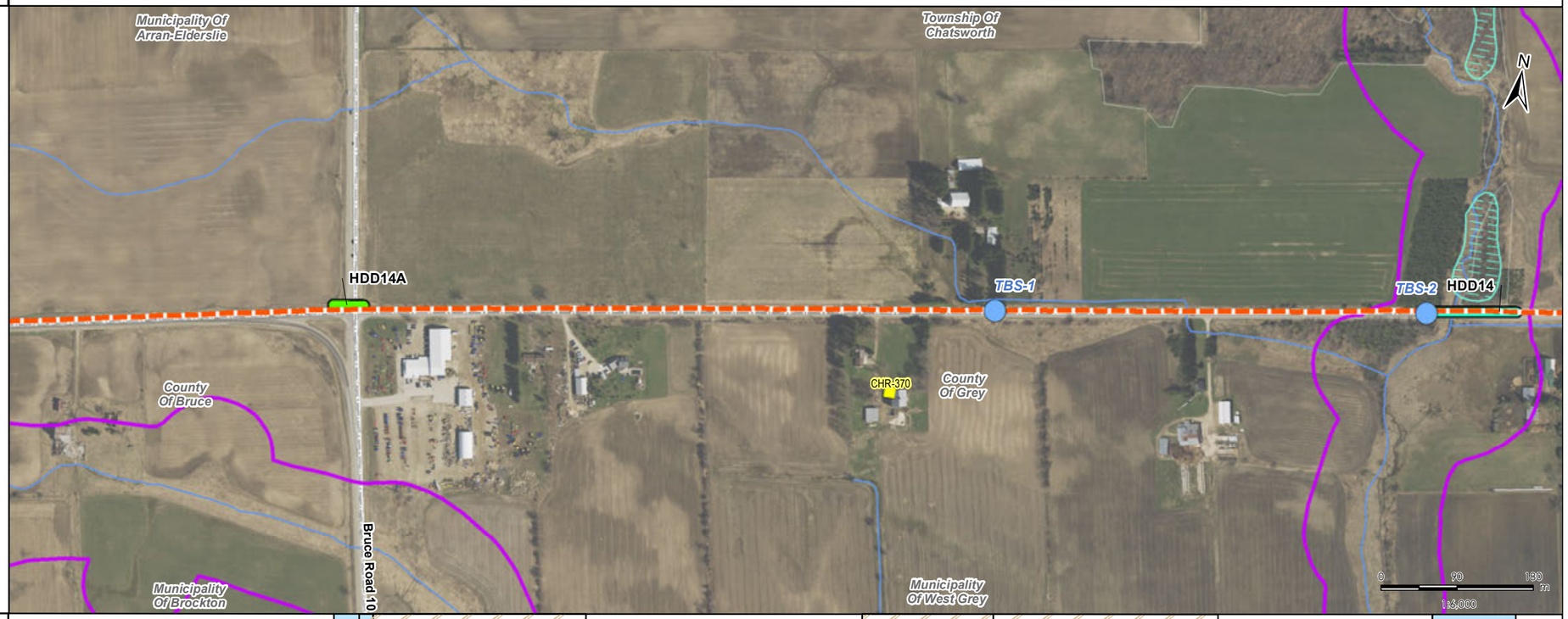


Construction Mitigation		
	CONSTRUCTION REQUIREMENTS	Note 1; Note 9; Note 9; Note 2; Note 1
	FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11; Note 11
	PIPELINE CROSSING METHODS	Note 1; Note 2; Note 1
	VEGETATION RESTRICTIONS	
	PERMITTING REQUIREMENTS	Note 7
	MONITORING	
	SEED MIX	
	POTENTIALLY CONTAMINATED SITES	
	SPECIES AT RISK (SAR) HABITAT	

Stantec

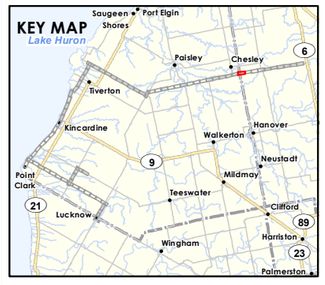
EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Conservation
- HDD Areas - Constructability
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Identified Cultural Heritage Resource
- Watercourse
- Unevaluated Wetland (per OWES)
- Wooded Area
- Saugeen Valley Conservation Screening Area



Notes

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6. All driveway crossings will allow for emergency services access.

Figure No.	Rev.
A-10	-

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Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-10

Title
Environmental Alignment Sheets - Map 10

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Revised: 2019-06-21 By: aeories

Resources

CONSERVATION AUTHORITY REGULATED AREA	
WETLAND WATERCOURSE	← Watercourse
VEGETATION	
WATER WELL WITHIN 50 m	← Well Present
LINEAR FEATURES	Driveways; Road; Driveways; ← Driveway
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:

Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
Note 3: Crossing permit from Hydro One Networks Inc. (HONI) needed.
Note 4: No clearing activities during the migratory breeding bird restricted activity period (April 1 – August 31) without preconstruction nesting surveys. Refer to Sections 5.1 and 7.2 of the EPP.
Note 5: Groundwater wells present – Refer to Sections 5.1, 6.0, 7.1 and 7.4 of the EPP.
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Note 7: Permit from MVCA or SVCA required. Refer to Sections 2.3, 3.3 and 4.0 of the EPP.
Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
Note 9: Maintain emergency egress. Refer to Sections 3.3, 6.0 and 7.4 of the EPP.
Note 10: Implement Suspect Soils Program. Refer to Sections 6.0 and 7.4 and 7.6 of the EPP.
Note 11: Coldwater watercourse crossing - In-water work permitted from July 1 to September 15. Refer to Sections 5.1 and 7.5 of the EPP.
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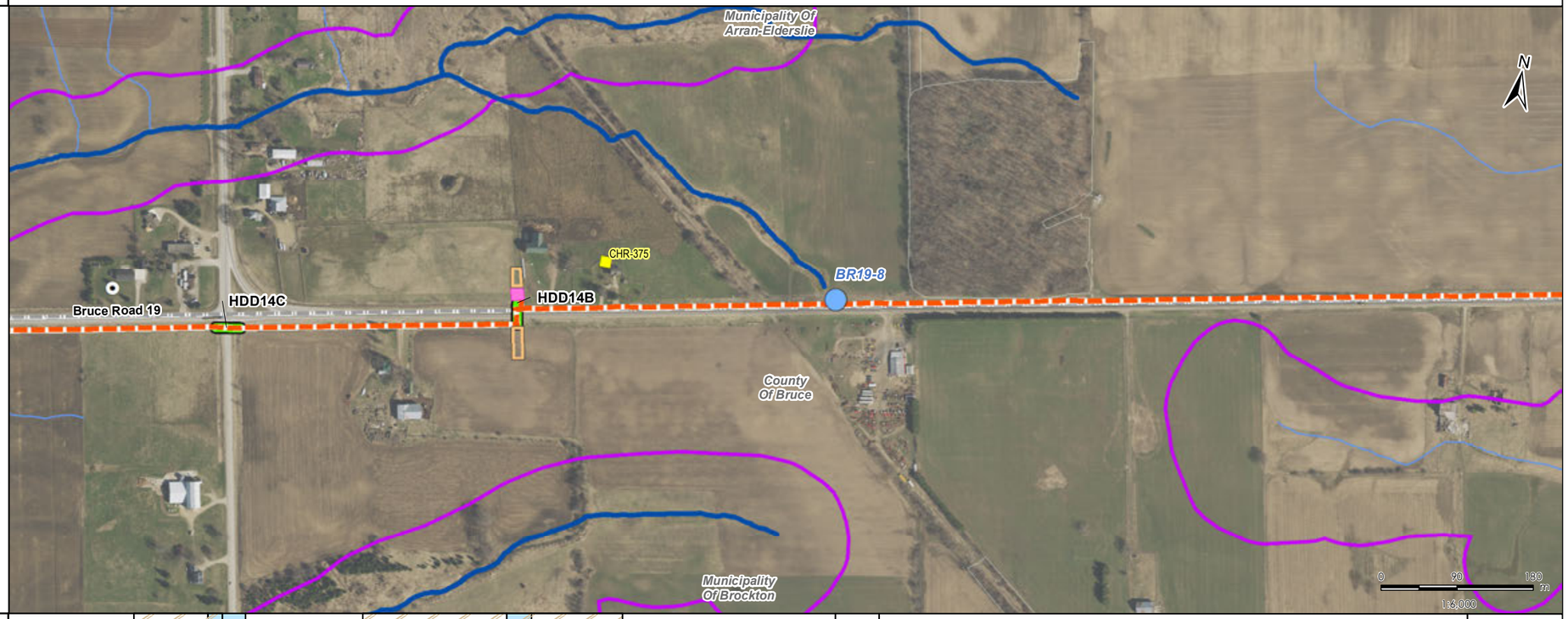

Construction Mitigation

CONSTRUCTION REQUIREMENTS	Note 9; Note 1; Note 1; Note 9; Note 1; Note 9; ← Note 2; Note 9
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	← Note 11
PIPELINE CROSSING METHODS	Note 1; Note 1; ← Note 2
VEGETATION RESTRICTIONS	
PERMITTING REQUIREMENTS	
MONITORING	← Notes 5 & 6
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

Stantec

EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Constructability
- Temporary Workspace
- Proposed Station
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Identified Cultural Heritage Resource
- Cold Water Thermal Regime
- Watercourse
- Unevaluated Wetland (per OWES)
- Wooded Area
- Saugeen Valley Conservation Screening Area

Notes

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6. All driveway crossings will allow for emergency services access.

Figure No.	Rev.
A-11	-

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Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-11

Title
Environmental Alignment Sheets - Map 11

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Resources	
CONSERVATION AUTHORITY REGULATED AREA	SVCA; SVCA
WETLAND WATERCOURSE	Watercourse; Wetland; Watercourse
VEGETATION	
WATER WELL WITHIN 50 m	Well Present; Well Present; Well Present
LINEAR FEATURES	Driveways; Driveway
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:

Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
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Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
Note 9: Maintain emergency egress. Refer to Sections 3.3, 6.0 and 7.4 of the EPP.
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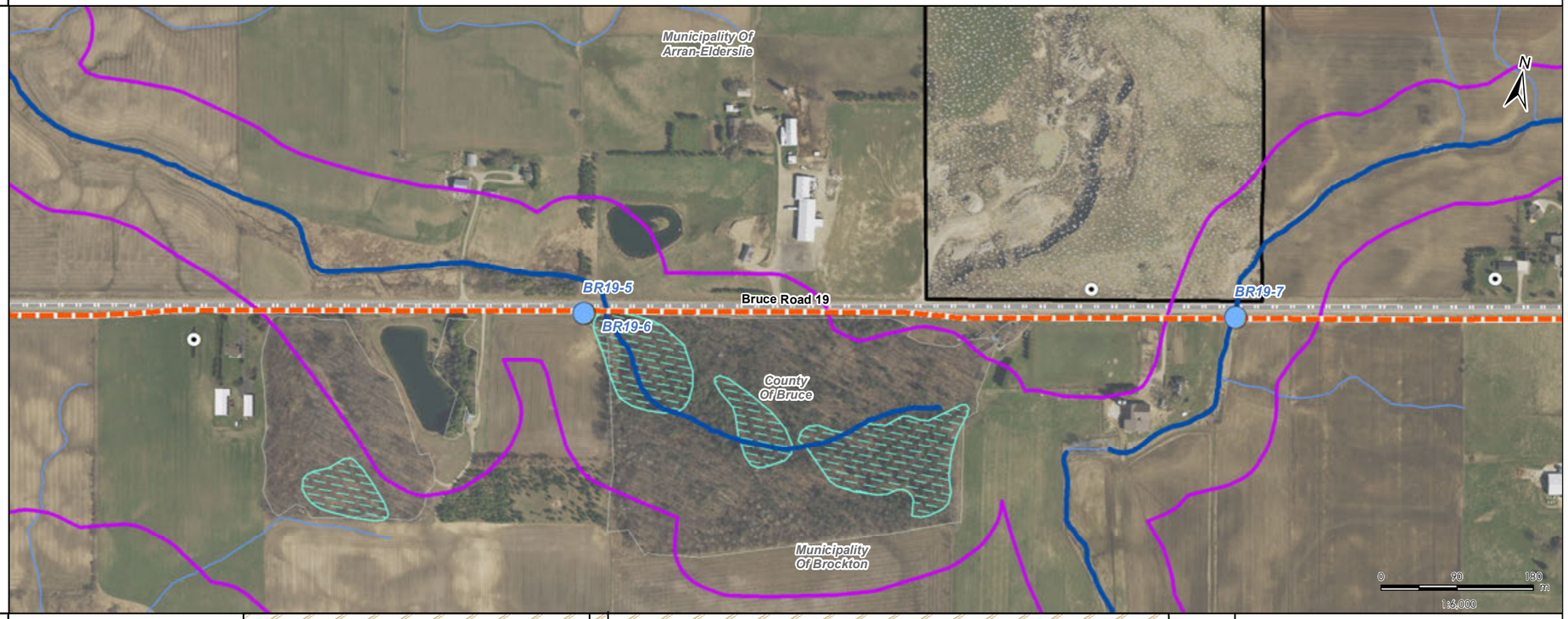

Construction Mitigation	
CONSTRUCTION REQUIREMENTS	Note 2; Note 2; Note 9; Note 2
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11; Note 11; Note 11
PIPELINE CROSSING METHODS	Note 2; Note 2; Note 2
VEGETATION RESTRICTIONS	Note 4; Note 4; Note 4
PERMITTING REQUIREMENTS	Note 7; Note 7
MONITORING	Notes 5 & 6; Notes 5 & 6; Notes 5 & 6
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

Stantec

EPCOR

Legend

- Preferred Pipeline Route
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Cold Water Thermal Regime
- Watercourse
- Aggregate Site (Active)
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area

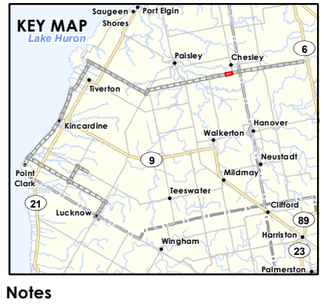

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Figure No.	Rev.
A-12	-

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160950831

Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-12

Title
Environmental Alignment Sheets - Map 12

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Revised: 2019-06-21 By: aeories

Resources	
CONSERVATION AUTHORITY REGULATED AREA	SVCA
WETLAND WATERCOURSE	Watercourse - Vesta Creek; Watercourse - Vesta Creek; Waterbody; Wetland
VEGETATION	
WATER WELL WITHIN 50 m	
LINEAR FEATURES	Driveway; Driveway; Driveway; Road; Road
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:

Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
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Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
Note 9: Maintain emergency egress. Refer to Sections 3.3, 6.0 and 7.4 of the EPP.
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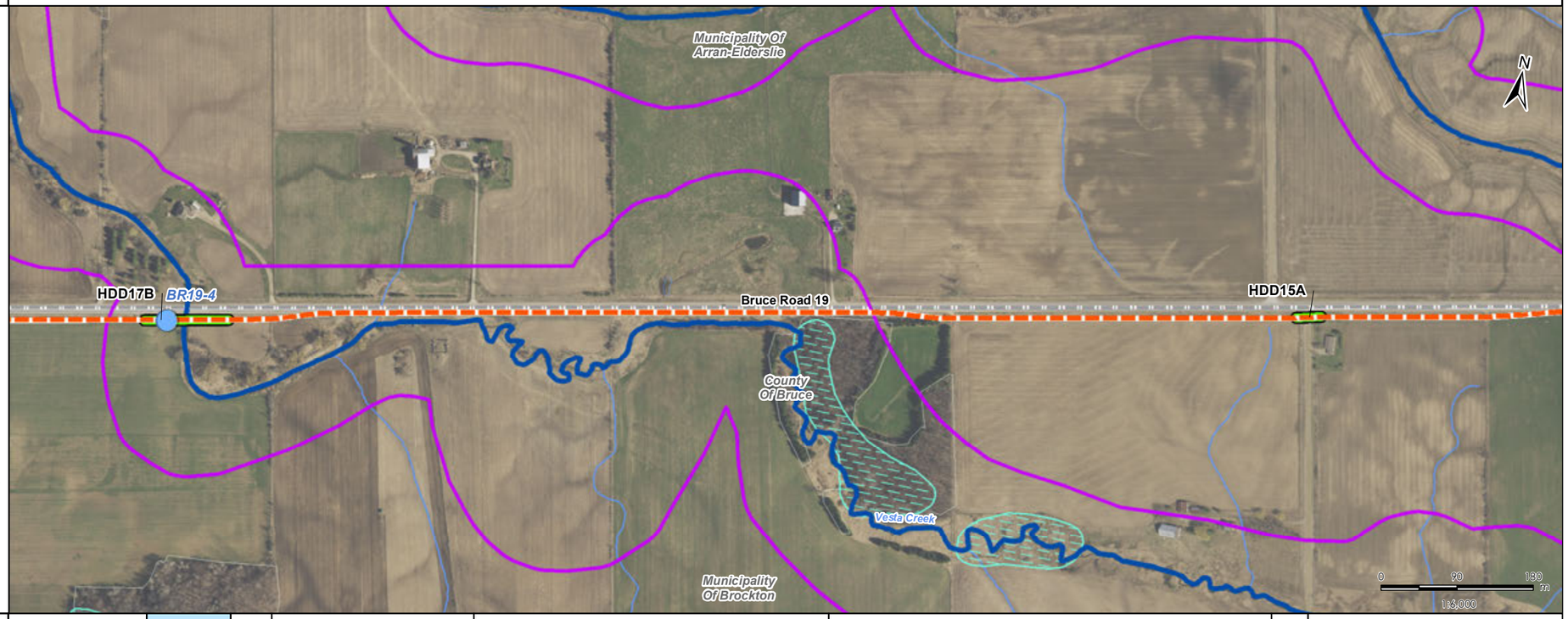
SVCA: Saugeen Valley Conservation Authority
MNRF: Ministry of Natural Resources and Forestry



Construction Mitigation	
CONSTRUCTION REQUIREMENTS	Note 1; Note 9; Note 9; Note 9; Note 9; Note 9
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11
PIPELINE CROSSING METHODS	Note 1
VEGETATION RESTRICTIONS	Note 4
PERMITTING REQUIREMENTS	Note 7
MONITORING	
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

Stantec

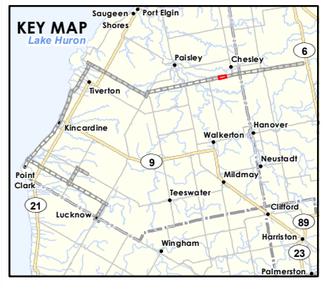
EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Constructability
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Cold Water Thermal Regime
- Watercourse
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area



Notes

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4. MOECC Water well locations are approximate and have been positioned based on published UTM coordinates © Queen's Printer for Ontario, 2018.
5. Conservation Authority data provided under license from Saugeen Valley Conseration Authority and Maitland Valley Conseration Authority (2016).
6. All driveway crossings will allow for emergency services access.

Figure No.	Rev.
A-13	-

June 2019
160950831

Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-13

Title
Environmental Alignment Sheets - Map 13

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Revised: 2019-06-21 By: seories

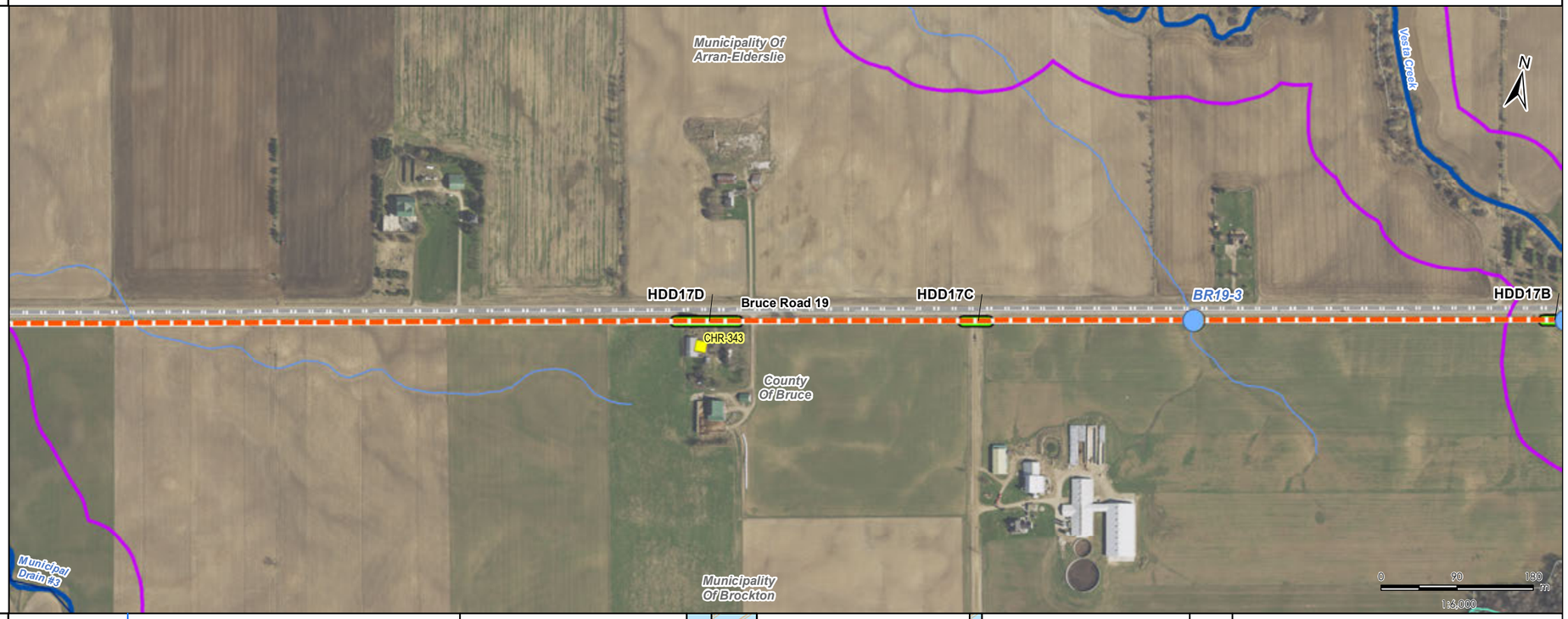
Resources

CONSERVATION AUTHORITY REGULATED AREA	SVCA
WETLAND WATERCOURSE	Watercourse - Municipal Drain #3; Watercourse
VEGETATION	
WATER WELL WITHIN 50 m	
LINEAR FEATURES	Driveway; Driveways; Road; Driveway
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:

Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
Note 3: Crossing permit from Hydro One Networks Inc. (HONI) needed.
Note 4: No clearing activities during the migratory breeding bird restricted activity period (April 1 – August 31) without preconstruction nesting surveys. Refer to Sections 5.1 and 7.2 of the EPP.
Note 5: Groundwater wells present – Refer to Sections 5.1, 6.0, 7.1 and 7.4 of the EPP.
Note 6: Water well monitoring program recommended. Refer to Sections 4.0 and 5.1 of the EPP.
Note 7: Permit from MVCA or SVCA required. Refer to Sections 2.3, 3.3 and 4.0 of the EPP.
Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
Note 9: Maintain emergency egress. Refer to Sections 3.3, 6.0 and 7.4 of the EPP.
Note 10: Implement Suspect Soils Program. Refer to Sections 6.0 and 7.4 and 7.6 of the EPP.
Note 11: Coldwater watercourse crossing - In-water work permitted from July 1 to September 15. Refer to Sections 5.1 and 7.5 of the EPP.
Note 12: Warmwater watercourse crossing - In-water work permitted from July 1 to March 14. Refer to Sections 5.1 and 7.5 of the EPP.
Note 13: Overall Benefit Permit under the Endangered Species Act, 2007 from the MNRF may be required if the species, or protected habitat, are impacted by project activities. Refer to Section 5.1 of the EPP.

Acronyms List:
EPP: Environmental Protection Plan (Stantec 2019)
MVCA: Maitland Valley Conservation Authority
SVCA: Saugeen Valley Conservation Authority
MNRF: Ministry of Natural Resources and Forestry



Construction Mitigation

CONSTRUCTION REQUIREMENTS	Note 11; Note 9; Note 1; Note 9; Notes 1 & 9; Note 2; Note 9
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11
PIPELINE CROSSING METHODS	Note 1; Notes 1 & 9; Note 2
VEGETATION RESTRICTIONS	
PERMITTING REQUIREMENTS	Note 7
MONITORING	
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

Stantec

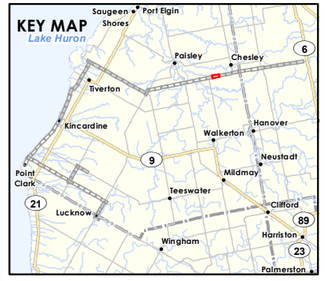
EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Constructability
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Identified Cultural Heritage Resource
- Cold Water Thermal Regime
- Watercourse
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area



Notes

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6. All driveway crossings will allow for emergency services access.

Figure No.	Rev.
A-14	-

June 2019
160950831

Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-14

Title
Environmental Alignment Sheets - Map 14

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Resources

CONSERVATION AUTHORITY REGULATED AREA	SVCA; SVCA
WETLAND WATERCOURSE	Waterbody; Watercourse; Watercourse - Municipal Drain #3; Watercourse - Municipal Drain #3
VEGETATION	
WATER WELL WITHIN 50 m	Well Present; Well Present
LINEAR FEATURES	Driveway; Driveways; Road; Driveways
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:

Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
Note 3: Crossing permit from Hydro One Networks Inc. (HONI) needed.
Note 4: No clearing activities during the migratory breeding bird restricted activity period (April 1 – August 31) without preconstruction nesting surveys. Refer to Sections 5.1 and 7.2 of the EPP.
Note 5: Groundwater wells present – Refer to Sections 5.1, 6.0, 7.1 and 7.4 of the EPP.
Note 6: Water well monitoring program recommended. Refer to Sections 4.0 and 5.1 of the EPP.
Note 7: Permit from MVCA or SVCA required. Refer to Sections 2.3, 3.3 and 4.0 of the EPP.
Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
Note 9: Maintain emergency egress. Refer to Sections 3.3, 6.0 and 7.4 of the EPP.
Note 10: Implement Suspect Soils Program. Refer to Sections 6.0 and 7.4 and 7.6 of the EPP.
Note 11: Coldwater watercourse crossing - In-water work permitted from July 1 to September 15. Refer to Sections 5.1 and 7.5 of the EPP.
Note 12: Warmwater watercourse crossing - In-water work permitted from July 1 to March 14. Refer to Sections 5.1 and 7.5 of the EPP.
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Acronyms List:
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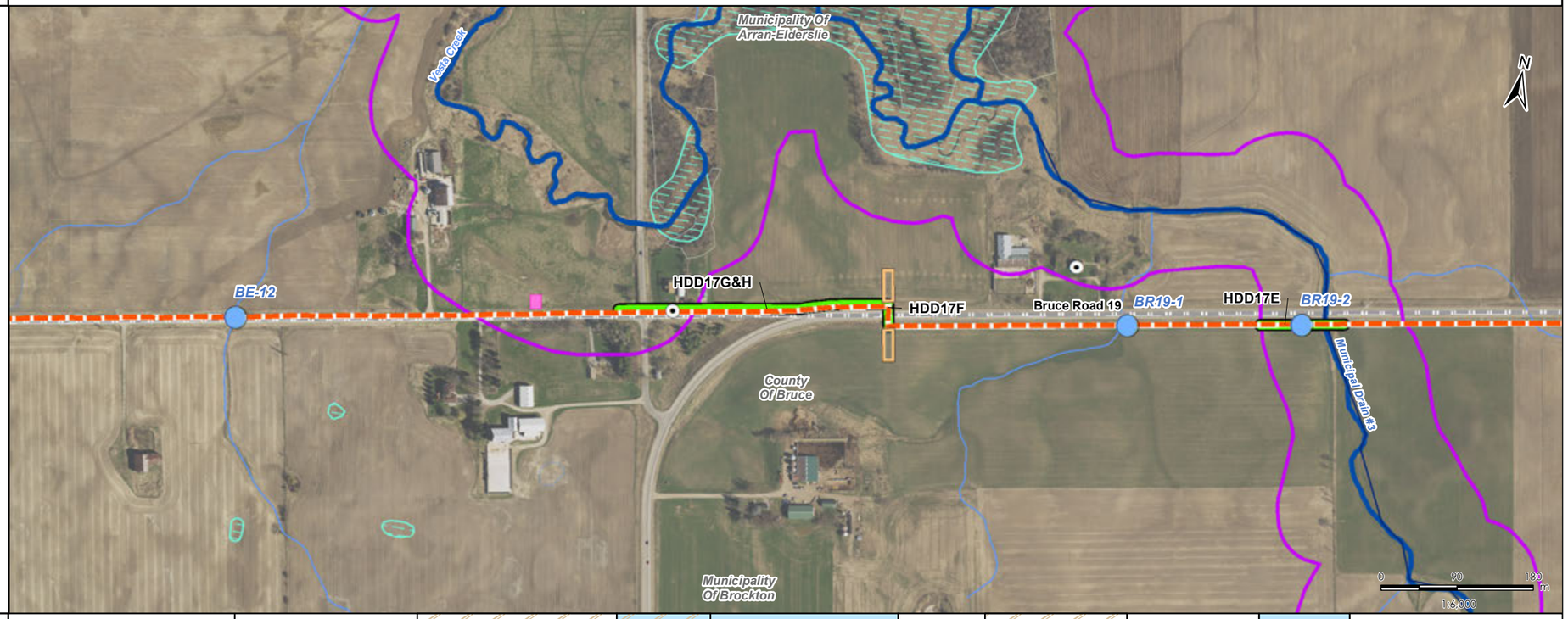


Construction Mitigation

CONSTRUCTION REQUIREMENTS	Note 2; Note 9; Note 1; Note 9; Note 2; Note 1
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11; Note 11; Note 11
PIPELINE CROSSING METHODS	Note 2; Note 1; Note 2; Note 1
VEGETATION RESTRICTIONS	
PERMITTING REQUIREMENTS	Note 7; Note 7; Note 7
MONITORING	Notes 5 & 6; Notes 5 & 6
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

Stantec

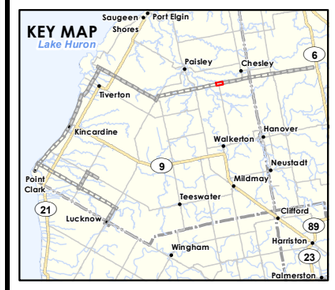
EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Constructability
- Temporary Workspace
- Proposed Station
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Cold Water Thermal Regime
- Watercourse
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area



Notes

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6. All driveway crossings will allow for emergency services access.

Figure No.	Rev.
A-15	-

June 2019
160950831

Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-15

Title
Environmental Alignment Sheets - Map 15

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Resources

CONSERVATION AUTHORITY REGULATED AREA	
WETLAND WATERCOURSE	← Watercourse ← Watercourse
VEGETATION	
WATER WELL WITHIN 50 m	← Well Present
LINEAR FEATURES	← Driveway ← Road ← Driveway ← Driveway ← Driveway ← Driveway Driveway
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:

Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
Note 3: Crossing permit from Hydro One Networks Inc. (HONI) needed.
Note 4: No clearing activities during the migratory breeding bird restricted activity period (April 1 – August 31) without preconstruction nesting surveys. Refer to Sections 5.1 and 7.2 of the EPP.
Note 5: Groundwater wells present – Refer to Sections 5.1, 6.0, 7.1 and 7.4 of the EPP.
Note 6: Water well monitoring program recommended. Refer to Sections 4.0 and 5.1 of the EPP.
Note 7: Permit from MVCA or SVCA required. Refer to Sections 2.3, 3.3 and 4.0 of the EPP.
Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
Note 9: Maintain emergency egress. Refer to Sections 3.3, 6.0 and 7.4 of the EPP.
Note 10: Implement Suspect Soils Program. Refer to Sections 6.0 and 7.4 and 7.6 of the EPP.
Note 11: Coldwater watercourse crossing - In-water work permitted from July 1 to September 15. Refer to Sections 5.1 and 7.5 of the EPP.
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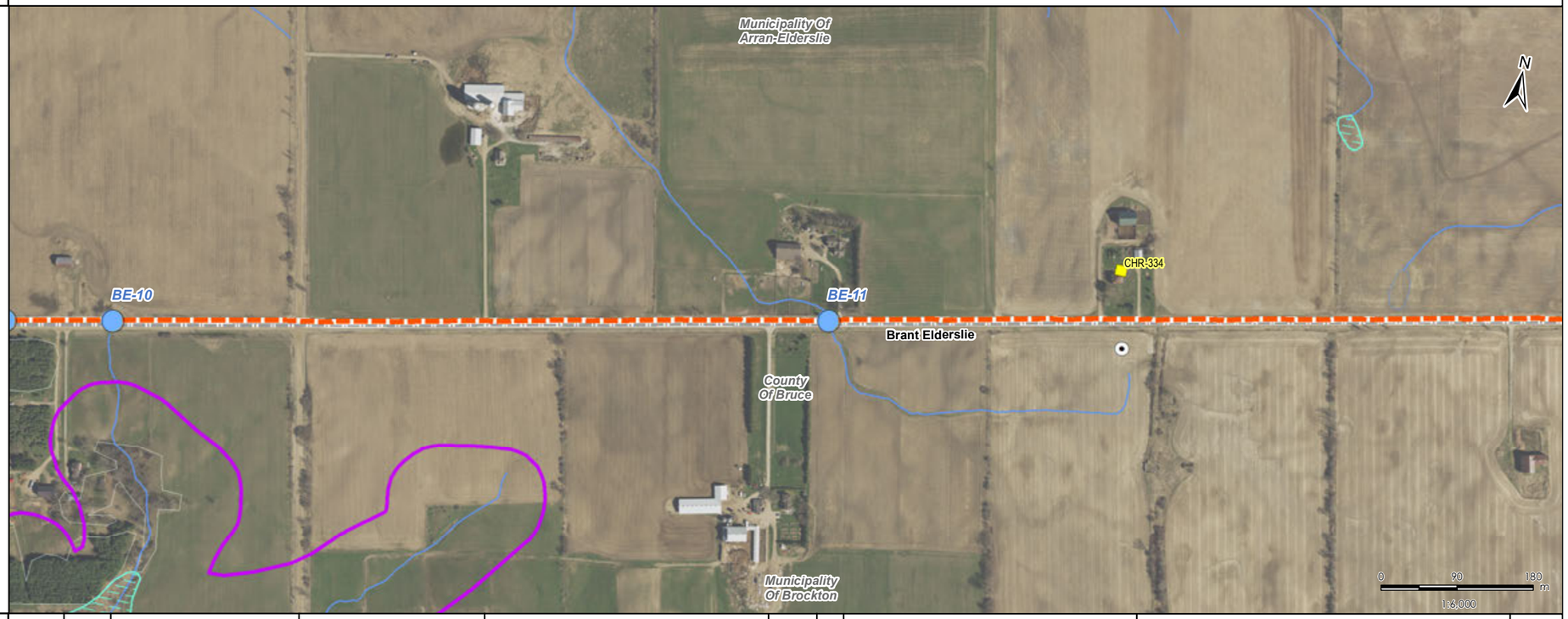


Construction Mitigation

CONSTRUCTION REQUIREMENTS	Note 9 ← Note 2 ← Note 9 ← Note 9 Note 9 Note 2 ← Note 9 ← Note 9 Note 9
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	← Note 11 ← Note 11
PIPELINE CROSSING METHODS	← Note 2 ← Note 2
VEGETATION RESTRICTIONS	
PERMITTING REQUIREMENTS	
MONITORING	← Notes 5 & 6
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

Stantec

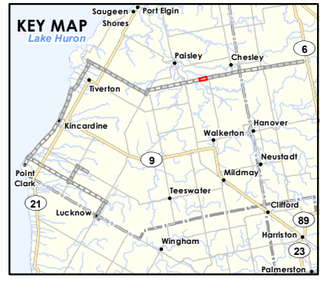
EPCOR

Legend

- Preferred Pipeline Route
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Identified Cultural Heritage Resource
- Cold Water Thermal Regime
- Watercourse
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area



Notes

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6. All driveway crossings will allow for emergency services access.

Figure No.	Rev.
A-16	-

June 2019
160950831

Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-16

Title
Environmental Alignment Sheets - Map 16

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Resources

CONSERVATION AUTHORITY REGULATED AREA	SVCA
WETLAND WATERCOURSE	Waterbody - Saugeen River; Wetland; Watercourse; Watercourse; Watercourse
VEGETATION	
WATER WELL WITHIN 50 m	Well Present
LINEAR FEATURES	Road; Driveway; Road; Driveways; Driveway; Driveways; Driveways
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:

Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
Note 3: Crossing permit from Hydro One Networks Inc. (HONI) needed.
Note 4: No clearing activities during the migratory breeding bird restricted activity period (April 1 – August 31) without preconstruction nesting surveys. Refer to Sections 5.1 and 7.2 of the EPP.
Note 5: Groundwater wells present – Refer to Sections 5.1, 6.0, 7.1 and 7.4 of the EPP.
Note 6: Water well monitoring program recommended. Refer to Sections 4.0 and 5.1 of the EPP.
Note 7: Permit from MVCA or SVCA required. Refer to Sections 2.3, 3.3 and 4.0 of the EPP.
Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
Note 9: Maintain emergency egress. Refer to Sections 3.3, 6.0 and 7.4 of the EPP.
Note 10: Implement Suspect Soils Program. Refer to Sections 6.0 and 7.4 and 7.6 of the EPP.
Note 11: Coldwater watercourse crossing - In-water work permitted from July 1 to September 15. Refer to Sections 5.1 and 7.5 of the EPP.
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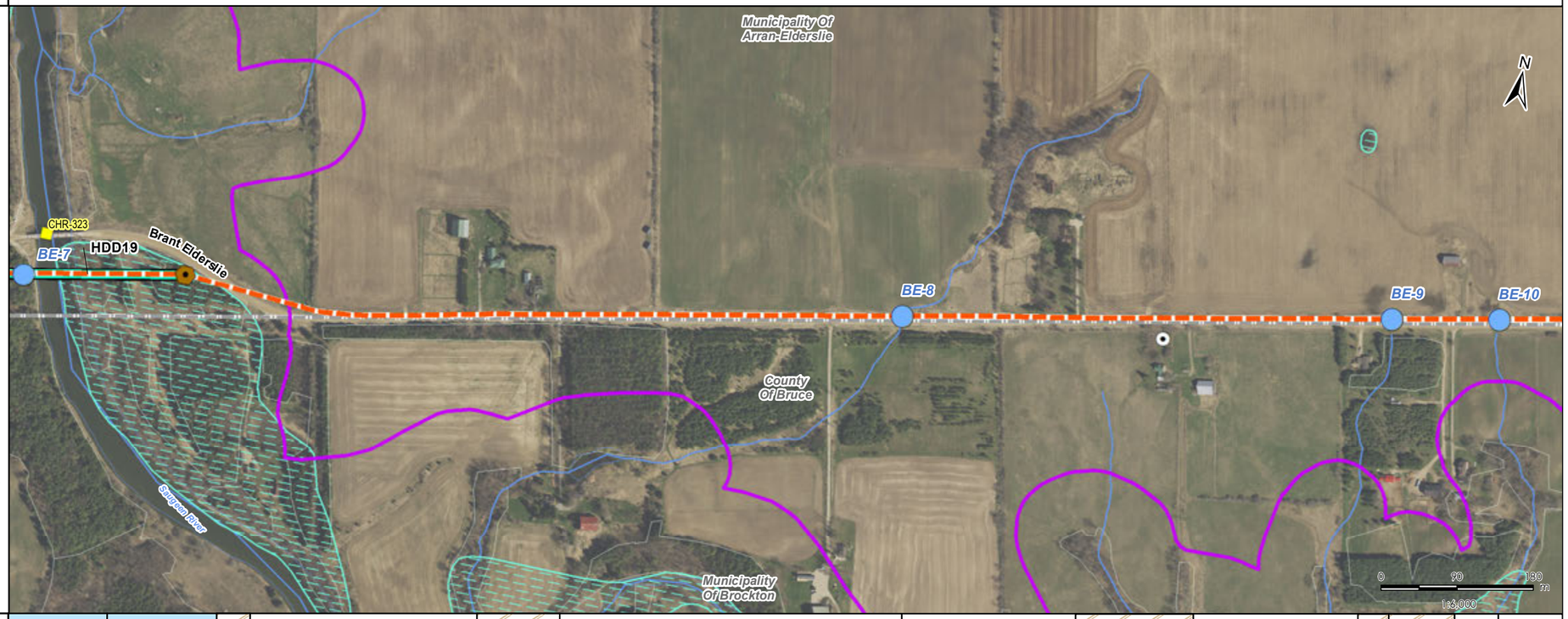

Construction Mitigation

CONSTRUCTION REQUIREMENTS	Note 9; Note 1; Note 9; Note 9; Note 2; Note 9; Note 9; Note 2; Note 2
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11; Note 11; Note 11
PIPELINE CROSSING METHODS	Note 1; Note 2; Note 2; Note 2
VEGETATION RESTRICTIONS	Note 4
PERMITTING REQUIREMENTS	Note 7
MONITORING	Notes 5 & 6
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

Stantec

EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Conservation
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Identified Cultural Heritage Resource
- Trench Plug
- Watercourse
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area

Notes

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Figure No.	Rev.
A-17	-

June 2019
160950831

Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-17

Title
Environmental Alignment Sheets - Map 17

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Resources

CONSERVATION AUTHORITY REGULATED AREA	SVCA; SVCA; SVCA
WETLAND WATERCOURSE	Wetland; Watercourse; Waterbody; Watercourse; Waterbody - Saugeen River; Wetland
VEGETATION	
WATER WELL WITHIN 50 m	Well Present; Well Present; Well Present
LINEAR FEATURES	Driveways; Driveways; Road; Driveway; Road
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	Saugeen River

Construction Mitigation Notes:

Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
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Note 7: Permit from MVCA or SVCA required. Refer to Sections 2.3, 3.3 and 4.0 of the EPP.
Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
Note 9: Maintain emergency egress. Refer to Sections 3.3, 6.0 and 7.4 of the EPP.
Note 10: Implement Suspect Soils Program. Refer to Sections 6.0 and 7.4 and 7.6 of the EPP.
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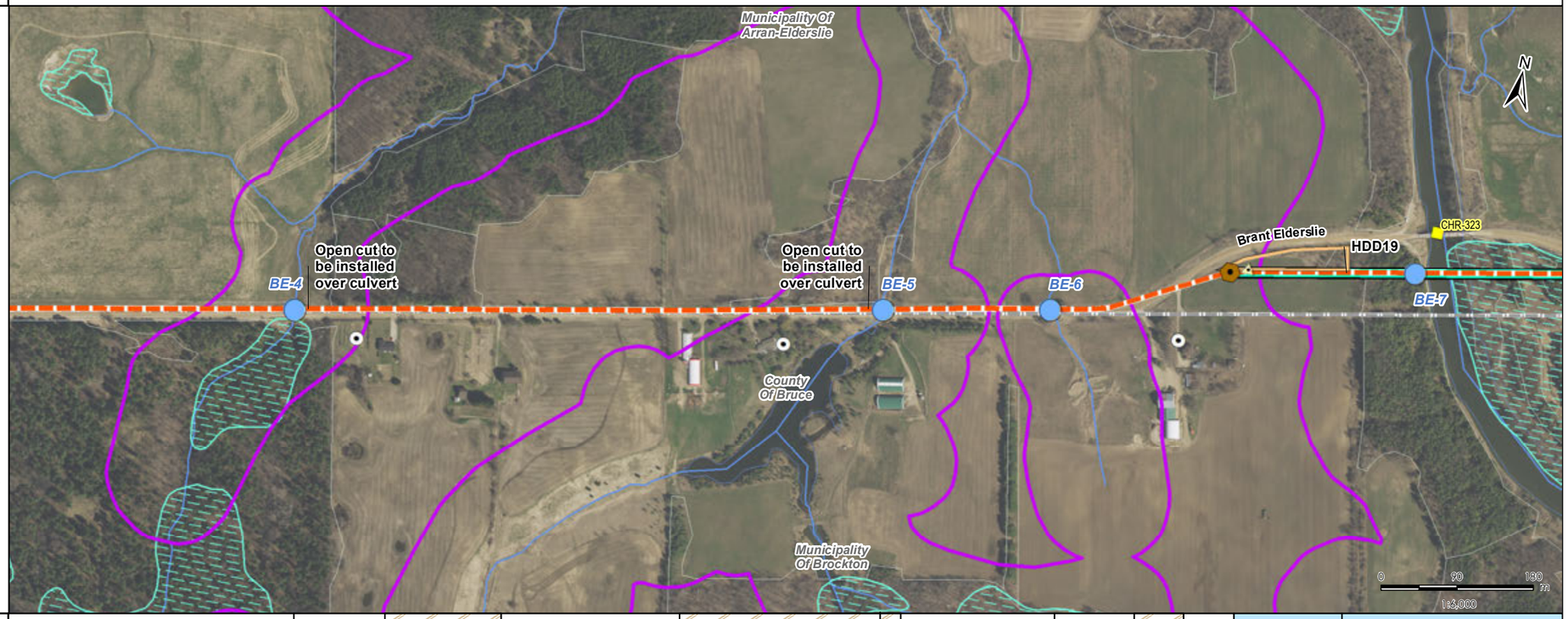

Construction Mitigation

CONSTRUCTION REQUIREMENTS	Note 2; Note 9; Note 9; Note 2; Note 2; Note 9; Note 9 Note 1
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11; Note 11; Note 11
PIPELINE CROSSING METHODS	Note 2; Note 2; Note 2; Note 1
VEGETATION RESTRICTIONS	Note 4; Note 4
PERMITTING REQUIREMENTS	Note 7; Note 7; Note 7
MONITORING	Notes 5 & 6; Notes 5 & 6; Notes 5 & 6
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

Stantec

EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Conservation
- Temporary Workspace
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Identified Cultural Heritage Resource
- Trench Plug
- Archaeological Site BbHn-11
- Watercourse
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area

Notes

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Figure No.	Rev.
A-18	-

June 2019
160950831

Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-18

Title
Environmental Alignment Sheets - Map 18

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Revised: 2019-06-21 By: aeories

Stantec

EPCOR

Resources

CONSERVATION AUTHORITY REGULATED AREA	SVCA	SVCA			
WETLAND WATERCOURSE	Wetland	Waterbody - Teeswater River	Watercourse		
VEGETATION					
WATER WELL WITHIN 50 m					
LINEAR FEATURES	Driveway	Driveway	Road	Driveway	Driveway
ENVIRONMENTALLY SENSITIVE AREA / ANSI					
SPECIES AT RISK (SAR) HABITAT					

Construction Mitigation Notes:
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Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
Note 9: Maintain emergency egress. Refer to Sections 3.3, 6.0 and 7.4 of the EPP.
Note 10: Implement Suspect Soils Program. Refer to Sections 6.0 and 7.4 and 7.6 of the EPP.
Note 11: Coldwater watercourse crossing - In-water work permitted from July 1 to September 15. Refer to Sections 5.1 and 7.5 of the EPP.
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Acronyms List:
EPP: Environmental Protection Plan (Stantec 2019)
MVCA: Maitland Valley Conservation Authority
SVCA: Saugeen Valley Conservation Authority
MNRF: Ministry of Natural Resources and Forestry

Construction Mitigation

CONSTRUCTION REQUIREMENTS	Note 1	Note 9	ote 9	Note 1	Note 1	Note 9	Note 9	Note 9
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11							
PIPELINE CROSSING METHODS	Note 1	Note 1	Note 1					
VEGETATION RESTRICTIONS								
PERMITTING REQUIREMENTS	Note 7	Note 7						
MONITORING								
SEED MIX								
POTENTIALLY CONTAMINATED SITES								
SPECIES AT RISK (SAR) HABITAT								

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Revised: 2019-06-21 By: searles

Legend

▬	Preferred Pipeline Route
▬	HDD Areas - Conservation
▬	HDD Areas - Constructability
■	Proposed Station
●	Watercourse Crossing Location

Existing Features

⊙	Water Well (MOECC)
■	Identified Cultural Heritage Resource
⬢	Trench Plug
▬	Silt Fencing
―	Watercourse
▨	Unevaluated Wetland (per OWES)
□	Waterbody
□	Wooded Area
□	Saugeen Valley Conservation Screening Area

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N.
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3. Orthoimagery © First Base Solutions, 2015.
4. MOECC Water well locations are approximate and have been positioned based on published UTM coordinates © Queen's Printer for Ontario, 2018.
5. Conservation Authority data provided under license from Saugeen Valley Conservation Authority and Maitland Valley Conservation Authority (2016).
6. All driveway crossings will allow for emergency services access.

Figure No.	Rev.
A-19	-

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Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-19

Title
Environmental Alignment Sheets - Map 19

Resources

CONSERVATION AUTHORITY REGULATED AREA	SVCA; SVCA; SVCA
WETLAND WATERCOURSE	Watercourse; Watercourse → Wetland; Watercourse Wetland
VEGETATION	
WATER WELL WITHIN 50 m	Well Present →
LINEAR FEATURES	Road; Driveway
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:

Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
Note 3: Crossing permit from Hydro One Networks Inc. (HONI) needed.
Note 4: No clearing activities during the migratory breeding bird restricted activity period (April 1 – August 31) without preconstruction nesting surveys. Refer to Sections 5.1 and 7.2 of the EPP.
Note 5: Groundwater wells present – Refer to Sections 5.1, 6.0, 7.1 and 7.4 of the EPP.
Note 6: Water well monitoring program recommended. Refer to Sections 4.0 and 5.1 of the EPP.
Note 7: Permit from MVCA or SVCA required. Refer to Sections 2.3, 3.3 and 4.0 of the EPP.
Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
Note 9: Maintain emergency egress. Refer to Sections 3.3, 6.0 and 7.4 of the EPP.
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Note 11: Coldwater watercourse crossing - In-water work permitted from July 1 to September 15. Refer to Sections 5.1 and 7.5 of the EPP.
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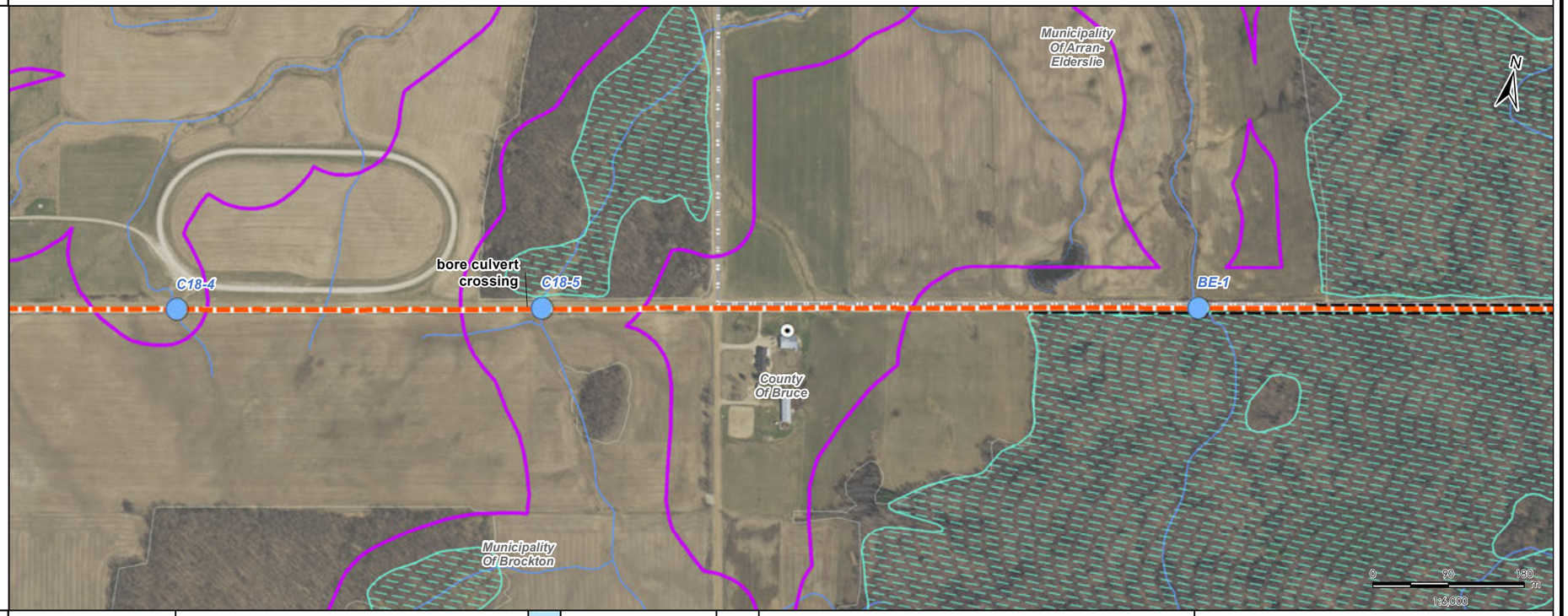


Construction Mitigation

CONSTRUCTION REQUIREMENTS	Note 2; Note 1; Note 9 Note 9; Note 2
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11; Note 11; Note 11
PIPELINE CROSSING METHODS	Note 2; Note 1; Note 2
VEGETATION RESTRICTIONS	
PERMITTING REQUIREMENTS	Note 7; Note 7; Note 7
MONITORING	Notes 5 & 6
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

Stantec

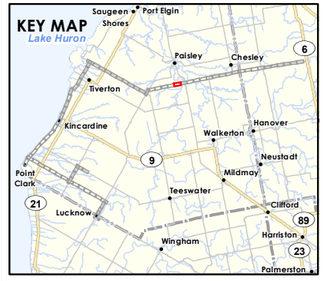
EPCOR

Legend

- Preferred Pipeline Route
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Silt Fencing
- Watercourse
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area



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6. All driveway crossings will allow for emergency services access.

Figure No.	Rev.
A-20	-

June 2019
160950831

Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-20

Title
Environmental Alignment Sheets - Map 20

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Resources

Resource	Details
CONSERVATION AUTHORITY REGULATED AREA	SVCA; SVCA
WETLAND WATERCOURSE	Watercourse
VEGETATION	
WATER WELL WITHIN 50 m	Well Present
LINEAR FEATURES	Driveways; Driveways; Driveways
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:
Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
Note 3: Crossing permit from Hydro One Networks Inc. (HONI) needed.
Note 4: No clearing activities during the migratory breeding bird restricted activity period (April 1 – August 31) without preconstruction nesting surveys. Refer to Sections 5.1 and 7.2 of the EPP.
Note 5: Groundwater wells present – Refer to Sections 5.1, 6.0; 7.1 and 7.4 of the EPP.
Note 6: Water well monitoring program recommended. Refer to Sections 4.0 and 5.1 of the EPP.
Note 7: Permit from MVCA or SVCA required. Refer to Sections 2.3, 3.3 and 4.0 of the EPP.
Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
Note 9: Maintain emergency egress. Refer to Sections 3.3, 6.0 and 7.4 of the EPP.
Note 10: Implement Suspect Soils Program. Refer to Sections 6.0 and 7.4 and 7.6 of the EPP.
Note 11: Coldwater watercourse crossing - In-water work permitted from July 1 to September 15. Refer to Sections 5.1 and 7.5 of the EPP.
Note 12: Warmwater watercourse crossing - In-water work permitted from July 1 to March 14. Refer to Sections 5.1 and 7.5 of the EPP.
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Acronyms List:
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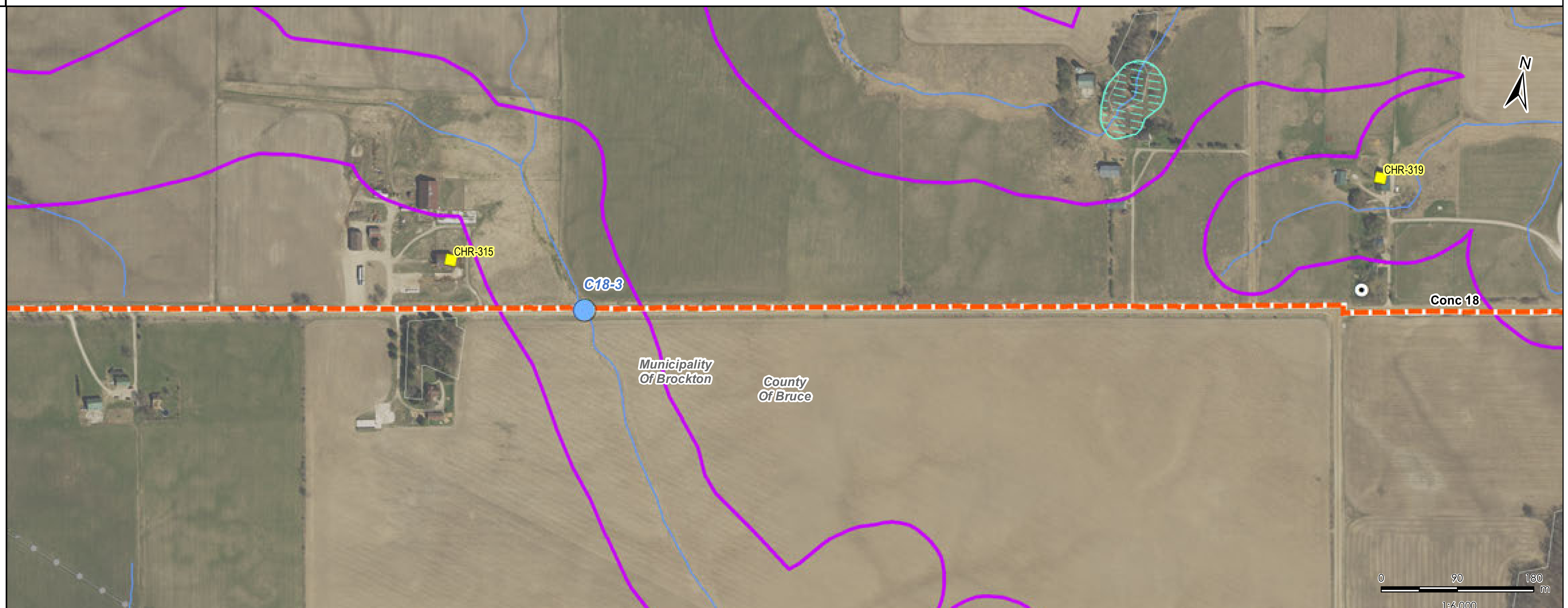


Construction Mitigation

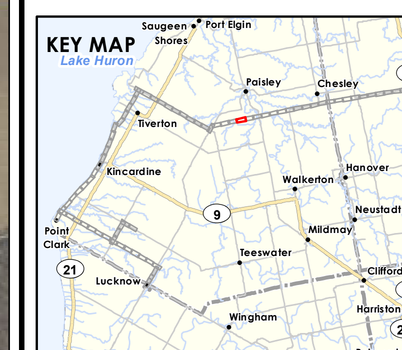
Requirement	Details
CONSTRUCTION REQUIREMENTS	Note 9; Note 9; Note 2
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11
PIPELINE CROSSING METHODS	Note 2
VEGETATION RESTRICTIONS	
PERMITTING REQUIREMENTS	Note 7; Note 7
MONITORING	Notes 5 & 6
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

Stantec EPCOR

Legend

Preferred Pipeline Route
Watercourse Crossing Location

Existing Features
Water Well (MOECC)
Identified Cultural Heritage Resource
Cool Water Thermal Regime
Hydro Line
Watercourse
Unevaluated Wetland (per OWES)
Waterbody
Wooded Area
Saugeen Valley Conservation Screening Area



Notes

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6. All driveway crossings will allow for emergency services access.

Figure No.	Rev.
A-21	-

June 2019
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Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-21

Title
Environmental Alignment Sheets - Map 21

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Resources	
CONSERVATION AUTHORITY REGULATED AREA	SVCA; SVCA
WETLAND WATERCOURSE	Watercourse
VEGETATION	
WATER WELL WITHIN 50 m	
LINEAR FEATURES	Road; Hydro Line
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:

Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
Note 3: Crossing permit from Hydro One Networks Inc. (HONI) needed.
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Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
Note 9: Maintain emergency egress. Refer to Sections 3.3, 6.0 and 7.4 of the EPP.
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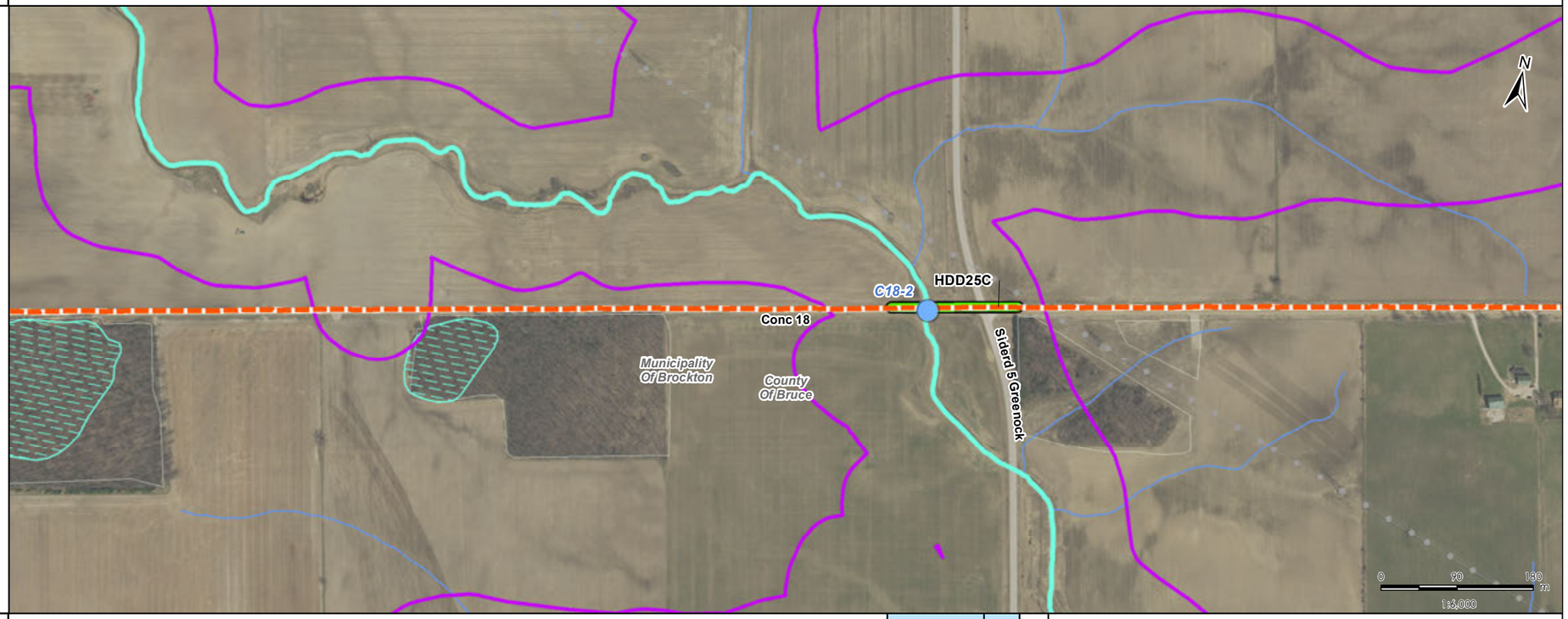


Construction Mitigation	
CONSTRUCTION REQUIREMENTS	Note 1; Note 9; Note 3
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11
PIPELINE CROSSING METHODS	Note 1
VEGETATION RESTRICTIONS	
PERMITTING REQUIREMENTS	Note 7; Note 7
MONITORING	
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

Stantec

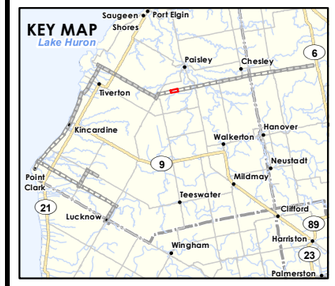
EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Constructability
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Cool Water Thermal Regime
- Hydro Line
- Watercourse
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area



Notes

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6. All driveway crossings will allow for emergency services access.

Figure No.	Rev.
A-22	-

June 2019
160950831

Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-22

Title
Environmental Alignment Sheets - Map 22

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Resources

CONSERVATION AUTHORITY REGULATED AREA	SVCA	SVCA
WETLAND WATERCOURSE	Wetland	Watercourse / Wetland
VEGETATION		
WATER WELL WITHIN 50 m		
LINEAR FEATURES		Road
ENVIRONMENTALLY SENSITIVE AREA / ANSI		
SPECIES AT RISK (SAR) HABITAT		

Construction Mitigation Notes:

Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
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Note 7: Permit from MVCA or SVCA required. Refer to Sections 2.3, 3.3 and 4.0 of the EPP.
Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
Note 9: Maintain emergency egress. Refer to Sections 3.3, 6.0 and 7.4 of the EPP.
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Note 11: Coldwater watercourse crossing - In-water work permitted from July 1 to September 15. Refer to Sections 5.1 and 7.5 of the EPP.
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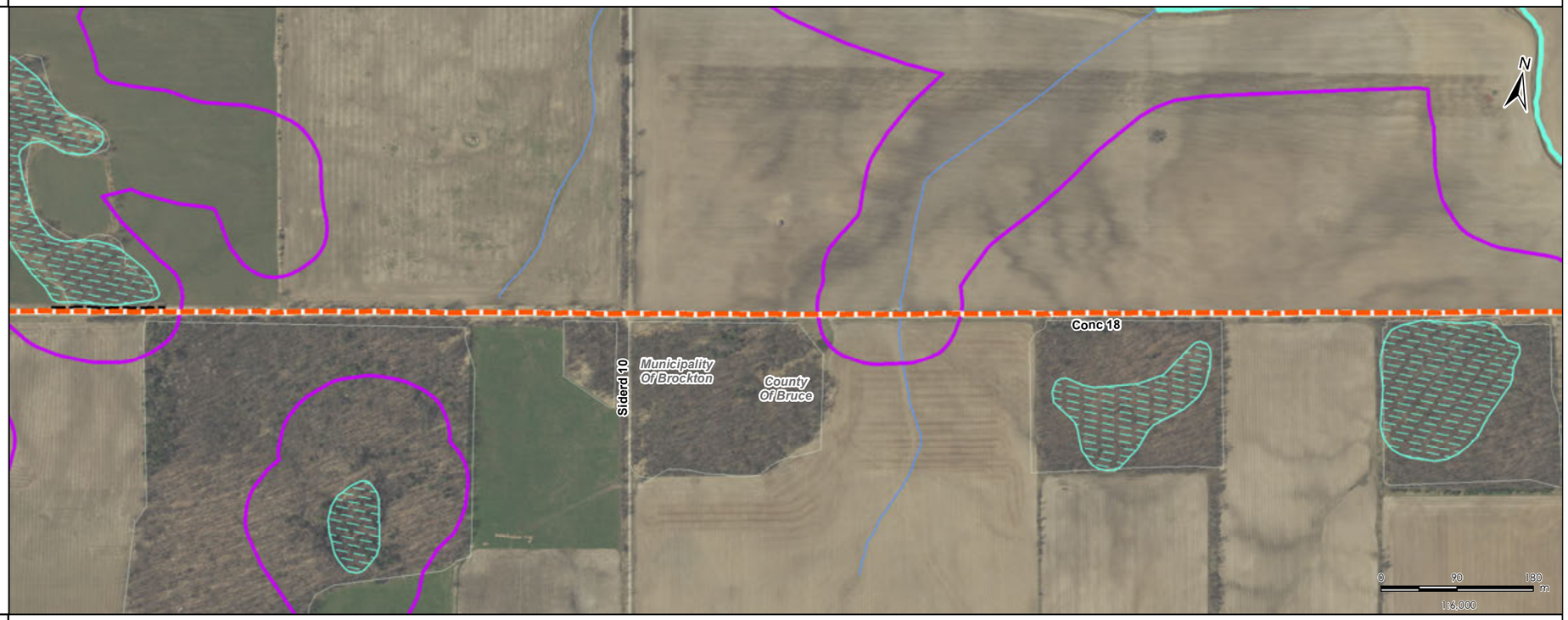

Construction Mitigation

CONSTRUCTION REQUIREMENTS	
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	
PIPELINE CROSSING METHODS	
VEGETATION RESTRICTIONS	Note 4
PERMITTING REQUIREMENTS	Note 7 / Note 7
MONITORING	
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

Stantec

EPCOR

Legend

- Preferred Pipeline Route

Existing Features

- Water Well (MOECC)
- Silt Fencing
- Cool Water Thermal Regime
- Hydro Line
- Watercourse
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area

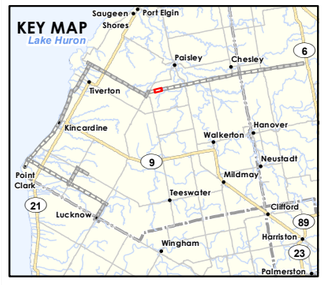

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Figure No.	Rev.
A-23	-

June 2019
160950831

Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-23

Title
Environmental Alignment Sheets - Map 23

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Revised: 2019-06-21 By: aaries

Resources

CONSERVATION AUTHORITY REGULATED AREA	SVCA | SVCA | SVCA | SVCA
WETLAND WATERCOURSE	Watercourse; Wetland; Wetland
VEGETATION	
WATER WELL WITHIN 50 m	
LINEAR FEATURES	Road; Road; Driveway
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:

Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
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Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
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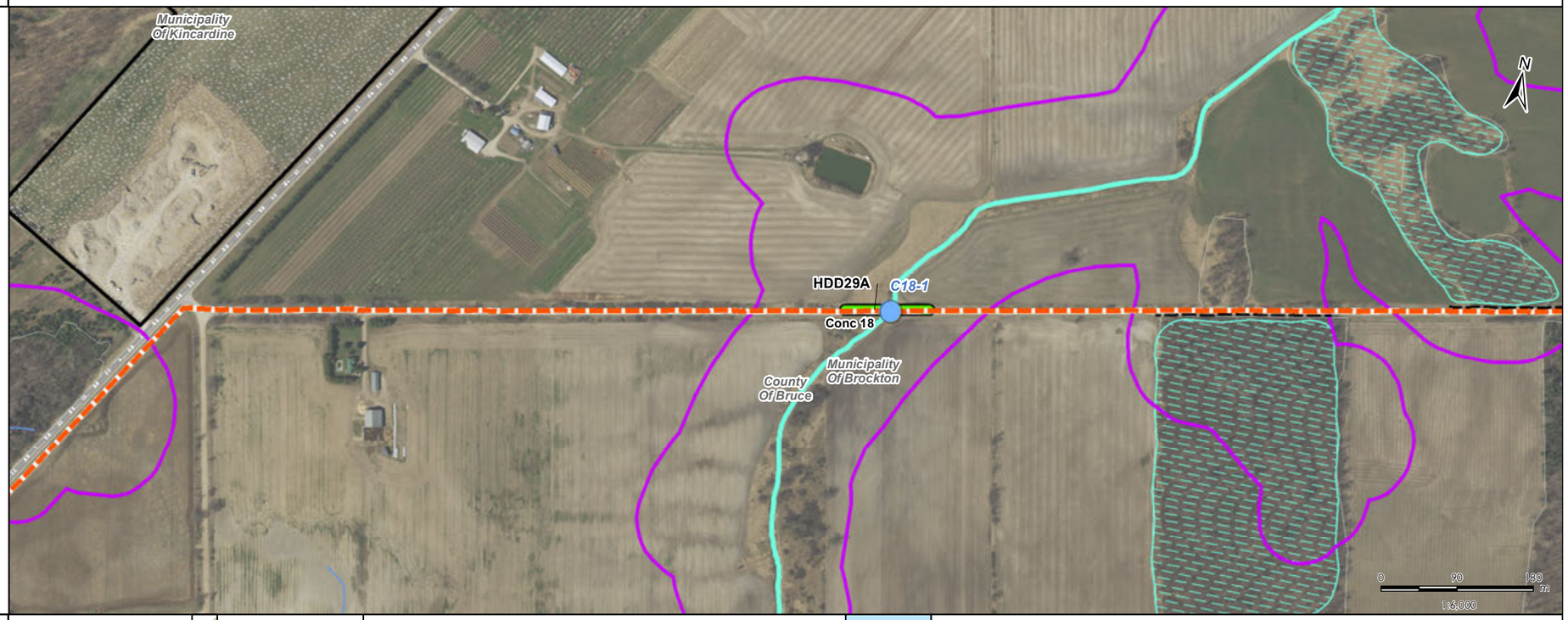

Construction Mitigation

CONSTRUCTION REQUIREMENTS	Note 9; Note 9; Note 1
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11
PIPELINE CROSSING METHODS	Note 1
VEGETATION RESTRICTIONS	Note 4; Note 4
PERMITTING REQUIREMENTS	Note 7; Note 7; Note 7; Note 7
MONITORING	
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

Stantec

EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Constructability
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Silt Fencing
- Cool Water Thermal Regime
- Watercourse
- Aggregate Site (Active)
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area

Notes

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Figure No.	Rev.
A-24	-

June 2019
160950831

Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-24

Title
Environmental Alignment Sheets - Map 24

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Revised: 2019-06-21 By: seories

Resources										
	CONSERVATION AUTHORITY REGULATED AREA		SVCA		SVCA		SVCA			
	WETLAND WATERCOURSE				Watercourse					
	VEGETATION									
	WATER WELL WITHIN 50 m									
	LINEAR FEATURES		Road					Road		
	ENVIRONMENTALLY SENSITIVE AREA / ANSI									
	SPECIES AT RISK (SAR) HABITAT									

Construction Mitigation Notes:
Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
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SVCA: Saugeen Valley Conservation Authority
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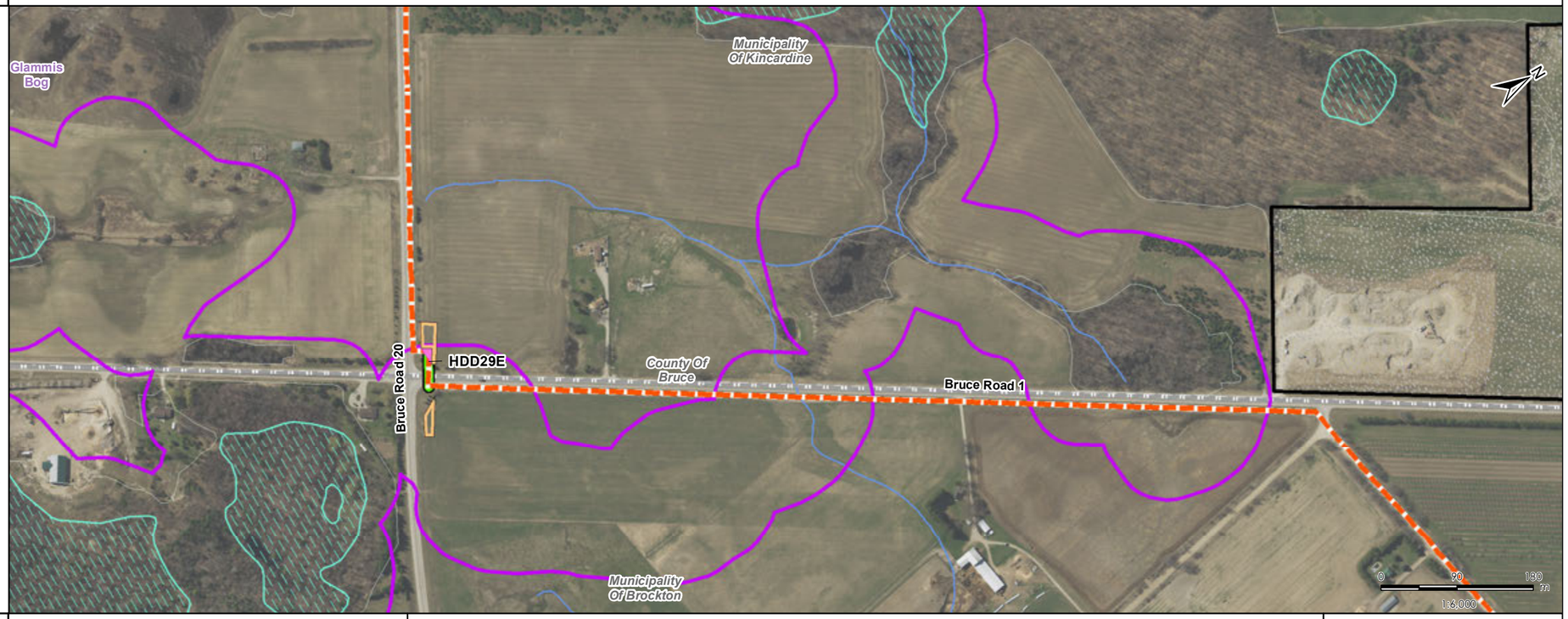

Construction Mitigation										
	CONSTRUCTION REQUIREMENTS		Note 9					Note 9		
	FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)									
	PIPELINE CROSSING METHODS		Note 1							
	VEGETATION RESTRICTIONS									
	PERMITTING REQUIREMENTS		Note 4		Note 4		Note 4			
	MONITORING									
	SEED MIX									
	POTENTIALLY CONTAMINATED SITES									
	SPECIES AT RISK (SAR) HABITAT									

Stantec

EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Constructability
- Temporary Workspace
- Proposed Station

Existing Features

- Water Well (MOECC)
- Cold Water Thermal Regime
- Cool Water Thermal Regime
- Watercourse
- Aggregate Site (Active)
- ANSI, Life Science;Provincial
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area

Notes

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5. Conservation Authority data provided under license from Saugeen Valley Conseration Authority and Maitland Valley Conseration Authority (2016).
6. All driveway crossings will allow for emergency services access.

Figure No.	Rev.
A-25	-

June 2019
160950831

Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-25

Title
Environmental Alignment Sheets - Map 25

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Revised: 2019-06-21 By: seories

Resources	
CONSERVATION AUTHORITY REGULATED AREA	SVCA; SVCA
WETLAND WATERCOURSE	Watercourse; Wetland; Watercourse →; Wetland
VEGETATION	
WATER WELL WITHIN 50 m	
LINEAR FEATURES	← Road; ← Driveway; Driveway →; ← Driveway
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:
Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
Note 3: Crossing permit from Hydro One Networks Inc. (HONI) needed.
Note 4: No clearing activities during the migratory breeding bird restricted activity period (April 1 – August 31) without preconstruction nesting surveys. Refer to Sections 5.1 and 7.2 of the EPP.
Note 5: Groundwater wells present – Refer to Sections 5.1, 6.0; 7.1 and 7.4 of the EPP.
Note 6: Water well monitoring program recommended. Refer to Sections 4.0 and 5.1 of the EPP.
Note 7: Permit from MVCA or SVCA required. Refer to Sections 2.3, 3.3 and 4.0 of the EPP.
Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
Note 9: Maintain emergency egress. Refer to Sections 3.3, 6.0 and 7.4 of the EPP.
Note 10: Implement Suspect Soils Program. Refer to Sections 6.0 and 7.4 and 7.6 of the EPP.
Note 11: Coldwater watercourse crossing - In-water work permitted from July 1 to September 15. Refer to Sections 5.1 and 7.5 of the EPP.
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EPP: Environmental Protection Plan (Stantec 2019)
MVCA: Maitland Valley Conservation Authority
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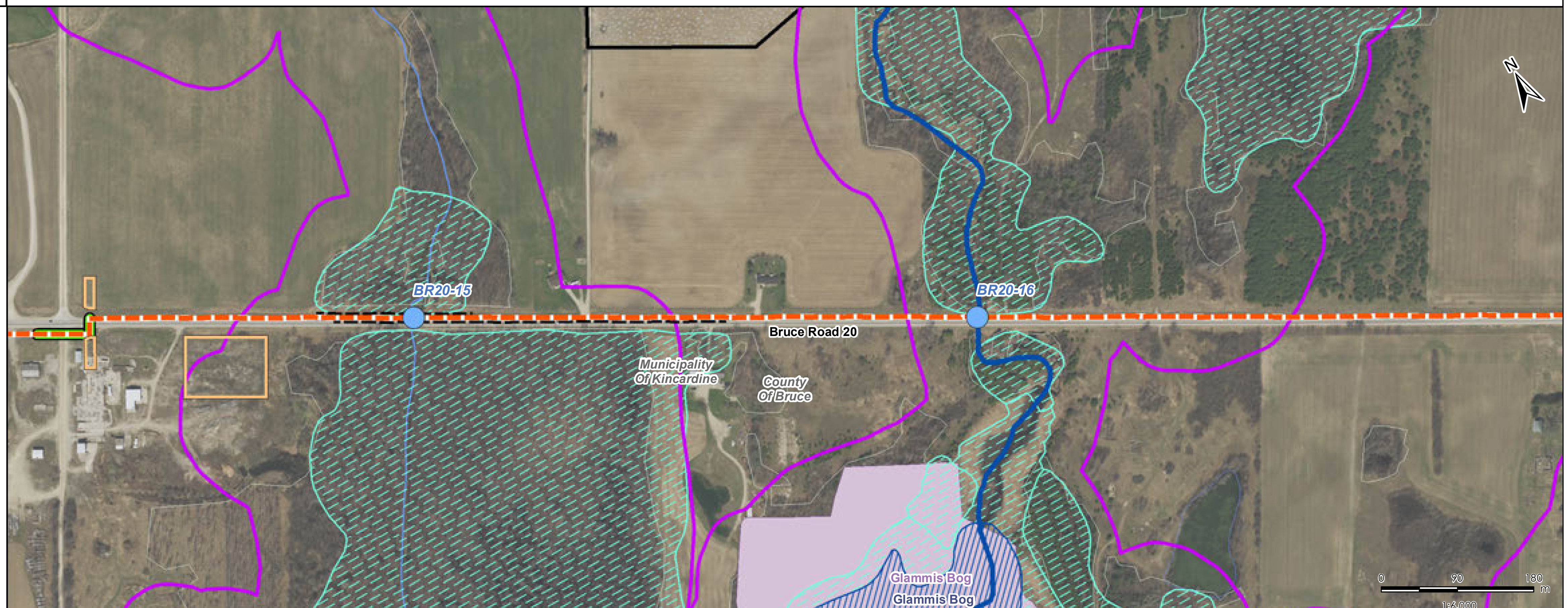
MNRF: Ministry of Natural Resources and Forestry



Construction Mitigation	
CONSTRUCTION REQUIREMENTS	← Note 9; Note 2 →; ← Note 9; ← Note; ← Note 9; Note 2 →
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11 →; Note 11 →
PIPELINE CROSSING METHODS	Note 2 →; Note 2 →
VEGETATION RESTRICTIONS	Note 4; Note 4
PERMITTING REQUIREMENTS	Note 7; Note 7
MONITORING	
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

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Revised: 2019-06-21 By: searles

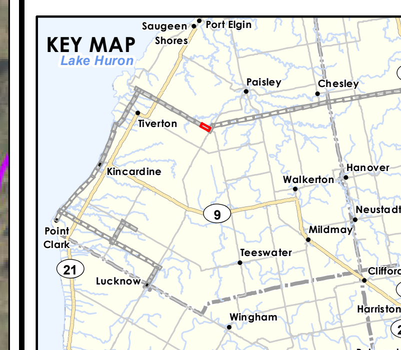
Stantec EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Constructability
- Temporary Workspace
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Silt Fencing
- Cold Water Thermal Regime
- Hydro Line
- Watercourse
- Aggregate Site (Active)
- ANSI, Life Science;Provincial
- Provincially Significant Wetland
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area



Notes

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6. All driveway crossings will allow for emergency services access.

Figure No.	Rev.
A-26	-

June 2019
160950831

Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-26

Title
Environmental Alignment Sheets - Map 26

Resources

CONSERVATION AUTHORITY REGULATED AREA	
WETLAND WATERCOURSE	← Watercourse ← Watercourse
VEGETATION	
WATER WELL WITHIN 50 m	← Well Present
LINEAR FEATURES	← Driveway ← Driveway ← Driveway ← Driveway ← Driveway ← Road
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:

Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
Note 3: Crossing permit from Hydro One Networks Inc. (HONI) needed.
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Note 6: Water well monitoring program recommended. Refer to Sections 4.0 and 5.1 of the EPP.
Note 7: Permit from MVCA or SVCA required. Refer to Sections 2.3, 3.3 and 4.0 of the EPP.
Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
Note 9: Maintain emergency egress. Refer to Sections 3.3, 6.0 and 7.4 of the EPP.
Note 10: Implement Suspect Soils Program. Refer to Sections 6.0 and 7.4 and 7.6 of the EPP.
Note 11: Coldwater watercourse crossing - In-water work permitted from July 1 to September 15. Refer to Sections 5.1 and 7.5 of the EPP.
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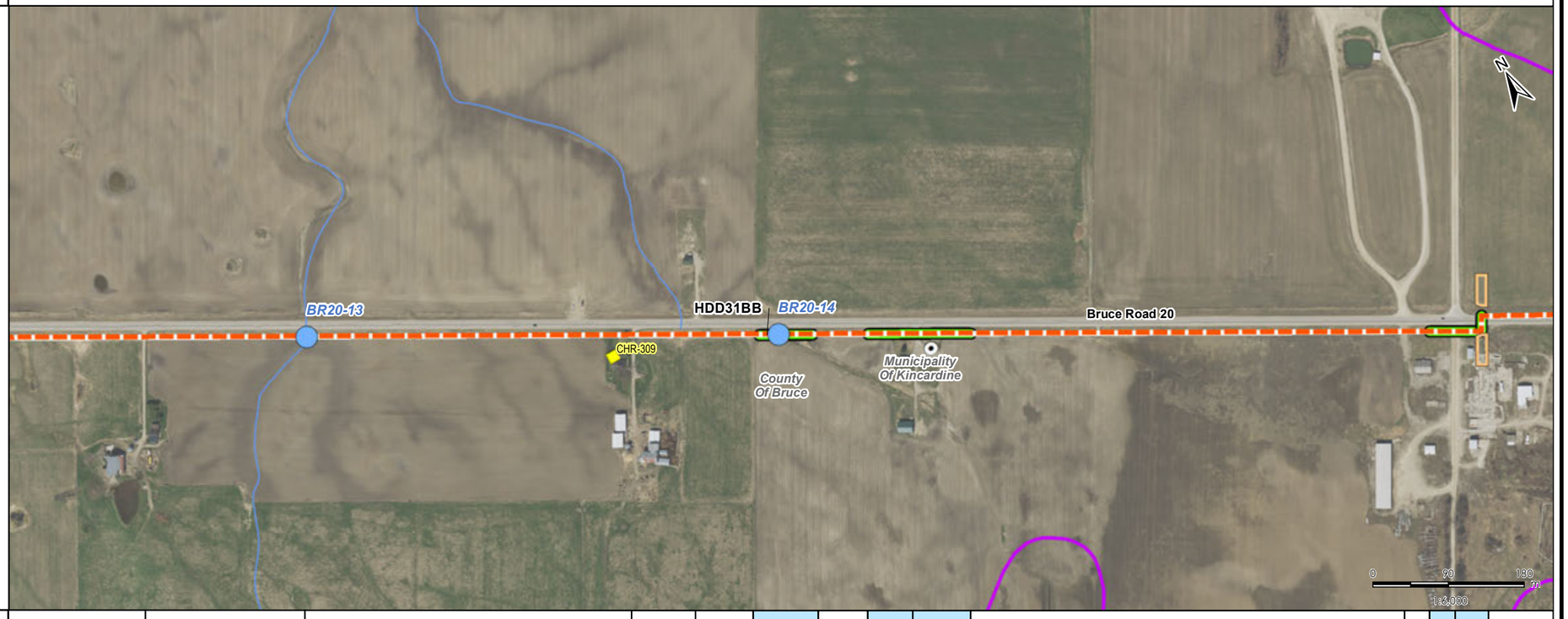


Construction Mitigation

CONSTRUCTION REQUIREMENTS	← Note 9 ← Note 2 ← Note 9 ← Note 9 Note 1 Note 9 Note 1 Note 9 Note 9 Note 1
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	← Note 11 ← Note 11
PIPELINE CROSSING METHODS	← Note 2 Note 1 Note 1 Note 1
VEGETATION RESTRICTIONS	
PERMITTING REQUIREMENTS	← Notes 5 & 6
MONITORING	
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	Glammis Bog

Stantec

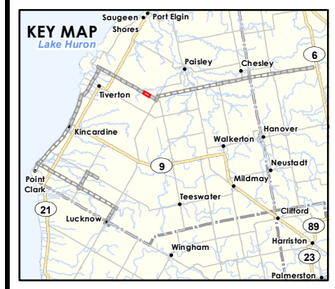
EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Constructability
- Temporary Workspace
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Identified Cultural Heritage Resource
- Hydro Line
- Watercourse
- ANSI, Life Science;Provincial
- Provincially Significant Wetland
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area



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6. All driveway crossings will allow for emergency services access.

Figure No.	Rev.
A-27	-

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Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-27

Title
Environmental Alignment Sheets - Map 27

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Revised: 2019-06-21 By: aeories

Resources

CONSERVATION AUTHORITY REGULATED AREA	SVCA; SVCA; SVCA
WETLAND WATERCOURSE	Watercourse - Willow Creek; Watercourse
VEGETATION	
WATER WELL WITHIN 50 m	Well Present; Well Present
LINEAR FEATURES	Driveways; Driveway; Driveway; Road; Driveway
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:

Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
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Note 7: Permit from MVCA or SVCA required. Refer to Sections 2.3, 3.3 and 4.0 of the EPP.
Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
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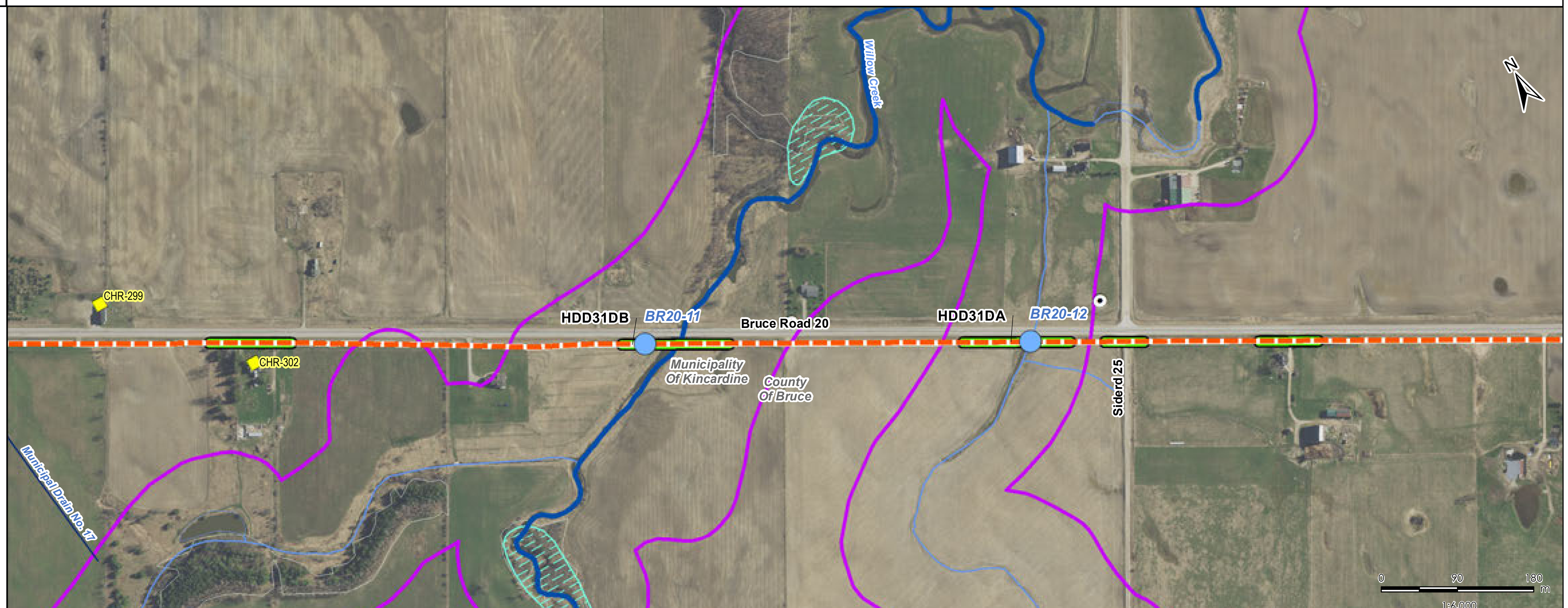

Construction Mitigation

CONSTRUCTION REQUIREMENTS	Note 1; Note 9; Note 9; Note 1; Note 9; Note 1; Note 1; Note 9; Note 1; Note 9; Note 9
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11; Note 11
PIPELINE CROSSING METHODS	Note 1; Note 1; Note 1; Note 1; Note 1
VEGETATION RESTRICTIONS	
PERMITTING REQUIREMENTS	Note 7; Note 7; Note 7
MONITORING	Notes 5 & 6
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

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Revised: 2019-06-21 By: searles

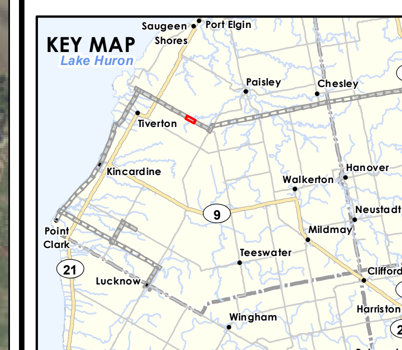
Stantec | EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Constructability
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Identified Cultural Heritage Resource
- Cold Water Thermal Regime
- Watercourse
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area



Notes

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6. All driveway crossings will allow for emergency services access.

Figure No.	Rev.
A-28	-

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Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-28

Title
Environmental Alignment Sheets - Map 28

Resources		
	CONSERVATION AUTHORITY REGULATED AREA	
	WETLAND WATERCOURSE	
	VEGETATION	
	WATER WELL WITHIN 50 m	
	LINEAR FEATURES	Driveways; Driveways; Road; Driveway; Driveway; Driveway
	ENVIRONMENTALLY SENSITIVE AREA / ANSI	
	SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:
Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
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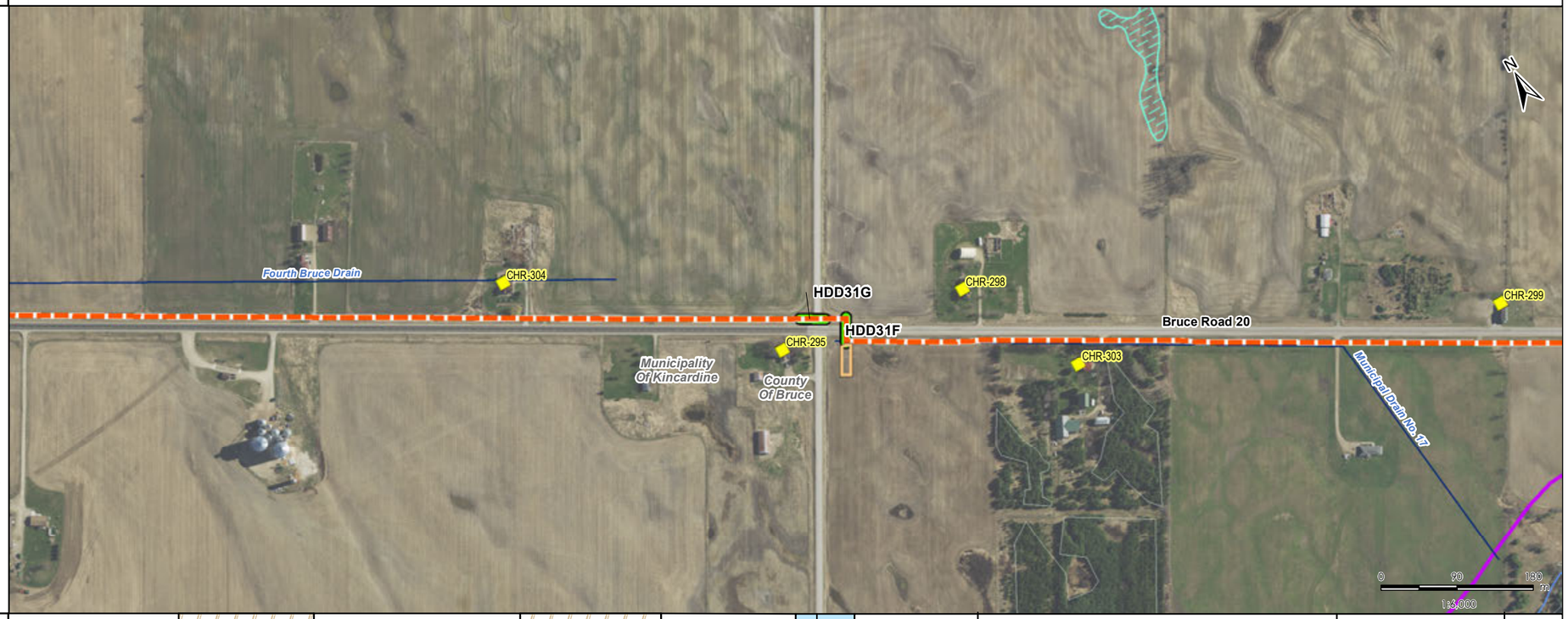

Construction Mitigation		
	CONSTRUCTION REQUIREMENTS	Note 9; Note 9; Note 9; Note 1; Note 9; Note 9; Note 9
	FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	
	PIPELINE CROSSING METHODS	Note 1
	VEGETATION RESTRICTIONS	
	PERMITTING REQUIREMENTS	
	MONITORING	
	SEED MIX	
	POTENTIALLY CONTAMINATED SITES	
	SPECIES AT RISK (SAR) HABITAT	

Stantec

EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Constructability
- Temporary Workspace

Existing Features

- Water Well (MOECC)
- Identified Cultural Heritage Resource
- Watercourse
- Unevaluated Wetland (per OWES)
- Wooded Area
- Saugeen Valley Conservation Screening Area

Notes

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Figure No.	Rev.
A-29	-

June 2019
160950831

Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-29

Title
Environmental Alignment Sheets - Map 29

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Revised: 2019-06-21 By: jesmiles

Resources	
CONSERVATION AUTHORITY REGULATED AREA	
WETLAND WATERCOURSE	Constructed Drain - Fourth Bruce Drain; Constructed Drain - Fourth Bruce Drain
VEGETATION	
WATER WELL WITHIN 50 m	Well Present
LINEAR FEATURES	Driveway; Road; Driveway; Driveway
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:

Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
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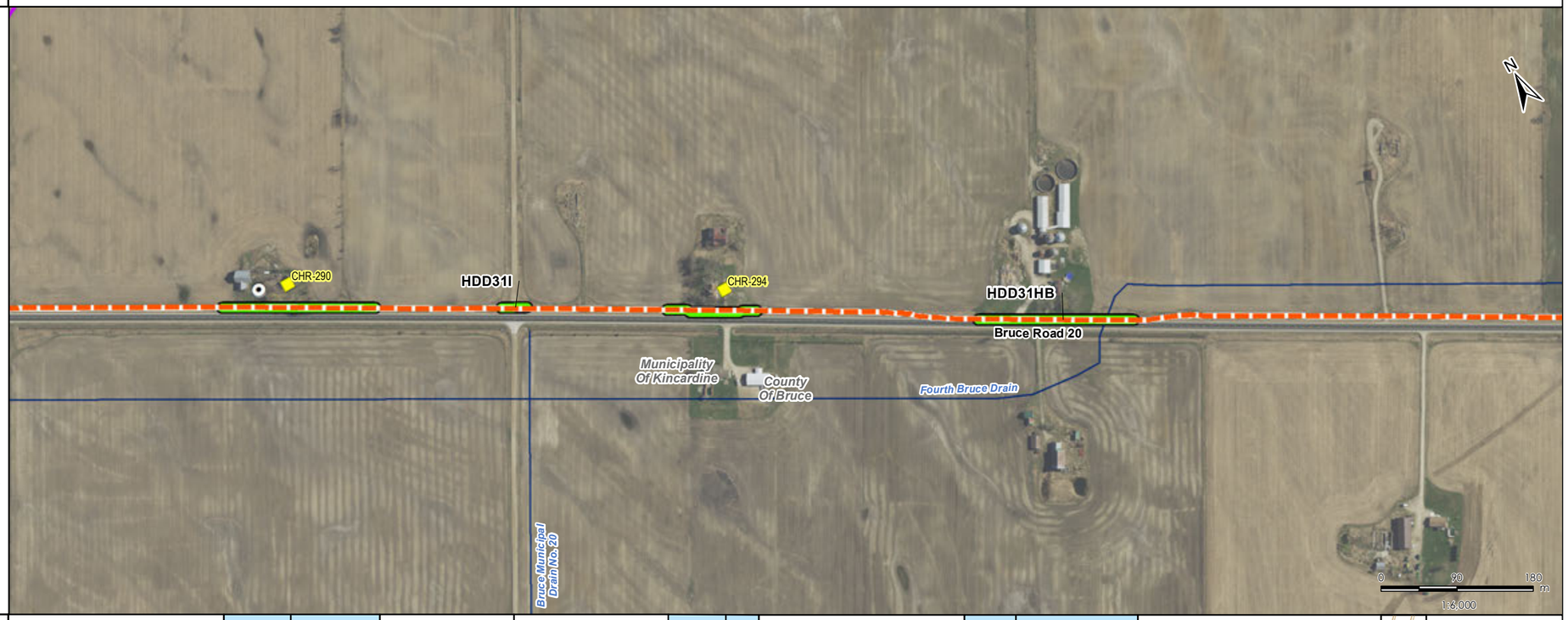

Construction Mitigation	
CONSTRUCTION REQUIREMENTS	Note 9; Note 1; Note 9; Note 1; Note 9; Note 9; Note 1; Note 9
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	
PIPELINE CROSSING METHODS	Note 1; Note 1; Note 1; Note 11
VEGETATION RESTRICTIONS	
PERMITTING REQUIREMENTS	
MONITORING	Notes 5 & 6
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

Stantec

EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Constructability

Existing Features

- Water Well (MOECC)
- Identified Cultural Heritage Resource
- Watercourse
- Unevaluated Wetland (per OWES)
- Wooded Area
- Saugeen Valley Conservation Screening Area

Notes

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Figure No.	Rev.
A-30	-

June 2019
160950831

Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-30

Title
Environmental Alignment Sheets - Map 30

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Revised: 2019-06-21 By: sevries

Resources	
CONSERVATION AUTHORITY REGULATED AREA	SVCA
WETLAND WATERCOURSE	Watercourse
VEGETATION	
WATER WELL WITHIN 50 m	
LINEAR FEATURES	Road; Driveway; Driveway; Driveway; Driveway
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:

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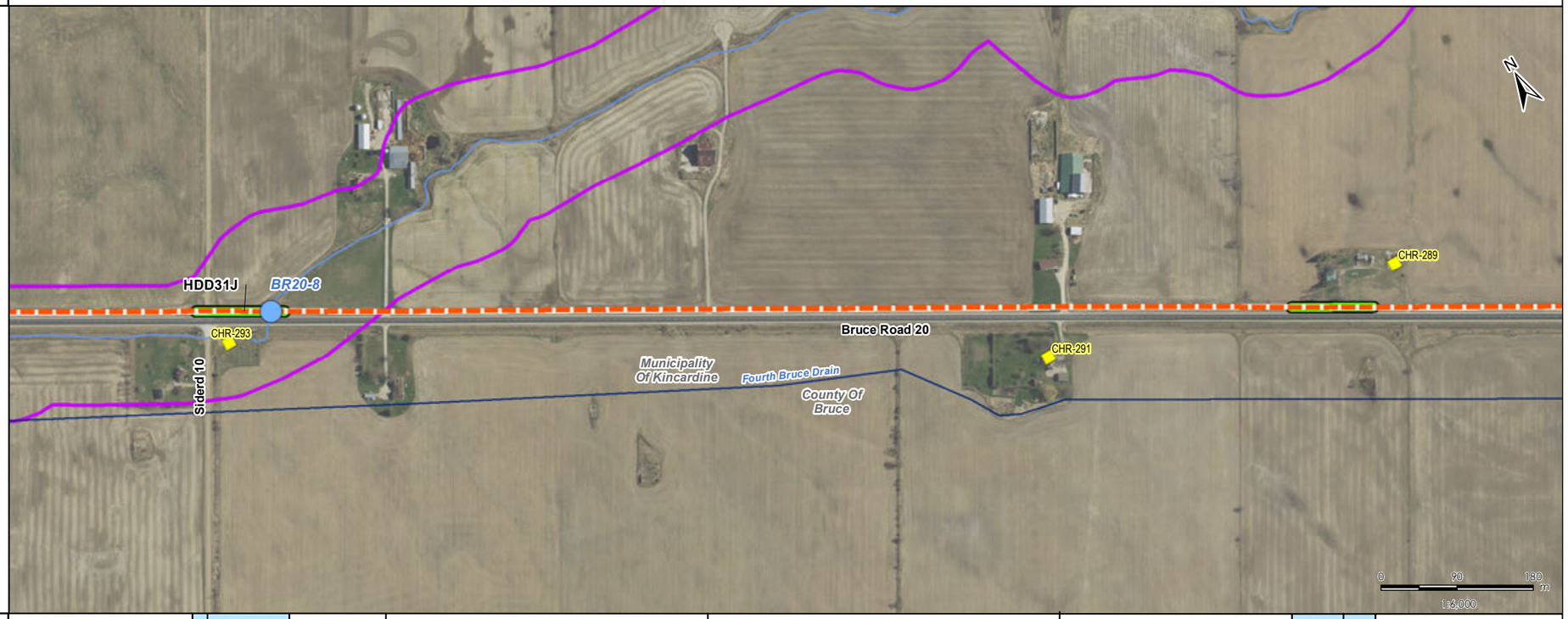
SVCA: Saugeen Valley Conservation Authority
MNRF: Ministry of Natural Resources and Forestry



Construction Mitigation	
CONSTRUCTION REQUIREMENTS	Note 8; Note 1; Note 9; Note 9; Note 9; Note 1; Note 9
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11
PIPELINE CROSSING METHODS	Note 1; Note 1
VEGETATION RESTRICTIONS	
PERMITTING REQUIREMENTS	Note 7
MONITORING	
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

Stantec

EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Constructability
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Identified Cultural Heritage Resource
- Cold Water Thermal Regime
- Watercourse
- Unevaluated Wetland (per OWES)
- Wooded Area
- Saugeen Valley Conservation Screening Area

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N.
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario,2016.
3. Orthoimagery © First Base Solutions, 2015.
4. MOECC Water well locations are approximate and have been positioned based on published UTM coordinates © Queen's Printer for Ontario, 2018.
5. Conservation Authority data provided under license from Saugeen Valley Conseration Authority and Maitland Valley Conseration Authority (2016).
6. All driveway crossings will allow for emergency services access.

Figure No.	Rev.
A-31	-

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Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-31

Title
Environmental Alignment Sheets - Map 31

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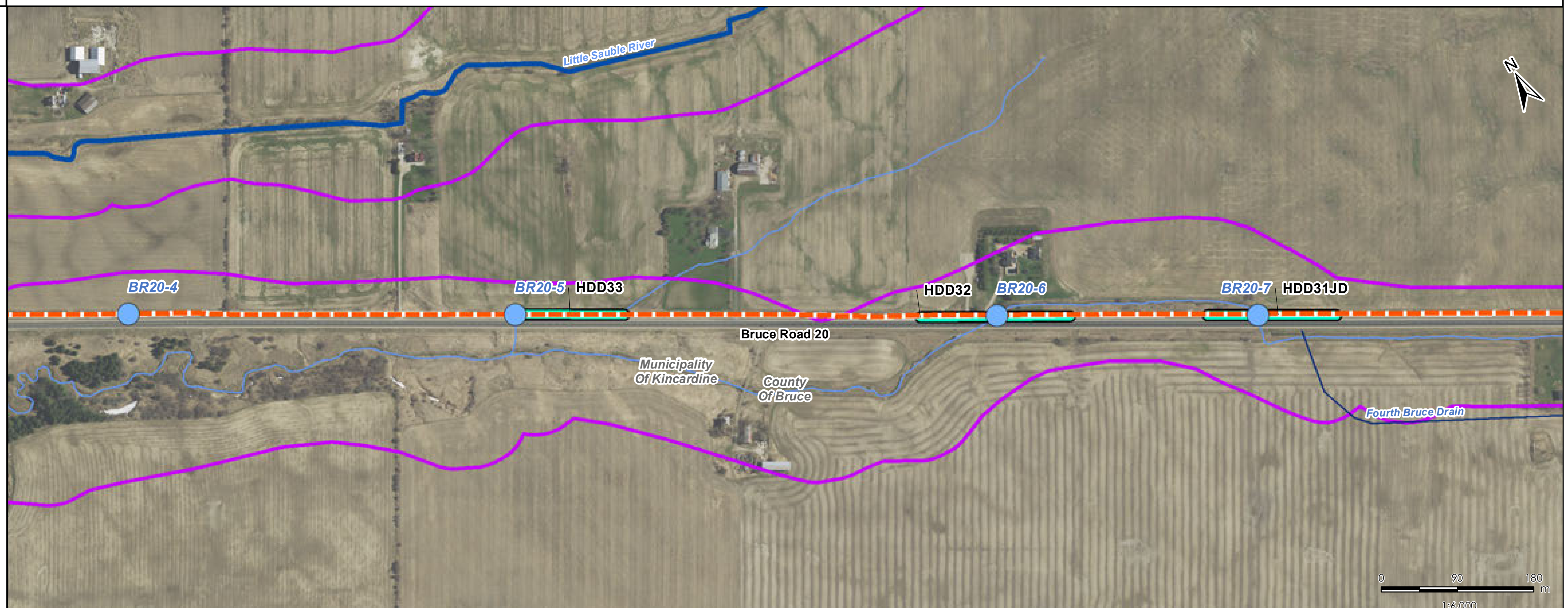
Revised: 2019-06-21 By: aeories

Resources

CONSERVATION AUTHORITY REGULATED AREA	SVCA
WETLAND WATERCOURSE	Watercourse; Watercourse; Watercourse; Watercourse
VEGETATION	
WATER WELL WITHIN 50 m	
LINEAR FEATURES	Driveway; Driveways; Driveway
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:
Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
Note 3: Crossing permit from Hydro One Networks Inc. (HONI) needed.
Note 4: No clearing activities during the migratory breeding bird restricted activity period (April 1 – August 31) without preconstruction nesting surveys. Refer to Sections 5.1 and 7.2 of the EPP.
Note 5: Groundwater wells present – Refer to Sections 5.1, 6.0; 7.1 and 7.4 of the EPP.
Note 6: Water well monitoring program recommended. Refer to Sections 4.0 and 5.1 of the EPP.
Note 7: Permit from MVCA or SVCA required. Refer to Sections 2.3, 3.3 and 4.0 of the EPP.
Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
Note 9: Maintain emergency egress. Refer to Sections 3.3, 6.0 and 7.4 of the EPP.
Note 10: Implement Suspect Soils Program. Refer to Sections 6.0 and 7.4 and 7.6 of the EPP.
Note 11: Coldwater watercourse crossing - In-water work permitted from July 1 to September 15. Refer to Sections 5.1 and 7.5 of the EPP.
Note 12: Warmwater watercourse crossing - In-water work permitted from July 1 to March 14. Refer to Sections 5.1 and 7.5 of the EPP.
Note 13: Overall Benefit Permit under the Endangered Species Act, 2007 from the MNRF may be required if the species, or protected habitat, are impacted by project activities. Refer to Section 5.1 of the EPP.

Acronyms List:
EPP: Environmental Protection Plan (Stantec 2019)
MVCA: Maitland Valley Conservation Authority
SVCA: Saugeen Valley Conservation Authority
MNRF: Ministry of Natural Resources and Forestry



Construction Mitigation

CONSTRUCTION REQUIREMENTS	Note 2; Note 2; Note 1; Note 9; Note 2; Note 1; Note 1
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11; Note 11; Note 11; Note 11
PIPELINE CROSSING METHODS	Note 2; Note 1; Note 1; Note 1
VEGETATION RESTRICTIONS	
PERMITTING REQUIREMENTS	Note 7
MONITORING	
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

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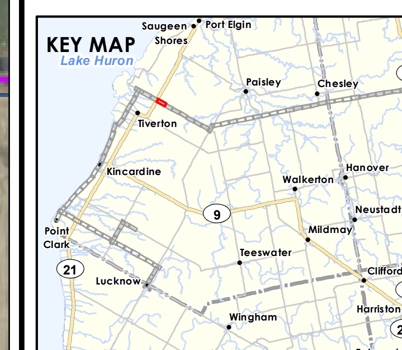
Revised: 2019-06-21 By: searles

Stantec EPCOR

Legend
- Preferred Pipeline Route
- HDD Areas - Conservation
- Watercourse Crossing Location

Existing Features
- Water Well (MOECC)
- Cold Water Thermal Regime
- Watercourse
- Unevaluated Wetland (per OWES)
- Wooded Area
- Saugeen Valley Conservation Screening Area



Notes
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3. Orthoimagery © First Base Solutions, 2015.
4. MOECC Water well locations are approximate and have been positioned based on published UTM coordinates © Queen's Printer for Ontario, 2018.
5. Conservation Authority data provided under license from Saugeen Valley Conservation Authority and Maitland Valley Conservation Authority (2016).
6. All driveway crossings will allow for emergency services access.

Figure No.	Rev.
A-32	-

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Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
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Title
Environmental Alignment Sheets - Map 32

Resources

CONSERVATION AUTHORITY REGULATED AREA		SVCA			SVCA	
WETLAND WATERCOURSE			Watercourse - Little Sauble River			
VEGETATION						
WATER WELL WITHIN 50 m		← Well Present	← Well Present			
LINEAR FEATURES				← Road		
ENVIRONMENTALLY SENSITIVE AREA / ANSI						
SPECIES AT RISK (SAR) HABITAT						

Construction Mitigation Notes:

Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
Note 3: Crossing permit from Hydro One Networks Inc. (HONI) needed.
Note 4: No clearing activities during the migratory breeding bird restricted activity period (April 1 – August 31) without preconstruction nesting surveys. Refer to Sections 5.1 and 7.2 of the EPP.
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Note 6: Water well monitoring program recommended. Refer to Sections 4.0 and 5.1 of the EPP.
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Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
Note 9: Maintain emergency egress. Refer to Sections 3.3, 6.0 and 7.4 of the EPP.
Note 10: Implement Suspect Soils Program. Refer to Sections 6.0 and 7.4 and 7.6 of the EPP.
Note 11: Coldwater watercourse crossing - In-water work permitted from July 1 to September 15. Refer to Sections 5.1 and 7.5 of the EPP.
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Acronyms List:
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MVCA: Maitland Valley Conservation Authority
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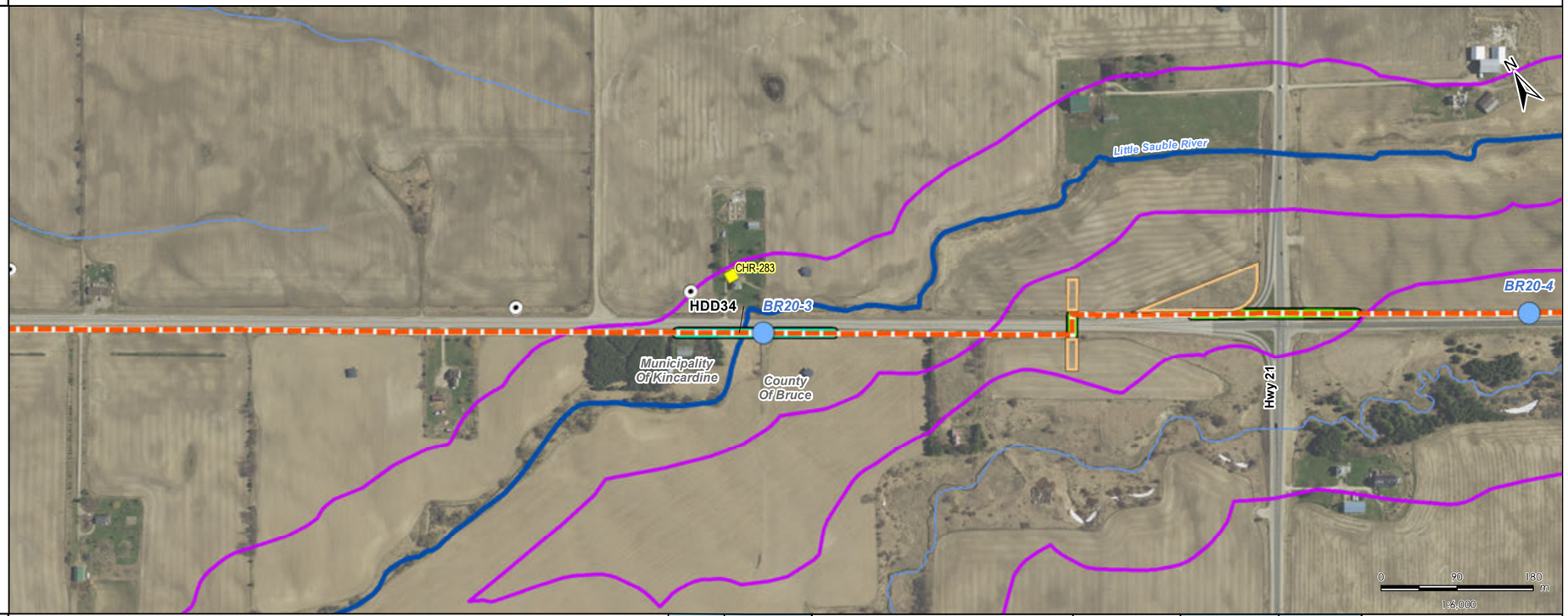
MNRF: Ministry of Natural Resources and Forestry



Construction Mitigation

CONSTRUCTION REQUIREMENTS		Note 9 / Note 1		← Note 1	Note 1 / Note 9	
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)		← Note 11				
PIPELINE CROSSING METHODS		Note 1		← Note 1	Note 1	
VEGETATION RESTRICTIONS						
PERMITTING REQUIREMENTS			Note 7			Note 7
MONITORING		← Notes 5 & 6	← Notes 5 & 6			
SEED MIX						
POTENTIALLY CONTAMINATED SITES						
SPECIES AT RISK (SAR) HABITAT						

Stantec

EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Conservation
- HDD Areas - Constructability
- Temporary Workspace
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Identified Cultural Heritage Resource
- Cold Water Thermal Regime
- Watercourse
- Unevaluated Wetland (per OWES)
- Wooded Area
- Saugeen Valley Conservation Screening Area

Notes

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4. MOECC Water well locations are approximate and have been positioned based on published UTM coordinates © Queen's Printer for Ontario, 2018.
5. Conservation Authority data provided under license from Saugeen Valley Conseration Authority and Maitland Valley Conseration Authority (2016).
6. All driveway crossings will allow for emergency services access.

Figure No.	Rev.
A-33	-

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Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-33

Title
Environmental Alignment Sheets - Map 33

Resources	
CONSERVATION AUTHORITY REGULATED AREA	
WETLAND WATERCOURSE	← Watercourse
VEGETATION	
WATER WELL WITHIN 50 m	← Well Present
LINEAR FEATURES	← Driveway ← Driveway ← Road ← Driveway ← Driveway
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:
Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
Note 3: Crossing permit from Hydro One Networks Inc. (HONI) needed.
Note 4: No clearing activities during the migratory breeding bird restricted activity period (April 1 – August 31) without preconstruction nesting surveys. Refer to Sections 5.1 and 7.2 of the EPP.
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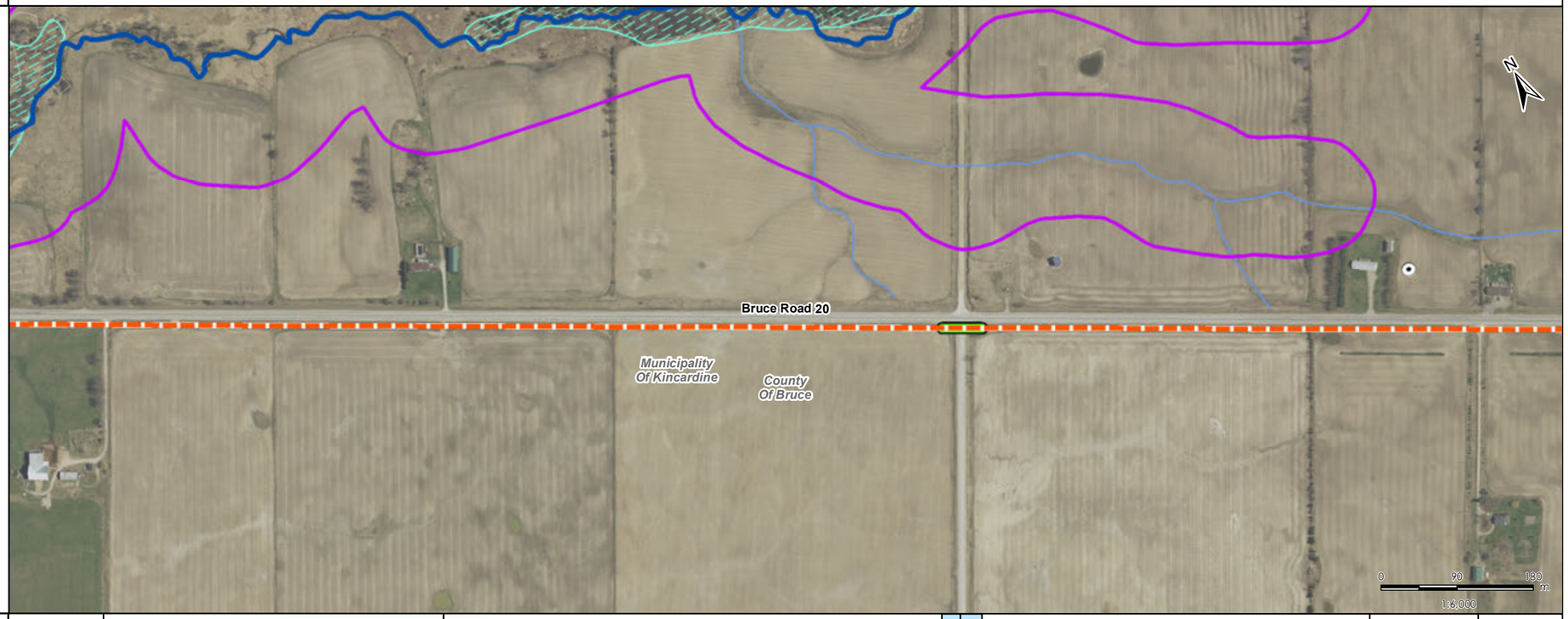

Construction Mitigation	
CONSTRUCTION REQUIREMENTS	← Note 9 ← Note 9 Note 1 ← Note 9 ← Note 9 ← Note 9
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	
PIPELINE CROSSING METHODS	Note 1
VEGETATION RESTRICTIONS	
PERMITTING REQUIREMENTS	
MONITORING	← Notes 5 & 6
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

Stantec

EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Constructability

Existing Features

- Water Well (MOECC)
- Cold Water Thermal Regime
- Watercourse
- Unevaluated Wetland (per OWES)
- Wooded Area
- Saugeen Valley Conservation Screening Area

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N.
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3. Orthoimagery © First Base Solutions, 2015.
4. MOECC Water well locations are approximate and have been positioned based on published UTM coordinates © Queen's Printer for Ontario, 2018.
5. Conservation Authority data provided under license from Saugeen Valley Conseration Authority and Maitland Valley Conseration Authority (2016).
6. All driveway crossings will allow for emergency services access.

Figure No.	Rev.
A-34	-

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Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-34

Title
Environmental Alignment Sheets - Map 34

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Resources

CONSERVATION AUTHORITY REGULATED AREA	SVCA; SVCA
WETLAND WATERCOURSE	Watercourse; Watercourse
VEGETATION	
WATER WELL WITHIN 50 m	Well Present; Well Present; Well Present; Well Present
LINEAR FEATURES	Road; Road; Road; Road
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:

Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
Note 3: Crossing permit from Hydro One Networks Inc. (HONI) needed.
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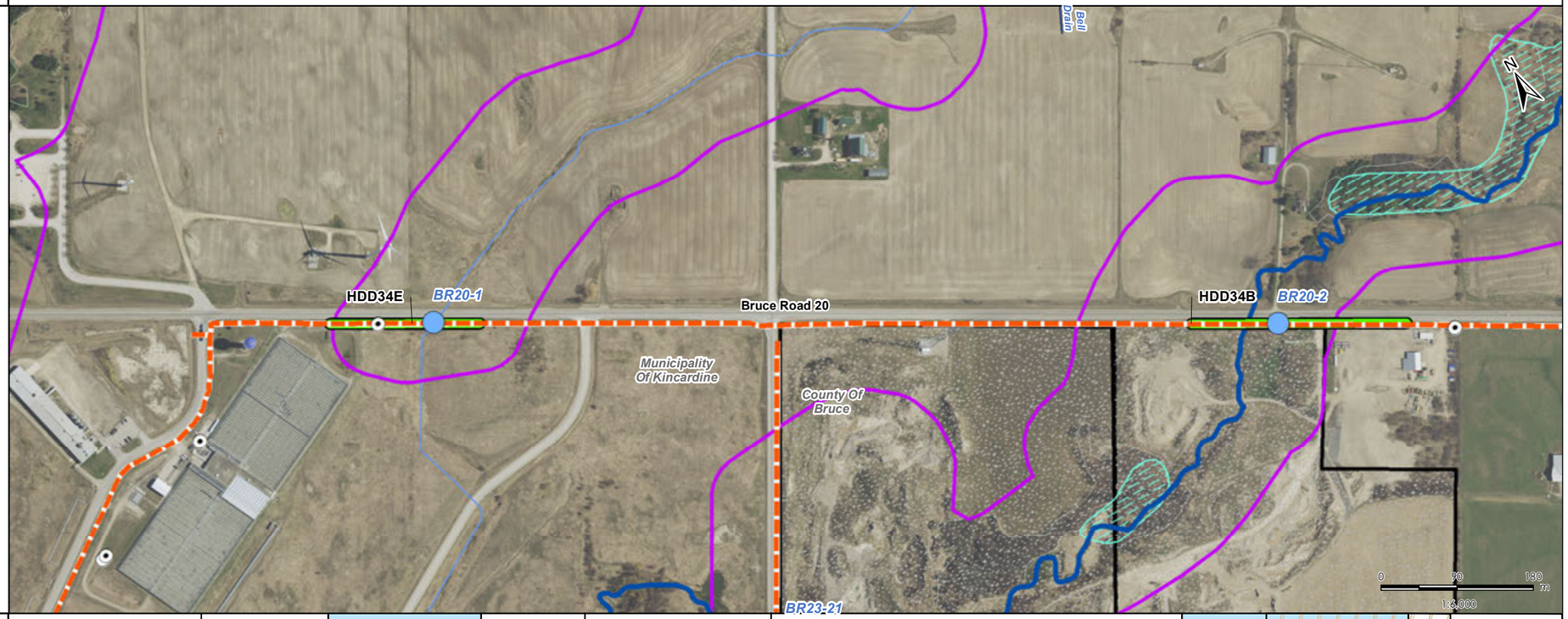

Construction Mitigation

CONSTRUCTION REQUIREMENTS	Note 9; Note 1; Note 9; Note 9; Note 1; Note 9
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11; Note 11
PIPELINE CROSSING METHODS	Note 1; Note 1
VEGETATION RESTRICTIONS	
PERMITTING REQUIREMENTS	Note 7; Note 7
MONITORING	Notes 5 & 6; Notes 5 & 6; Notes 5 & 6; Notes 5 & 6
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

Stantec

EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Constructability
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Cold Water Thermal Regime
- Watercourse
- Aggregate Site (Active)
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area

Notes

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6. All driveway crossings will allow for emergency services access.

Figure No.	Rev.
A-35	-

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Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-35

Title
Environmental Alignment Sheets - Map 35

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Revised: 2019-06-21 By: seories

Resources

CONSERVATION AUTHORITY REGULATED AREA	SVCA; SVCA
WETLAND WATERCOURSE	Wetland; Watercourse - Little Sauble River; Wetland; Wetland; Watercourse
VEGETATION	
WATER WELL WITHIN 50 m	
LINEAR FEATURES	Hydro Corridor; Road
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:

Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
Note 3: Crossing permit from Hydro One Networks Inc. (HONI) needed.
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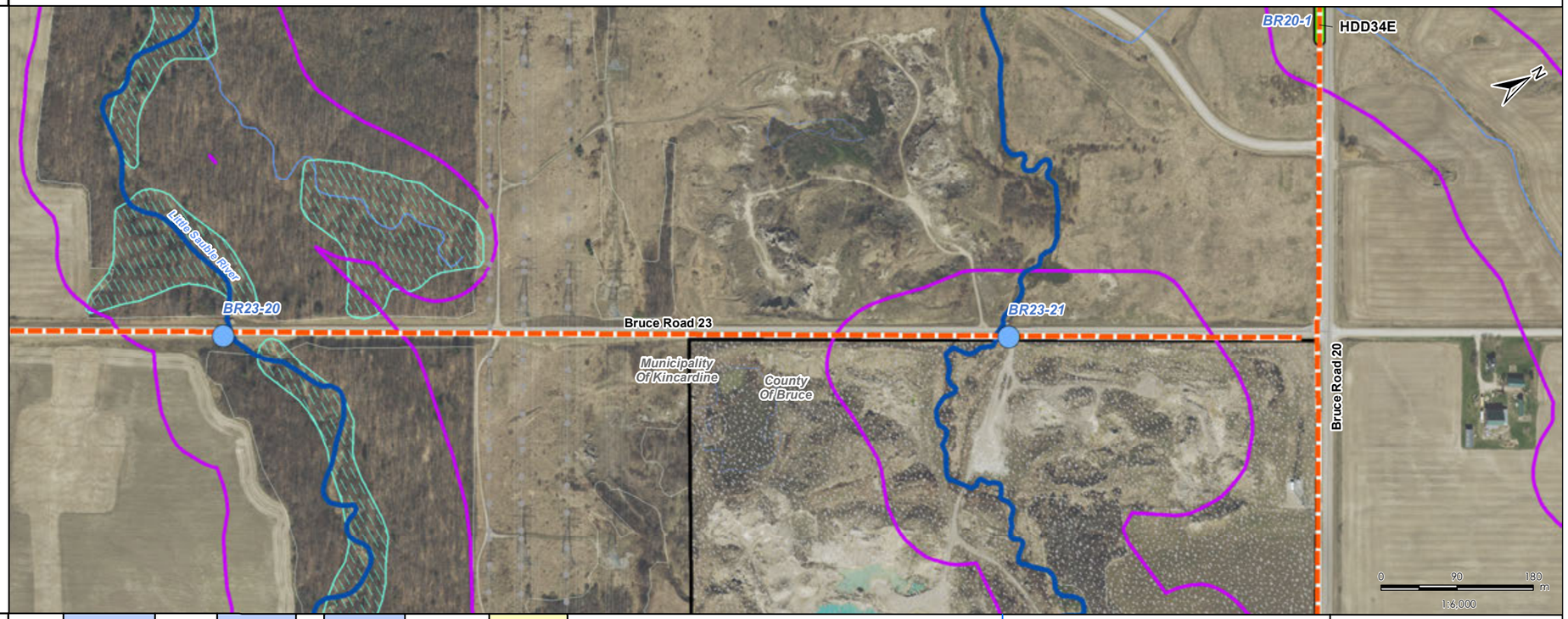

Construction Mitigation

CONSTRUCTION REQUIREMENTS	Note 1; Note 1; Note 1; Note 3; Note 11; Note 9
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11
PIPELINE CROSSING METHODS	Note 11; Note 11
VEGETATION RESTRICTIONS	Note 4; Note 4
PERMITTING REQUIREMENTS	Note 7; Note 7; HDD34B
MONITORING	BR20-2
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

Stantec

EPCOR

Legend

- Preferred Pipeline Route
- HDD Areas - Constructability
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Cold Water Thermal Regime
- Hydro Line
- Watercourse
- Aggregate Site (Active)
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area

Notes

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6. All driveway crossings will allow for emergency services access.

Figure No.	Rev.
A-36	-

June 2019
160950831

Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-36

Title
Environmental Alignment Sheets - Map 36

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Resources

CONSERVATION AUTHORITY REGULATED AREA	SVCA / SVCA
WETLAND WATERCOURSE	Wetland / Watercourse / Watercourse Wetland / Wetland
VEGETATION	
WATER WELL WITHIN 50 m	
LINEAR FEATURES	Road / Little Sauble River
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:

Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
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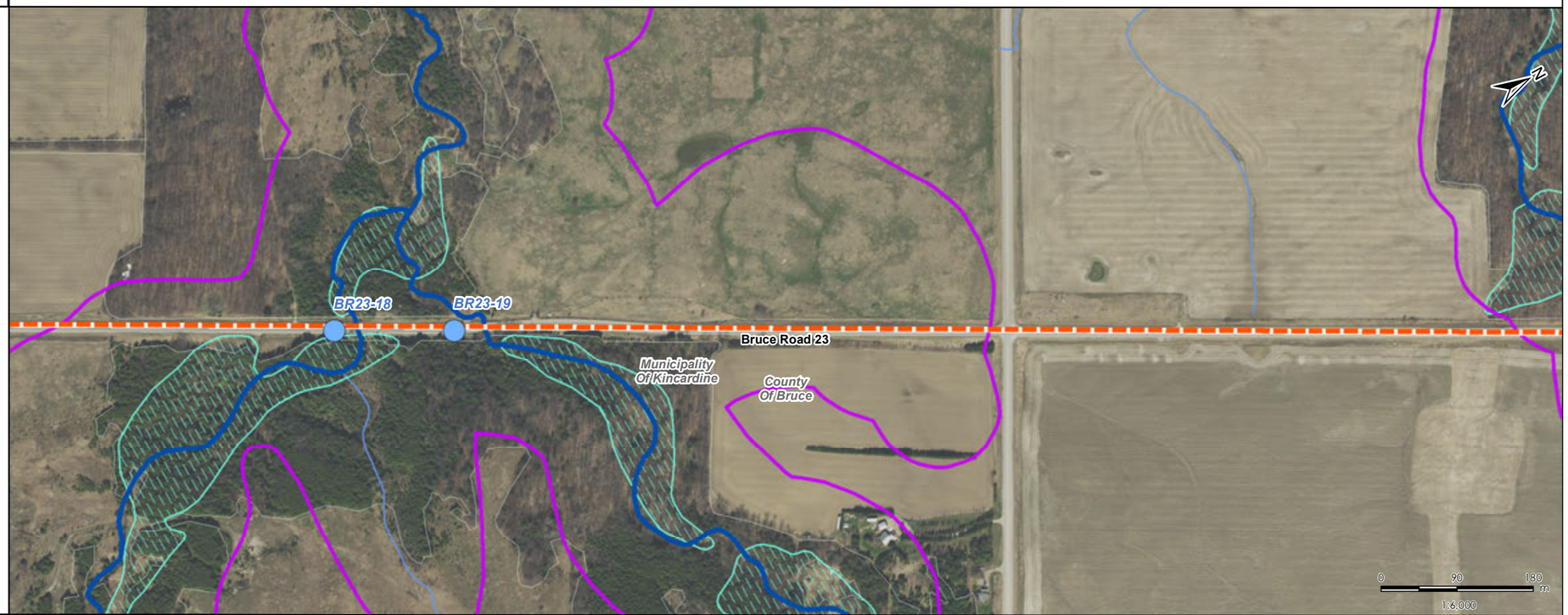

Construction Mitigation

CONSTRUCTION REQUIREMENTS	Note 1 / Note 1 / Note 9 / Note 1
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11 / Note 11
PIPELINE CROSSING METHODS	Note 11 / Note 11
VEGETATION RESTRICTIONS	Note 4 / Note 4
PERMITTING REQUIREMENTS	Note 7 / Note 7
MONITORING	
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

Stantec

EPCOR

Legend

- Preferred Pipeline Route
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Cold Water Thermal Regime
- Watercourse
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area

Notes

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2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario,2016.
3. Orthoimagery © First Base Solutions, 2015.
4. MOECC Water well locations are approximate and have been positioned based on published UTM coordinates © Queen's Printer for Ontario, 2018.
5. Conservation Authority data provided under license from Saugeen Valley Conseration Authority and Maitland Valley Conseration Authority (2016).
6. All driveway crossings will allow for emergency services access.

Figure No.	Rev.
A-37	-

June 2019
160950831

Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-37

Title
Environmental Alignment Sheets - Map 37

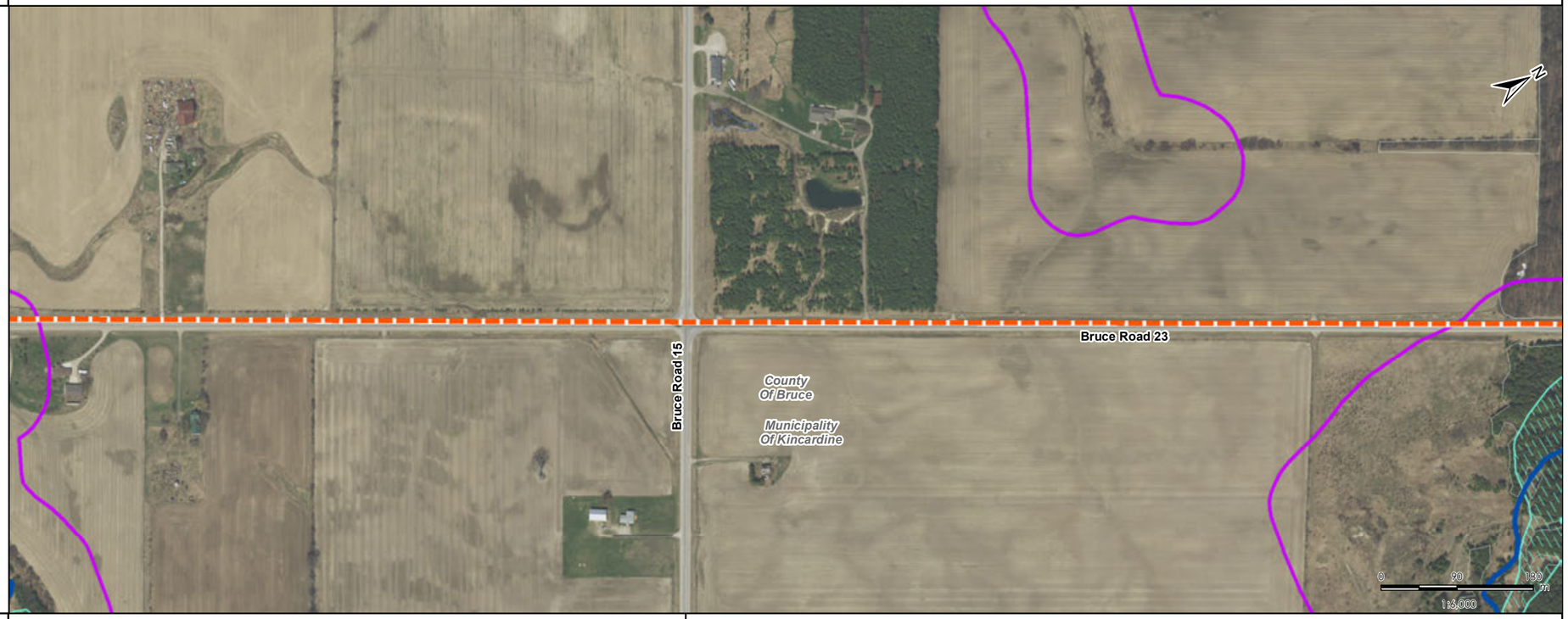
Resources

CONSERVATION AUTHORITY REGULATED AREA	SVCA	SVCA
WETLAND WATERCOURSE		
VEGETATION		
WATER WELL WITHIN 50 m		
LINEAR FEATURES	← Road	
ENVIRONMENTALLY SENSITIVE AREA / ANSI		
SPECIES AT RISK (SAR) HABITAT		

Construction Mitigation Notes:

Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
Note 3: Crossing permit from Hydro One Networks Inc. (HONI) needed.
Note 4: No clearing activities during the migratory breeding bird restricted activity period (April 1 – August 31) without preconstruction nesting surveys. Refer to Sections 5.1 and 7.2 of the EPP.
Note 5: Groundwater wells present – Refer to Sections 5.1, 6.0, 7.1 and 7.4 of the EPP.
Note 6: Water well monitoring program recommended. Refer to Sections 4.0 and 5.1 of the EPP.
Note 7: Permit from MVCA or SVCA required. Refer to Sections 2.3, 3.3 and 4.0 of the EPP.
Note 8: Linear facility – Refer to Sections 4.0 and 7.1 of the EPP.
Note 9: Maintain emergency egress. Refer to Sections 3.3, 6.0 and 7.4 of the EPP.
Note 10: Implement Suspect Soils Program. Refer to Sections 6.0 and 7.4 and 7.6 of the EPP.
Note 11: Coldwater watercourse crossing - In-water work permitted from July 1 to September 15. Refer to Sections 5.1 and 7.5 of the EPP.
Note 12: Warmwater watercourse crossing - In-water work permitted from July 1 to March 14. Refer to Sections 5.1 and 7.5 of the EPP.
Note 13: Overall Benefit Permit under the Endangered Species Act, 2007 from the MNRF may be required if the species, or protected habitat, are impacted by project activities. Refer to Section 5.1 of the EPP.

Acronyms List:
EPP: Environmental Protection Plan (Stantec 2019)
MVCA: Maitland Valley Conservation Authority
SVCA: Saugeen Valley Conservation Authority
MNRF: Ministry of Natural Resources and Forestry



Construction Mitigation

CONSTRUCTION REQUIREMENTS	← Note 9	
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)		
PIPELINE CROSSING METHODS		
VEGETATION RESTRICTIONS		Note 4
PERMITTING REQUIREMENTS	Note 7	Note 7
MONITORING		
SEED MIX		
POTENTIALLY CONTAMINATED SITES		
SPECIES AT RISK (SAR) HABITAT		

Stantec

EPCOR

Legend

- Preferred Pipeline Route

Existing Features

- Water Well (MOECC)
- Cold Water Thermal Regime
- Watercourse
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N.
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3. Orthoimagery © First Base Solutions, 2015.
4. MOECC Water well locations are approximate and have been positioned based on published UTM coordinates © Queen's Printer for Ontario, 2018.
5. Conservation Authority data provided under license from Saugeen Valley Conseration Authority and Maitland Valley Conseration Authority (2016).
6. All driveway crossings will allow for emergency services access.

Figure No.	Rev.
A-38	-

June 2019
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Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-38

Title
Environmental Alignment Sheets - Map 38

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Revised: 2019-06-21 By: jeconles

Resources		
	CONSERVATION AUTHORITY REGULATED AREA	SVCA
	WETLAND WATERCOURSE	Watercourse - Munro Municipal Drain; Watercourse - Tiverton Creek
	VEGETATION	
	WATER WELL WITHIN 50 m	Well Present
	LINEAR FEATURES	
	ENVIRONMENTALLY SENSITIVE AREA / ANSI	
	SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:

Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
Note 3: Crossing permit from Hydro One Networks Inc. (HONI) needed.
Note 4: No clearing activities during the migratory breeding bird restricted activity period (April 1 – August 31) without preconstruction nesting surveys. Refer to Sections 5.1 and 7.2 of the EPP.
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Note 6: Water well monitoring program recommended. Refer to Sections 4.0 and 5.1 of the EPP.
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Note 10: Implement Suspect Soils Program. Refer to Sections 6.0 and 7.4 and 7.6 of the EPP.
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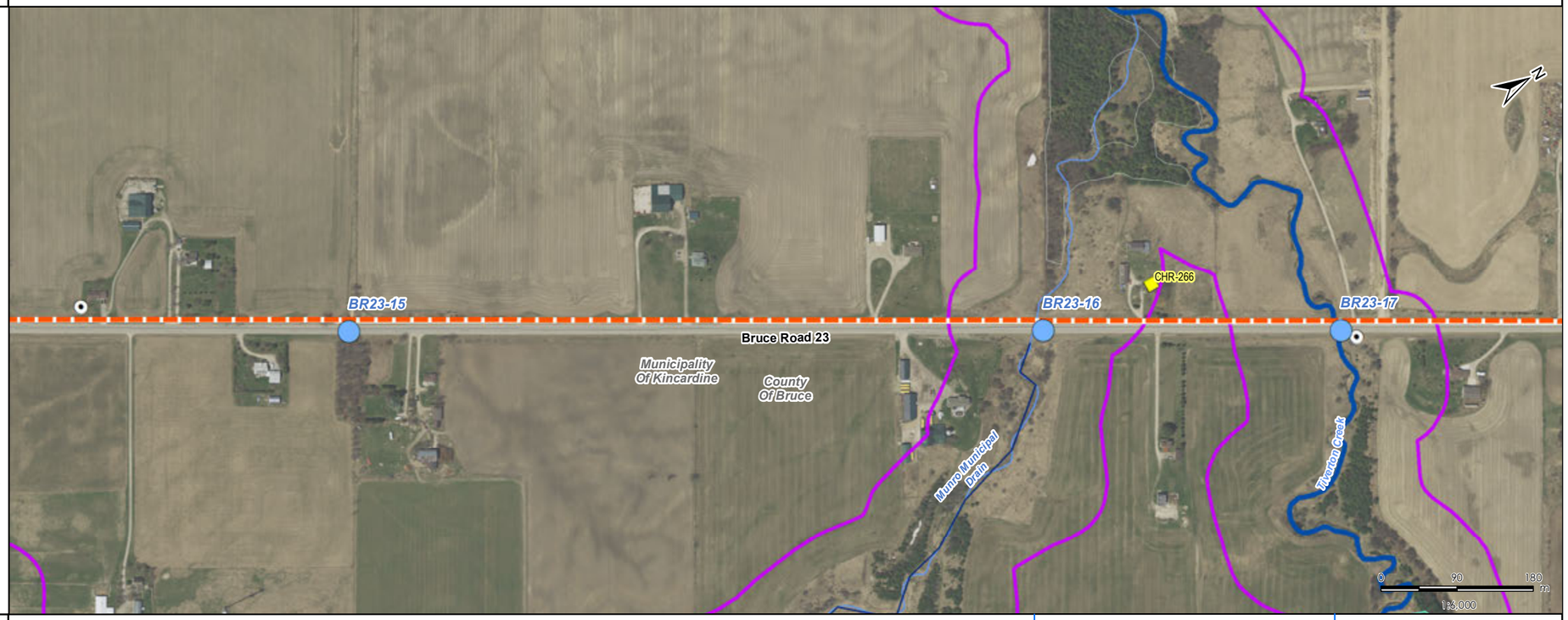


Construction Mitigation		
	CONSTRUCTION REQUIREMENTS	Note 11; Note 11
	FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	Note 11
	PIPELINE CROSSING METHODS	Note 11; Note 11
	VEGETATION RESTRICTIONS	
	PERMITTING REQUIREMENTS	Note 7
	MONITORING	Notes 5 & 6 — Andrews Creek
	SEED MIX	
	POTENTIALLY CONTAMINATED SITES	
	SPECIES AT RISK (SAR) HABITAT	

Stantec

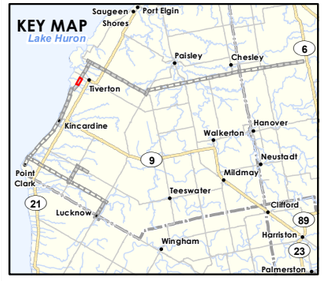
EPCOR

Legend

- Preferred Pipeline Route
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Identified Cultural Heritage Resource
- Cold Water Thermal Regime
- Watercourse
- Unevaluated Wetland (per OWES)
- Wooded Area
- Saugeen Valley Conservation Screening Area



Notes

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6. All driveway crossings will allow for emergency services access.

Figure No.	Rev.
A-39	-

June 2019
160950831

Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-39

Title
Environmental Alignment Sheets - Map 39

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Revised: 2019-06-21 By: aeories

Resources

CONSERVATION AUTHORITY REGULATED AREA	SVCA
WETLAND WATERCOURSE	Watercourse; Watercourse; Watercourse - Andrews Creek
VEGETATION	Lorne Beach Swamp
WATER WELL WITHIN 50 m	Well Present; Well Present
LINEAR FEATURES	
ENVIRONMENTALLY SENSITIVE AREA / ANSI	
SPECIES AT RISK (SAR) HABITAT	

Construction Mitigation Notes:
Note 1: HDD construction method. Refer to Section 7.5 of the EPP.
Note 2: Open Cut construction method. Refer to Section 7.5 of the EPP.
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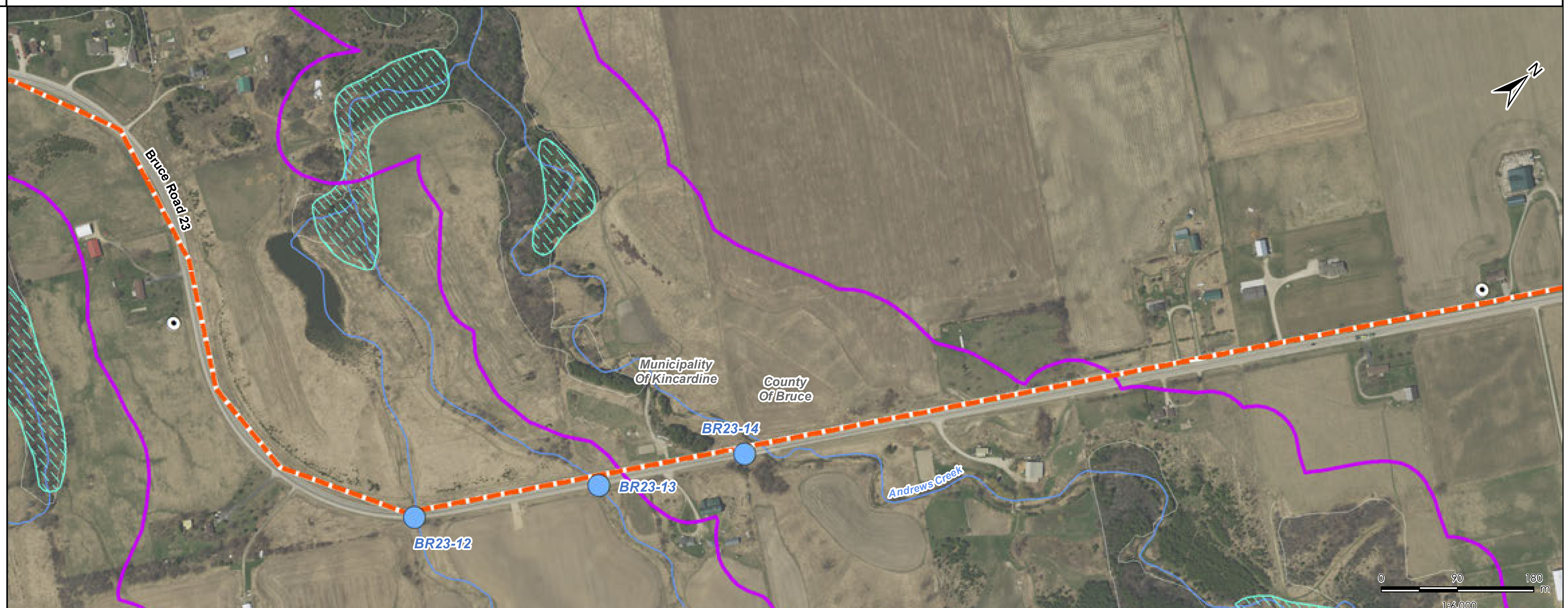

Construction Mitigation

CONSTRUCTION REQUIREMENTS	Note 11; Note 11; Note 11
FISHERIES TIMING RESTRICTIONS (CONSTRUCT BETWEEN)	
PIPELINE CROSSING METHODS	Note 11; Note 11; Note 11
VEGETATION RESTRICTIONS	
PERMITTING REQUIREMENTS	Note 7
MONITORING	Notes 5 & 6; Notes 5 & 6
	Lorne Creek
SEED MIX	
POTENTIALLY CONTAMINATED SITES	
SPECIES AT RISK (SAR) HABITAT	

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Revised: 2019-06-21 By: searles

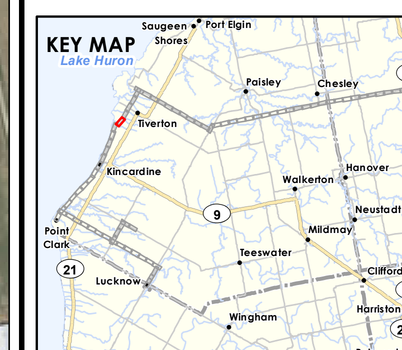
Stantec EPCOR

Legend

- Preferred Pipeline Route
- Watercourse Crossing Location

Existing Features

- Water Well (MOECC)
- Watercourse
- Other/Locally Significant Wetland
- Unevaluated Wetland (per OWES)
- Waterbody
- Wooded Area
- Saugeen Valley Conservation Screening Area



Notes

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Figure No.	Rev.
A-40	-

June 2019
160950831

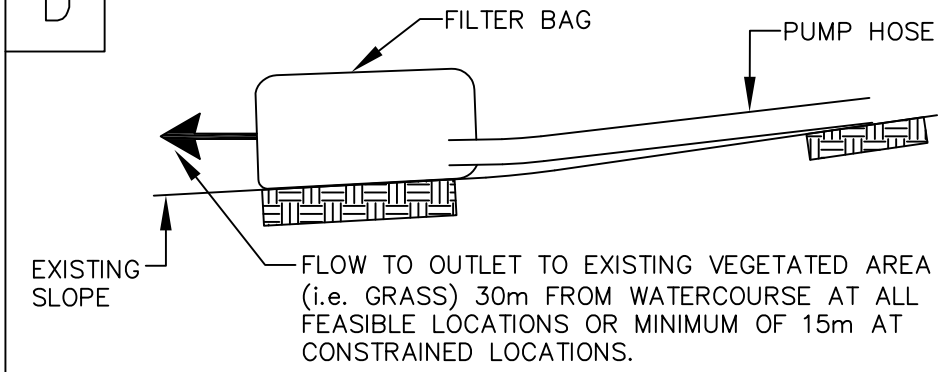
Client/Project
EPCOR Natural Gas Limited Partnership (ENGLP)
Natural Gas Service Southern Bruce
Environmental Alignment Sheets

Figure No.
A-40

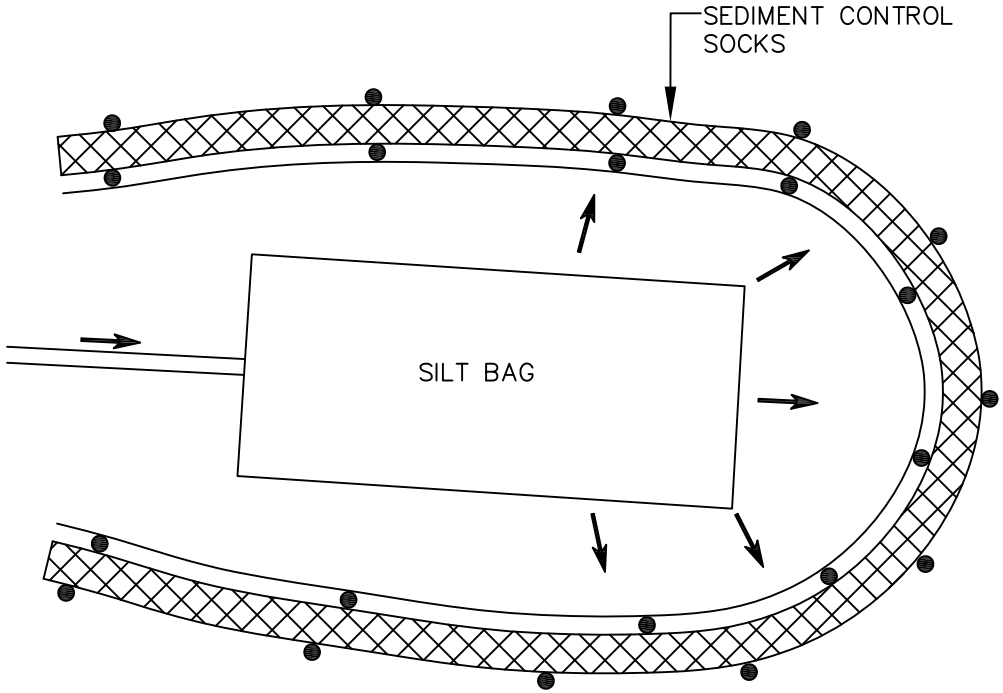
Title
Environmental Alignment Sheets - Map 40

APPENDIX B
Typical Drawings

D



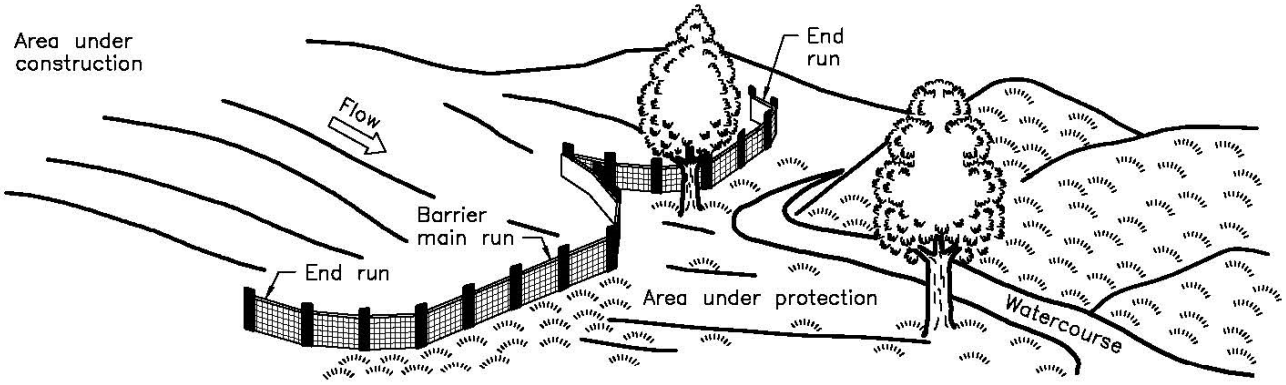
DEWATERING OUTLET



FILTER BAG OUTLET DETAIL–PLAN VIEW

DEWATERING DISCHARGE LOCATION

N.T.S.



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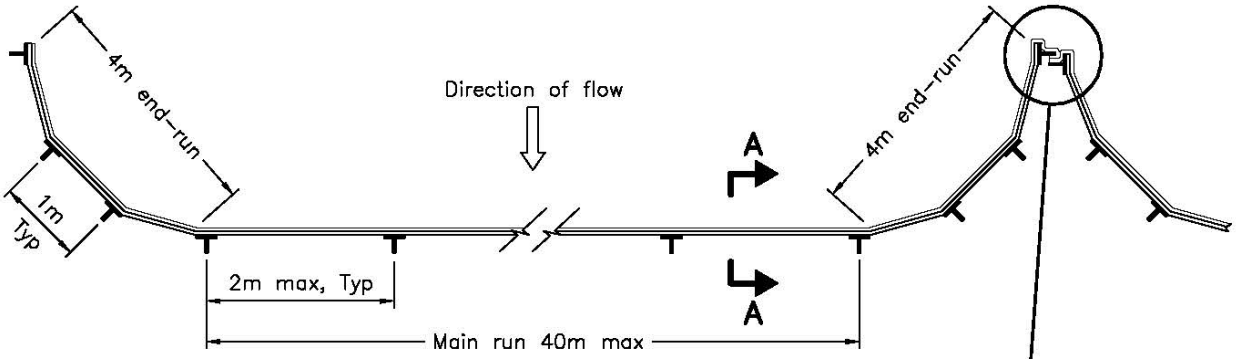
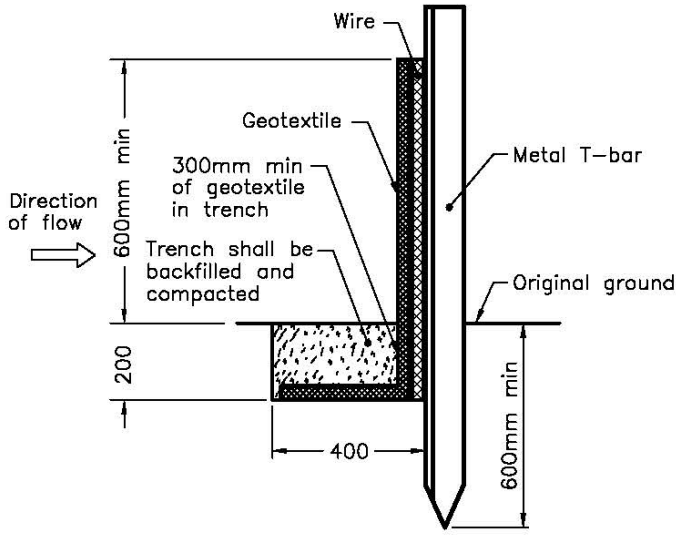
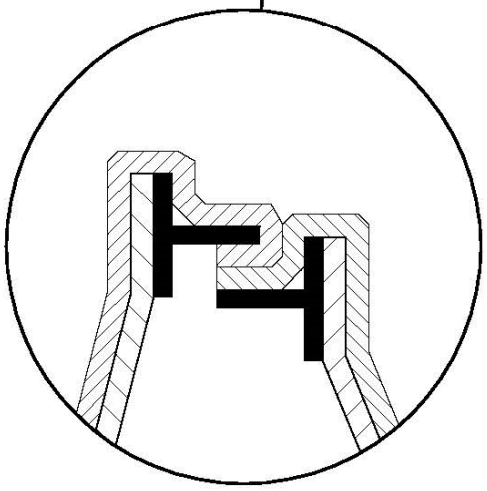


PLAN



SECTION A–A

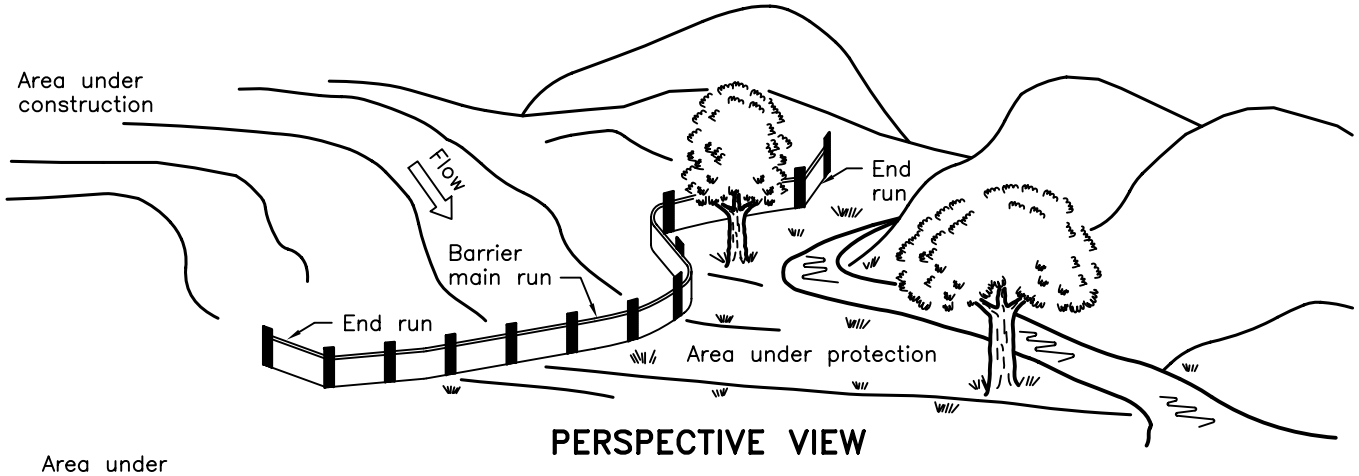


JOINT DETAIL

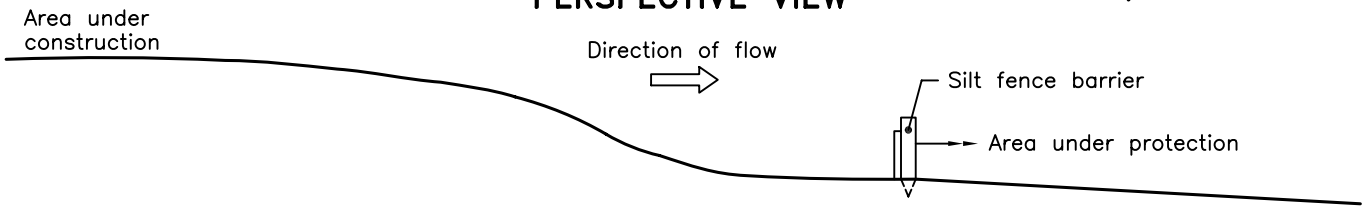
NOTE:

A All dimensions are in millimetres unless otherwise shown.

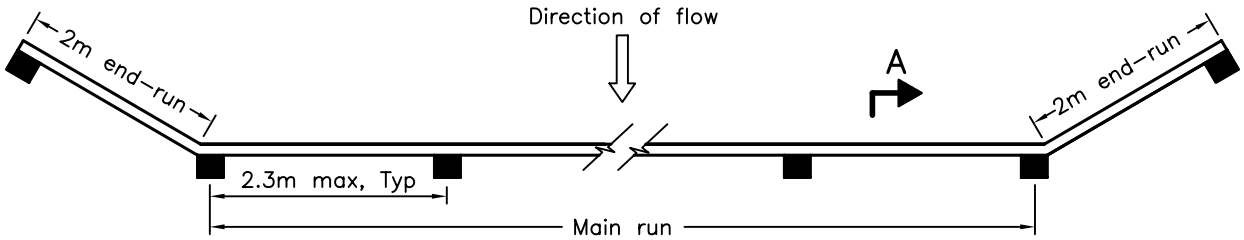
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev	0
HEAVY–DUTY WIRE–BACKED SILT FENCE BARRIER			
	OPSD 219.131		



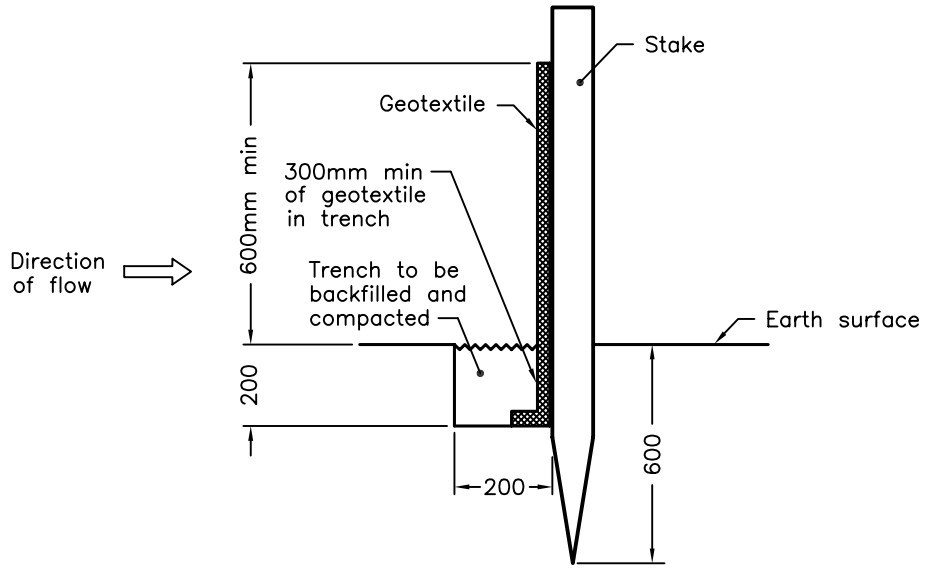
PERSPECTIVE VIEW



SECTION



PLAN



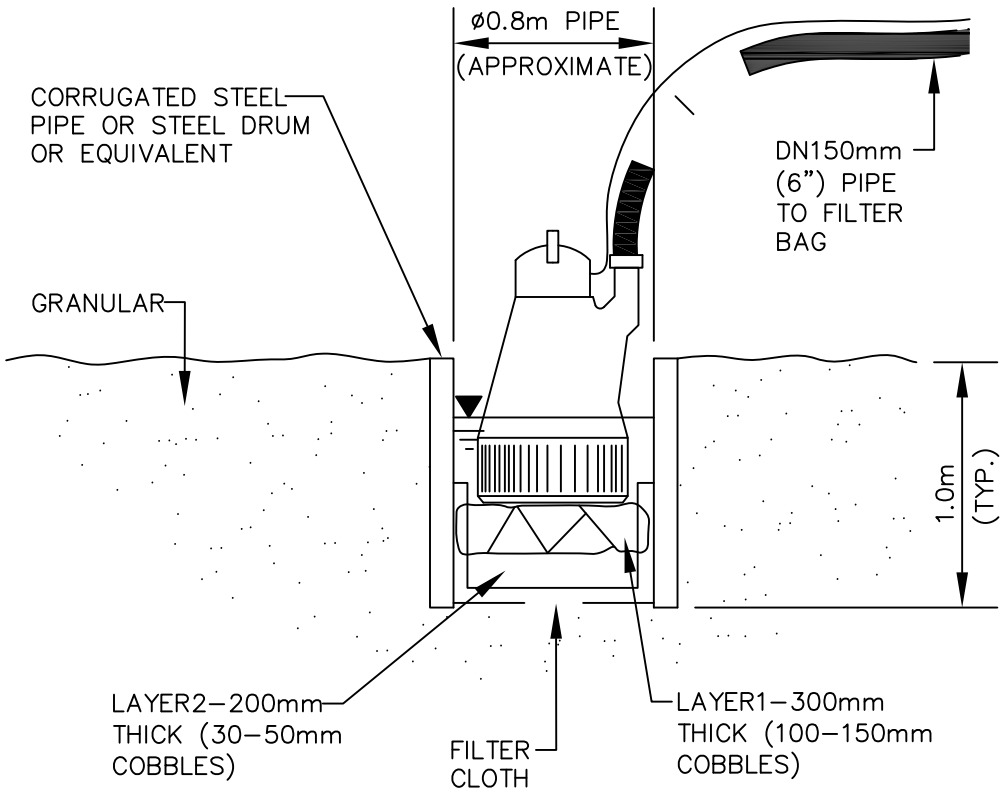
SECTION A–A

NOTE:

A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2006	Rev	1
LIGHT–DUTY SILT FENCE BARRIER			
	OPSD 219.110		

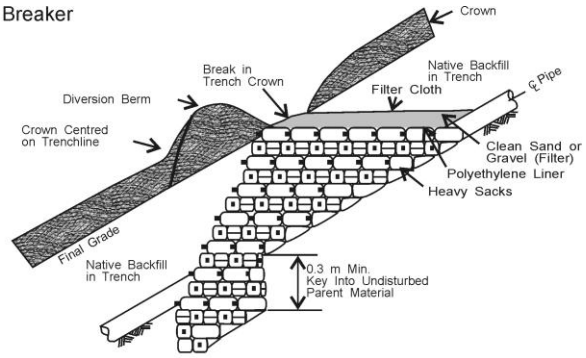
A

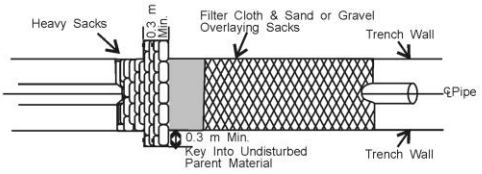


SUMP PIT & PUMP

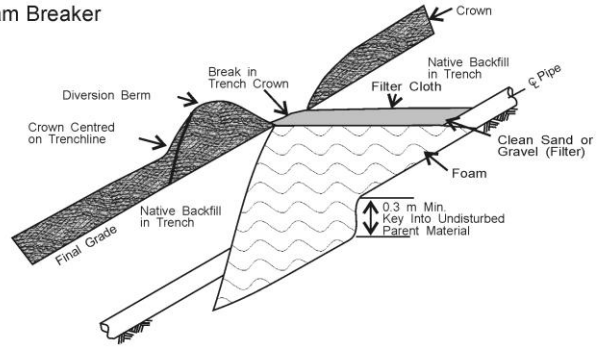
N.T.S.

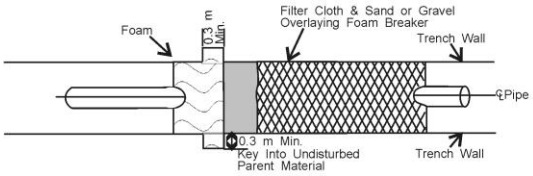
Sack Breaker



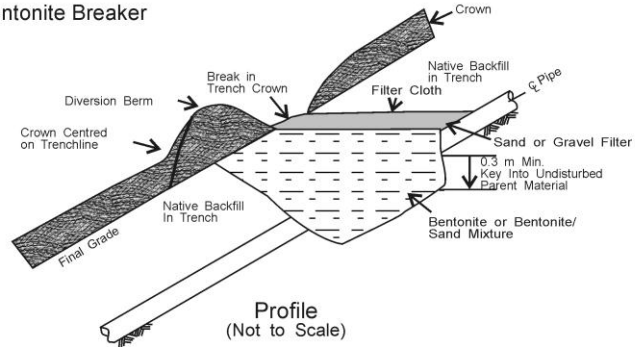


Foam Breaker

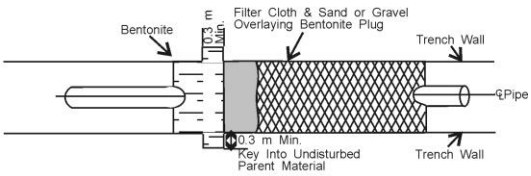




Bentonite Breaker



Profile
(Not to Scale)



Plan View
(Not to Scale)

Notes:

1. Install trench breakers to control water seepage along the trench line and prevent erosion of backfill materials.
2. Trench breakers may be constructed using earth filled sacks, bentonite, foam or equivalent materials to provide a barrier to water seepage.
3. The drawings above provide a schematic representation of trench breaker installation. Final locations and design of trench breakers will be determined by the project engineer based on site-specific conditions at the time of construction.
4. Dig keys into the trench bottom and sides to the extent feasible for added stability.
5. Install a prefabricated drain or a layer of sand or gravel covered with filter cloth over the breaker.
6. Backfill native material and mark location of breaker.
7. Ensure cross ditches are located over the end of the drain.
8. Construct diversion berms downslope from the breaker but not over the end of the drain.
9. Ensure that the trench crown does not encroach upon the breaker drain or cross ditch.
10. Backfill the trench on downslope side of breaker before upslope side.

Adapted from Alliance (1997)

SUBSURFACE DRAINAGE CONTROL – TYPICAL TRENCH BREAKERS

CAPP • CEPA canadian energy pipeline association | association canadienne de pipelines d'énergie • CGA

Fourth Edition
November 2012
DWG. NO. 19

APPENDIX C

TRCA Horizontal Directional Drill Guidelines (2010)

HORIZONTAL DIRECTIONAL DRILL GUIDELINES

July 2010

Horizontal Directional Drilling (HDD) is intended to be a less intrusive construction method than the traditional open cut for crossing a watercourse or wetland with a pipe, cable or other underground service. However, there is a possibility of surface (water, riparian, wetland) disturbance if a 'frac-out' (inadvertent release of drilling fluid or a release of sediment laden groundwater into the wetland or watercourse. There is also the potential for sediment laden water or other deleterious substances to enter a surface water feature as the result of grading, drilling excavations, equipment washing, or other construction related activities during directional boring.

Frac-out releases are typically caused by the pressurization of the drill hole beyond the containment capability of the near surface geologic materials (soil and/or rock). Therefore the type and depth of these materials, as well as the drilling pressure, are key factors in preventing and managing frac-outs.

TRCA aims to minimize ecological risk, which is accomplished by effective siting of the project, collection of detailed information to understand environmental constraints/sensitivities, proactive mitigation of potential ecological impacts, environmental monitoring during HDD construction, and detailed contingency measures.

Minimizing Ecological Risk

These guidelines are intended to provide direction to minimize the potential ecological risks associated with HDD for the installation of services under watercourses or wetlands. The preferred order for dealing with potential releases of drilling fluid is first to prevent them from occurring, second to contain them if such an incident occurs, and third is site restoration/remediation.

Sediment entering a surface water feature may result in a temporary increase in turbidity or siltation that can negatively impact aquatic life, by covering spawning/feeding areas and clogging fish gills. These effects may be a violation under the *Conservation Authorities Act*, *Fisheries Act*, or the *Endangered Species Act.*

The proponent needs to indicate whether or not they are using the Department of Fisheries and Oceans Operational Statement for High Pressure Directional Drilling, which can be downloaded from the Operational Statements web site at http://www.dfo-mpo.gc.ca/oceans-habitat/habitat/modernizing-moderniser/epmp-pmpe/index_e.asp. Please ensure that the most recent version of the operational statement is used, as they may be revised periodically. It is the proponent's responsibility to use the most recent version.

Understanding Site Conditions

When designing HDD projects in or around natural areas, such as watercourses and wetlands, it is important to clearly understand the ecological sensitivities and the potential risk of inadvertent releases of sediment or sediment-laden water during HDD operations. This understanding is based upon detailed information, provided by the proponent, on existing site conditions, including a geotechnical study supporting the type of construction methodology proposed, hydrogeology data including shallow groundwater levels, upwellings, seeps and other discharge zones, and all ecological sensitivities that may be at risk from the proposal. The absence of any of this information with respect to the natural heritage features, functions and the construction methodology within the work area reduces TRCA's ability to effectively review the site plans and determine whether the proposed mitigation measures are appropriate

to reduce risks to the natural environment. It is recommended that prior to designing a HDD project within a TRCA regulated area; proponents consult with TRCA staff to scope detailed requirements, particularly natural heritage features and functions, geotechnical requirements, construction timing, etc., for their projects.

A geotechnical report should support the selection of HDD as the technology chosen to install underground servicing through natural heritage features. Similarly, the design details for the HDD should reflect the findings and recommendations in the geotechnical report. The information obtained in the geotechnical report, in terms of stratigraphy, soil material best suited for the bore path, and groundwater levels, are all critical elements in designing a successful project and limiting the risks to the environment. The geotechnical report should also identify any hydrogeologic or surface water constraints the contractor should be aware of during the drilling process, such as artesian groundwater pressure, ground conditions that may limit construction, etc. One key point to consider when obtaining any geotechnical data, is the location of investigative test pits or boreholes in relation to the bore path. Test pits and boreholes should not be located directly on, or extend through, the proposed alignment, as these weak points may serve as conduits where inadvertent fluid returns or frac outs occur. It is recommended that at least a 3 m offset be provided between the boreholes and pipe alignment.

If there are particular ecologically sensitive features or functions that require enhanced protection at the project location, the following alternatives may need to be considered, in order of preference:

- routes along other existing roads or rights-of-way that avoid sensitive areas entirely;
- other alignments (including crossing above a culvert/creek within a road bed, or locating the pipe/cable on a bridge);
- other trenchless construction methods, such as augering, tunneling, pipe ramming, etc.
- or additional mitigation measures to minimize ecological impacts, if HDD is still proposed. This may include installing pressure relief wells to minimize a potential frac-out, isolating the creek in the area of the tunnel alignment, or other mitigation measures during drilling operations.

Detailed Design Requirements
Once the route has been determined, the following information will be required on the detailed site plans:

- the proposed HDD alignment in both plan and profile views;
- borehole data including the stratigraphy in relation to the proposed bore path, and the elevation of groundwater resources;
- the exact location of all watercourses, including accurate surveys of creeks, clearly identifying the location of banks, and bed invert elevations;
- the exact location of all wetlands, including accurate surveys of wetland boundaries as determined by either the MNR or TRCA, wetland invert elevations, the location of standing water, and water elevations;
- an accurate cross-section of the watercourse/wetland at the crossing location in relation to the HDD trajectory;
- all tree/vegetation removals, access points, entry and exit points, erosion and sediment controls, dewatering/depressurization requirements, details for working in the dry, and site restoration;
- if dewatering of work areas is required, additional clarity on water treatment and disposal should be provided on the plans. Please note that all dewatering discharge locations should be located within a well vegetated area, outside of the work area, a minimum of 30 m from a watercourse or wetland;
- confirmation of adequate treatment of any dewatering from the work area prior to release of this water to the environment. Treatment methods should ensure that only clean water be released to

the environment, and that adequate dissipation methods be employed to minimize erosion at the outlet. Contingency methods of treating sediment laden water and details on monitoring the effluent should be provided, in the event that treatment is ineffective at removing suspended clays and silts from the water column. Please note that filterbags are not effective at removing silts and clays.

- all existing/proposed ditches should be clearly identified, so that water conveyance (during rain events, and dewatering) in and around the work site is clearly understood;
- fisheries timing windows must be identified on the plans;
- contingency/mitigation methods for frac outs, or inadvertent returns of drilling fluids
- notes outlining environmental monitoring and reporting.

Environmental Monitoring

An environmental monitor will be required on site during the HDD construction. Notes regarding environmental monitoring need to be provided on the plans. Please note that the environmental monitor should be experienced with an understanding of the ecological objectives and sensitivities of the site, and in identifying/anticipating potential ecological concerns/risks in a proactive manner in an attempt to avoid impacts before they occur. It is our preference that environmental monitors be qualified, in that they have a college or university degree in environmental science or equivalent, and have experience in managing and mitigating environmental issues on construction sites. Information on how environmental monitoring is to be conducted for the project is required, and should be determined in consultation with TRCA staff. A detailed environmental monitoring/contingency plan is requested, and should describe, among other things, the following:

- how potential ecological issues will be identified,
- how often the monitoring is to be undertaken,
- the environmental monitor be on site for the duration of the HDD operation in and adjacent to natural heritage features,
- protocol for how the environmental monitor is to manage situations that are likely to cause environmental damage,
- ability of the environmental monitor to provide advice to the contractor, as needed in the event of emergencies, etc.

Contingency Plans

TRCA will also require that the proponent provide a Contingency Plan to effectively address inadvertent releases of sediment through frac-outs, or other releases of sediment laden water from the project site.

The environmental monitoring and contingency plan should clearly outline the steps that the contractor is to take in the event of a sediment release or other type of spill. The plan should clearly outline the steps involved to mitigate an inadvertent return or frac out after it occurs, and should not rely solely on the contractor to take all necessary steps to minimize the impacts. Ultimately, the responsibility lies with the proponent. The TRCA Enforcement Officer should be contacted immediately if an environmental emergency arises.

Contingency Plans may include the provision of a vacuum truck, or alternative means of containing or cleaning up a sediment release, at the time of construction in sensitive areas. If vacuum trucks are to be utilized, they should be on-site during construction, and be ready to contain any spill, as it occurs, before it enters a surface water feature. If a sediment spill occurs within the watercourse, adequate isolation of the release should be provided to contain the sediment, and the vacuum truck be ready to remove the drilling fluid and any other frac out soil.

Additional measures may include having a supply of products that can be used to stop a frac-out, such as ‘Poly Swell’, or equivalent. All products used on site are to be environmentally safe. Frac mitigation wells may also be considered to relieve drilling pressures.

The Contingency Plan should indicate if, and when, HDD activities are to resume. For example, when mitigation measures have been implemented are deemed to be effective at mitigating potential ecological impacts.