Interactions Table

INTERACTIONS TABLE

Element	Interaction (Y/N)	Description of Interaction(s) (If no interaction is predicted, provide justification)	Status of Element-Specific Study or Survey (Complete, Underway, Date Expected, or N/A)	Description of Potential Effects	Mitigation Will Be Implemented to Resolve Potential Adverse Effect (Y/N)	Specify the Mitigation	Description of Residual Effects after Mitigation	Description of the Cumulative Effects	Monitoring Plan/Details
Physical and Meteorological Environment	N	The Project is not located in areas of unstable terrain, or permafrost. Potential effects associated with erosion potential are discussed as they relate to soil productivity. The Project does not affect the meteorological environment. Extreme weather events are discussed in the context of effects of the environment on the Project.	N/A	None	N	N/A	None	None	N/A
Soil and Soil Productivity	Y	The Project will be located on land owned by TransCanada, adjacent to an existing TransCanada right-of-way and existing meter station site. Temporary workspace may be required via the previously disturbed area north of the existing facility. Interactions during construction and decommissioning could occur as a result of: • clearing, soil stripping and grading • soil admixing, rutting, and compaction • wind and water erosion • pre-existing contaminated soil (if any)	Complete	Change in soil quality during construction and decommissioning due to: • Soil loss through wind or water erosion following vegetation removal • Soil loss during soil handling and storage • Admixing, compaction, rutting, or loss of soil structure through vehicle and equipment • Remediation of pre-existing contamination (if any)	Y	**Soil Erosion** • If wet/thawed soil conditions occur, implement the *Wet Soil Contingency Plan*. • Salvage topsoil prior to hydrovac use in all areas with agricultural potential. • Should high winds or heavy rains damage the tackifier during construction, the Environmental Inspector(s) or designate, in consultation with the Construction Manager, may implement contingency measures as outlined in the *Adverse Weather Contingency Plan.* • Should construction traffic or other related construction activities disturb the topsoil piles and there is a potential for wind erosion, apply additional water and/or tackifier. • Undertake all grading with the understanding that original contours and drainage patterns will be re-established during clean-up unless otherwise authorized by the Environmental Inspector(s) or designate. **Soil Handling** • Conduct topsoil salvage on all arable or potentially arable lands to promote successful reclamation and ensure this resource is returned to an equivalent land capability. • Salvage topsoil prior to hydrovac use in all areas with agricultural potential. • Salvage topsoil as indicated on the	Change in soil quality may occur due to: • Changes in soil chemical or physical characteristics of stockpiled soils • Soil erosion and compaction until vegetative cover has been re-established • Positive effects predicted if pre-existing contamination is discovered and remediated	None Effects on soil productivity will be limited to the Project site and are not likely to overlap with residual effects of other past, present, or future projects and activities.	Monitoring/ Inspection will occur during construction.

Element	Interaction (Y/N)	Description of Interaction(s) (If no interaction is predicted, provide justification)	Status of Element-Specific Study or Survey (Complete, Underway, Date Expected, or N/A)	Description of Potential Effects	Mitigation Will Be Implemented to Resolve Potential Adverse Effect (Y/N)	Specify the Mitigation	Description of Residual Effects after Mitigation	Description of the Cumulative Effects	Monitoring Plan/Details
						Environmental Site Information Sheet and/or other Project-specific environment documents and in accordance with the typical drawings. • Topsoil from areas of temporary disturbance and/or the permanent Project footprint will be salvaged and conserved in a designated, approved location, in a manner that will not cause erosion or sedimentation and will be stabilized by establishing vegetative cover. • Following salvage of the topsoil, if warranted, stabilize topsoil windrows and stockpiles using either water or a suitable tackifier as directed by the Environmental Inspector(s) or designate. Refer to the *Soil Erosion Contingency Plan*. • Salvage topsoil from areas to be graded. • Ensure grade material does not spread off the construction footprint. • Where pulverization of soils has the potential of causing soil loss or long-term structural impact, salvage topsoil, regrade and/or stabilize the construction footprint using a tackifier or water. • In the event of adverse weather that could result in rutting, sedimentation and erosion, and/or compaction, the Environmental Inspector(s) or designate, in consultation with the Construction Manager, may implement contingency measures as outlined in the *Adverse Weather Contingency Plan*. A soils specialist and/or the responsible regulatory agency may be consulted, if warranted. • Place spoil back into the trench in such a way as to prevent loss or mixing of topsoil. **Admixing, Compaction, Rutting** • Where pulverization of soils has the potential of causing soil loss or long-term structural impact, salvage topsoil, regrade and/or stabilize the construction footprint using a tackifier or water.			

Element	Interaction (Y/N)	Description of Interaction(s) (If no interaction is predicted, provide justification)	Status of Element-Specific Study or Survey (Complete, Underway, Date Expected, or N/A)	Description of Potential Effects	Mitigation Will Be Implemented to Resolve Potential Adverse Effect (Y/N)	Specify the Mitigation	Description of Residual Effects after Mitigation	Description of the Cumulative Effects	Monitoring Plan/Details
						• Place spoil to maintain an adequate separation between topsoil and subsoil piles. Avoid overlap of the spoil and topsoil in agricultural lands. If the potential of overlap is identified, move the topsoil, or in some space restricted cases, protect with a geotextile cover. • In the event of adverse weather that could result in rutting, sedimentation and erosion, and/or compaction, the Environmental Inspector(s) or designate, in consultation with the Construction Manager, may implement contingency measures as outlined in the *Adverse Weather Contingency Plan*. A soils specialist and/or the responsible regulatory agency may be consulted, if warranted. • Place spoil back into the trench in such a way as to prevent loss or mixing of topsoil. **Remediation** • In the event unanticipated contaminated soils, surface water and/or groundwater are encountered during construction, implement the *TransCanada Waste and Hazardous Materials Management Manual* and the *Contaminated Soils Contingency Plan.*			
Vegetation	Y	The Project will be located on land owned by TransCanada, adjacent to an existing TransCanada right-of-way and existing meter station site. Temporary workspace may be required via the previously-disturbed area north of the existing facility. Construction of the new sales meter station will require removal of up to 0.2 ha of previously disturbed upland vegetation communities, consisting primarily of early seral stage graminoid and forb species. Interactions during construction could occur due to: • vegetation clearing • vehicle and equipment movement	Underway – Pre-construction surveys will be undertaken in Spring 2017 to confirm the presence/ absence of species at risk	Change in community and species diversity during construction due to: • Direct loss or alteration of previously disturbed upland vegetation communities or plant species of management concern arising from clearing and ground disturbance • Introduction or spread of noxious weeds or invasive species through vehicle and equipment movement	Y	**Vegetation Removal** • Restrict all construction activities to the approved construction footprint. All construction traffic will adhere to safety and road closure regulations. • Use a cover crop to assist in weed and erosion control where warranted, or where requested by the landowner. If previously unidentified rare plants or rare ecological communities are found on the construction footprint during construction, implement the *Plant Species and Ecological Communities of Concern Discovery Contingency Plan.* • Consult with relevant regulatory bodies to develop appropriate	Change in abundance or distribution of native vegetation communities and species during construction due to: • Small area of previously-disturbed upland vegetation communities will be removed • Weeds may be introduced or spread	Project contributions to ongoing cumulative effects on native vegetation are predicted to be negligible.	Monitoring/ Inspection will occur during construction.

Element	Interaction (Y/N)	Description of Interaction(s) (If no interaction is predicted, provide justification)	Status of Element-Specific Study or Survey (Complete, Underway, Date Expected, or N/A)	Description of Potential Effects	Mitigation Will Be Implemented to Resolve Potential Adverse Effect (Y/N)	Specify the Mitigation	Description of Residual Effects after Mitigation	Description of the Cumulative Effects	Monitoring Plan/Details
		Decommissioning activities for the existing sales meter station will be limited to the existing fenced and graveled site. Interactions with vegetation communities are not anticipated during decommissioning.				species-specific mitigation measures, if determined to be present on the Project site. **Weeds and Invasive Species** • All equipment must arrive at the Project site clean and free of soil or vegetative debris. Equipment will be inspected by the Environmental Inspector(s) or designate, and if deemed to be in appropriate condition will be approved for use and identified with a suitable marker or tag. Any equipment which does not arrive in appropriate condition shall not be allowed on the construction footprint until it has been cleaned, re-inspected by the Environmental Inspector(s) or designate, and deemed suitable for use. • Strip topsoil from the construction footprint on lands where localized weed infestations are encountered. Store soil piles containing regulated weeds to prevent mixing with the surrounding soil during re-grading and final clean-up. • Monitor topsoil piles for weed growth during the course of construction and implement corrective measures (e.g., spraying, mowing, hand pulling) to avoid infestation when warranted. • If previously unidentified locations with noxious or prohibited noxious weed infestations are found on the construction footprint during construction, the Environmental Inspector(s) or designate will be contacted and will establish the appropriate mitigation or control procedures prior to continuing construction activities in the area. • Use only Certified No. 1 seed, unless Certified No. 1 is not available for select reclamation seed species (i.e., native species). • Unless a certificate of weed analysis can be provided, all construction material sources used for supplies of sand, gravel, rock, straw and mulch will be visually inspected to			

Element	Interaction (Y/N)	Description of Interaction(s) (If no interaction is predicted, provide justification)	Status of Element-Specific Study or Survey (Complete, Underway, Date Expected, or N/A)	Description of Potential Effects	Mitigation Will Be Implemented to Resolve Potential Adverse Effect (Y/N)	Specify the Mitigation	Description of Residual Effects after Mitigation	Description of the Cumulative Effects	Monitoring Plan/Details
						ensure they are free of noxious weeds to the extent possible. If sources are suspected as having noxious weeds, they shall be sampled and lab analyzed to ensure they meet the requirements of the responsible regulatory agency prior to obtaining or transporting any material to the Project. • Use a cover crop to assist in weed and erosion control where warranted, or where requested by the landowner. • Restrict the general application of herbicide near rare plants or rare ecological communities. Spot spraying, wicking, mowing, or hand-picking are acceptable measures for weed control in these areas.			
Water Quality and Quantity	N	Project activities are more than 30 m away from defined watercourses and waterbodies and water withdrawals are not anticipated to construct or operate the Project. No interaction with surface water quality and quantity during construction (including decommissioning activities) and operation of the Project is predicted. No interaction with groundwater quality and quantity during construction and operation of the Project is predicted.	N/A	None	N	N/A	None	None	N/A
Fish and Fish Habitat	N	There are no fish bearing watercourses within 100 m of the Project. No interaction with fish and fish habitat during construction (including decommissioning activities) and operation of the Project is predicted.	N/A	None	N	N/A	None	None	N/A
Wetlands	N	There are no wetlands present within 120 m of the Project. No interaction with wetlands during construction (including decommissioning activities) and operation of the Project is predicted.	N/A	None	N	N/A	None	None	N/A
Wildlife and Wildlife Habitat	Y	The Project will be located on land owned by TransCanada, adjacent to an existing TransCanada right-of-way and existing meter station site.	Underway – Pre-construction surveys will be undertaken in Spring 2017 to confirm the presence/	Change to habitat during construction due to: • Direct habitat loss or alteration through vegetation	Y	**Change to Habitat** • Restrict all construction activities to the approved construction footprint. All construction traffic will adhere to	Change to habitat will occur: • small area of previously disturbed upland vegetation will be	Project contribution to ongoing cumulative effects on wildlife and wildlife habitat are predicted to be	Monitoring/ inspection will occur during

Element	Interaction (Y/N)	Description of Interaction(s) (If no interaction is predicted, provide justification)	Status of Element-Specific Study or Survey (Complete, Underway, Date Expected, or N/A)	Description of Potential Effects	Mitigation Will Be Implemented to Resolve Potential Adverse Effect (Y/N)	Specify the Mitigation	Description of Residual Effects after Mitigation	Description of the Cumulative Effects	Monitoring Plan/Details
		Temporary workspace may be required via the previously disturbed area north of the existing facility. Construction: • Construction of the new sales meter station (SMS) will require disturbance of up to 0.2 ha of previously disturbed low quality upland habitat; however, it may be suitable for general use by migratory birds and small terrestrial mammals. Interactions during construction could occur due to: • vegetation clearing • vehicle and equipment movement • increased traffic • increased noise Decommissioning: • Decommissioning activities for the existing SMS will be limited to the existing fenced and graveled site, which contains no wildlife habitat. Interactions with wildlife and wildlife habitat are not anticipated during decommissioning activities.	absence of species at risk	clearing and ground disturbance Indirect loss or alteration of habitat effectiveness through sensory disturbance Change in mortality risk during construction due to: • Ground disturbance and vegetation clearing resulting in physical destruction of key habitat features (e.g., nests, dens) • Vehicle and equipment movement and ground disturbance resulting in accidental mortality of small, less mobile species or individuals (e.g., small rodents, amphibians, reptiles, juvenile birds) • Vehicle collisions		safety and road closure regulations. • Prior to the start of clearing, clearly mark all sensitive resources as identified on the Environmental Site Information Sheet and/or other Project-specific documents and in the Environmental Protection Plan (EPP). • To prevent inadvertent trespass, stake the approved construction footprint to clearly delineate all boundaries. • In the event that clearing or construction activities cannot be avoided during the migratory bird primary nesting period (PNP); approximately April 15--August 15 [Zone C3], refer to the *Breeding Bird and Nest Management Plan* (BBNMP). • Ensure that noise abatement equipment on machinery is in good working order. **Change in Mortality Risk** • Avoid disturbance to environmentally sensitive features during clearing as identified by the appropriate signage and/or fencing. The Environmental Inspector(s) or designate and appropriate Environmental Resource Specialist will determine the size of avoidance buffer surrounding these features, if appropriate. • In the event that clearing or construction activities cannot be avoided during the migratory bird PNP; approximately April 15--August 15 [Zone C3], refer to the BBNMP. • Environment and Climate Change Canada's avoidance guidelines and policy on incidental take of migratory bird in Canada (ECCC 2017) will be followed to determine the presence of nesting birds and to prevent disturbance to active nests. • Construction and clean-up activities will occur outside of PNP, where feasible. • Where clearing or construction	removed during construction resulting in direct habitat loss for wildlife • habitat near the Project site may become less suitable during construction due to sensory disturbance to wildlife (e.g., light, noise) Change in mortality risk may occur: • ground disturbance could disturb or destroy nests or dens • accidental collisions with Project-related equipment and vehicles	negligible.	construction.

Element	Interaction (Y/N)	Description of Interaction(s) (If no interaction is predicted, provide justification)	Status of Element-Specific Study or Survey (Complete, Underway, Date Expected, or N/A)	Description of Potential Effects	Mitigation Will Be Implemented to Resolve Potential Adverse Effect (Y/N)	Specify the Mitigation	Description of Residual Effects after Mitigation	Description of the Cumulative Effects	Monitoring Plan/Details
						activities will occur during the PNP in nesting habitat, a non-intrusive pre-construction breeding bird survey will be conducted unless the area has been pre-cleared. • If an active nest is identified within the Project footprint, the BBNMP will be implemented to avoid or minimize risks of negative effects to migratory birds, their nests and eggs. • Do not permit construction personnel to have dogs on the construction footprint. • Report sightings of project-specific species of interest to the Environmental Inspector(s) or designate. Specific protection measures may be implemented and the sighting will be recorded. • If previously unidentified listed or sensitive wildlife species or their site-specific habitat (e.g., dens, nests) are identified during construction of the Project, report to the Environmental Inspector(s) or designate and implement the *Wildlife Species of Concern Discovery Contingency Plan*. • All construction traffic will adhere to safety and road closure regulations. • Consult with relevant regulatory bodies to develop appropriate species-specific mitigation measures, if determined to be present on the Project site.			
Species at Risk, or Species of Special Status, and related habitat	Y	The Project will be located on land owned by TransCanada, adjacent to an existing TransCanada right-of-way and existing meter station site. Temporary workspace may be required via the previously disturbed area north of the existing facility. No wildlife species of management concern were observed during the field survey; however, have the potential to occur due to the presence of potential habitat in the Project footprint. No plant species of management concern or species at risk were observed during the field survey;	Underway – Pre-construction surveys will be undertaken in Spring 2017 to determine presence/ absence of species at risk	Change to habitat and mortality risk for wildlife species of management concern may arise during construction. See the Wildlife and Wildlife Habitat element of this table for potential effects and pathways that may affect wildlife, including wildlife species of management concern. Change to vegetation community and species diversity may arise during construction. See the Vegetation element of this table for potential effects and pathways that may affect vegetation,	Y	See the Wildlife and Wildlife Habitat element of this table for mitigation measures regarding changes in wildlife habitat and mortality risk. See the Vegetation element of this table for mitigation measures regarding vegetation removal, and introduction of weeds.	Change to habitat or mortality risk for wildlife species of management concern could arise during construction. See the Wildlife and Wildlife Habitat element of this table for predicted residual effects on wildlife, including wildlife species of management concern. Change in abundance or distribution of native vegetation species, including vegetation species	Project contribution to ongoing cumulative effects on vegetation and wildlife, including species of management concern are predicted to be negligible.	Monitoring/ Inspection will occur during construction.

Element	Interaction (Y/N)	Description of Interaction(s) (If no interaction is predicted, provide justification)	Status of Element-Specific Study or Survey (Complete, Underway, Date Expected, or N/A)	Description of Potential Effects	Mitigation Will Be Implemented to Resolve Potential Adverse Effect (Y/N)	Specify the Mitigation	Description of Residual Effects after Mitigation	Description of the Cumulative Effects	Monitoring Plan/Details
		however, have the potential to occur due to the presence of potential habitat in the Project footprint. Construction: • Construction of the new SMS will require disturbance of up to 0.2 ha of previously disturbed early seral stage vegetation, which is considered low quality upland habitat; however, it may be suitable for general use by migratory birds and small terrestrial mammals. Interactions during construction with wildlife and vegetation species at risk and species of management concern could occur due to: • vegetation clearing • vehicle and equipment movement • increased traffic • increased noise Decommissioning: • Decommissioning activities for the existing SMS will be limited to the existing fenced and graveled site, which contains no wildlife habitat. Interactions with wildlife and vegetation species at risk and species of management concern are not anticipated during decommissioning activities.		including vegetation species of management concern.			of management concern, if present, could arise during construction. See the Vegetation element of this table for predicted residual effects on vegetation, including vegetation species of management concern.		
Air Emissions and Greenhouse Gas (GHG) Emissions	Y	Interactions could occur due to vehicle and equipment used during construction and decommissioning.	N/A	Increase in criteria air contaminants (CAC) and GHG emissions during construction and decommissioning due to: • Project contribution to (CACs • Increased GHG emissions during construction.	Y	• Reduce idling of equipment, where possible. • The Contractor will ensure that equipment is well-maintained. • Where practical, use multi-passenger vehicles for the transport of crews to and from job sites.	CAC and GHG emissions during construction and decommissioning are anticipated to be negligible.	Negligible Project contribution to CACs and GHGs from vehicle exhaust during construction and decommissioning in proximity to roads and other industrial developments.	Monitoring/ Inspection will occur during construction.
Acoustic Environment	Y	Interactions could occur due to noise generated by equipment and vehicles during construction and decommissioning activities.	N/A	Increased nuisance noise emissions during construction and decommissioning activities	Y	• Ensure that noise abatement equipment on machinery is in good working order. • Take reasonable measures to control construction related noise near residential areas.	Noise emissions during construction and decommissioning are anticipated to be negligible.	Negligible additional noise arising from Project activities during construction and decommissioning in the proximity of other industrial developments and urban center.	Monitoring/ Inspection will occur during construction.

Element	Interaction (Y/N)	Description of Interaction(s) (If no interaction is predicted, provide justification)	Status of Element-Specific Study or Survey (Complete, Underway, Date Expected, or N/A)	Description of Potential Effects	Mitigation Will Be Implemented to Resolve Potential Adverse Effect (Y/N)	Specify the Mitigation	Description of Residual Effects after Mitigation	Description of the Cumulative Effects	Monitoring Plan/Details
Human Occupancy and Resource Use	Y	The Project will be located on land owned by TransCanada, adjacent to an existing TransCanada right-of-way and meter station site. Temporary workspace may be required on the previously disturbed area north of the existing facility. This area is National Capital Commission (NCC) designated land, which is currently leased for seasonal commercial use. Interactions could occur due to access restrictions during construction and decommissioning activities.	Complete	Change to oil and gas and other industrial activities • Access restrictions during construction Change to leased land use • Access restrictions during construction • Removal of area for leased land use during construction	Y	**Access Restrictions** • Notify affected landowners and lessees of the intended Project schedule before the start of construction to prevent or reduce impacts to their operations or activities. • To prevent inadvertent trespass, stake the approved construction footprint to clearly delineate all boundaries. • Mark and locate all foreign lines and cables using Ontario One-Call services before the start of construction to ensure the safety of the workers and public. • Post signage to discourage unauthorized public access onto the construction footprint during construction. • Restrict all construction activities to the approved construction footprint. All construction traffic will adhere to safety and road closure regulations. • Clearly delineate areas that have access restrictions. Restrict access to construction personnel only. • Review landowner requests as they appear on the landowner line list, or as they arise in the field to ensure conformance with the environmental commitments. • Consult with NCC and leased land users to determine appropriate mitigation measures and develop land use arrangements prior to the start of construction.	Effects to access for nearby oil and gas and other industrial activities are anticipated to be localized, temporary, and negligible.	None	Monitoring/ Inspection will occur during construction.
Heritage Resources	Y	The Project will be located on TransCanada owned land, adjacent to an existing pipeline right-of-way and meter station. A Stage I archaeological Assessment was completed and submitted to the Ministry of Tourism, Culture and Sport on December 22, 2016. The Project will be located on land that may contain heritage resources; the likelihood of these resources occurring will be determined following additional investigation prior to construction.	Underway – a Stage 2 Archaeological Assessment will be undertaken in spring 2017.	With the implementation of proposed mitigation measures, including those required to satisfy the Ministry of Tourism, Culture and Sport prior to undertaking construction, effects on heritage resources are not predicted.	Y	• If historical or palaeontological features (e.g., arrow heads, modified bone, pottery fragments, fossils) not previously identified are found on the construction footprint during construction implement the measures outlined in the *Heritage Resource Discovery Plan*. • If potential human remains are found on the construction footprint during construction implement the measures outlined in the *Heritage Resource Discovery Plan.*	None	None	Monitoring/ Inspection will occur during construction

Element	Interaction (Y/N)	Description of Interaction(s) (If no interaction is predicted, provide justification)	Status of Element-Specific Study or Survey (Complete, Underway, Date Expected, or N/A)	Description of Potential Effects	Mitigation Will Be Implemented to Resolve Potential Adverse Effect (Y/N)	Specify the Mitigation	Description of Residual Effects after Mitigation	Description of the Cumulative Effects	Monitoring Plan/Details
						• Prohibit the collection of Historical Resources by Project personnel.			
Navigation and Navigation Safety	N	The Project activities will not take place in or near navigable waterways. No Interaction is predicted.	N/A	None	N	N/A	None	None	N/A
Traditional Land and Resource Use	N	The Project is located on TransCanada owned land, adjacent to an existing pipeline right-of-way and meter station. The Algonquins of Ontario received information about the Project. To date, no Project-related concerns or issues have been communicated to TransCanada. No interaction with Traditional Land and Resource Use is predicted. If previously-unidentified traditional land use (TLU) sites are found on the Project footprint during construction, TransCanada will implement the process outlined in the *Traditional Land Use Sites Discovery Contingency Plan*.	N/A	None	N	N/A	None	None	N/A
Socio and Cultural Well-Being	N	The Project has a limited scope, relatively small workforce (approximately 25 workers), and a short duration of construction (approximately two months). There are no anticipated interactions with social and cultural well-being.	N/A	None	N	N/A	None	None	N/A
Human Health or Aesthetics	N	The Project has a limited scope; limited residual effects on air quality and the acoustic environment are predicted. There are no anticipated interactions with human health and aesthetics.	N/A	None	N	N/A	None	None	N/A
Infrastructure and Services	Y	The Project has a limited scope, relatively small workforce (approximately 25 workers), and a short duration of construction (approximately 2 months). Local infrastructure and services are sufficiently robust to support the Project. There are limited predicted interactions with infrastructure and services.	N/A	None	N	N/A	None	None	N/A

Element	Interaction (Y/N)	Description of Interaction(s) (If no interaction is predicted, provide justification)	Status of Element-Specific Study or Survey (Complete, Underway, Date Expected, or N/A)	Description of Potential Effects	Mitigation Will Be Implemented to Resolve Potential Adverse Effect (Y/N)	Specify the Mitigation	Description of Residual Effects after Mitigation	Description of the Cumulative Effects	Monitoring Plan/Details
Employment and Economy	Y	The Project has a limited scope, relatively small workforce (approximately 25 workers), and a short duration of construction (approximately two months). There are limited predicted interactions with employment and economy.	N/A	None	N	N/A	None	None	N/A
Accidents and Malfunctions	Y	Project activities during construction and decommissioning have the potential to cause: • accidental release or rupture • fire • hazardous materials release • vehicle accident • damage to Existing Pipelines and/or Facilities	N/A	A release or rupture could occur during operation due to: • Internal and external corrosion or stress corrosion cracking • Defects associated with either manufacturing or onsite installation • Overpressure events • Natural force • Third-party damage A hazardous materials release could occur during construction (or operation to a lesser extent) due to improper handling, use or storage. Fire could occur during construction due to explosion, lightning or other natural event. A vehicle accident, including one that involves wildlife, could occur during construction or operation during movement of vehicles to and from the Project site or heavy equipment on-site. Damage to existing pipelines and/or facilities near the Project site could occur during Project construction.	Y	**Release or Ruptures** • All equipment shall arrive on the project free of leaks and in good working condition. Any equipment which does not arrive free of leaks and in good working condition shall not be allowed on the construction footprint until it has been repaired, re-inspected by the Environmental Inspector(s) or designate, and deemed suitable for use. • The Contractor will ensure equipment is well-maintained and free of fluid leaks. • If an accidental release does occur, measures to control, contain, recover and clean up the release are to be implemented immediately to minimize the potential for adverse environmental and human health effects, or to ensure the release does not spread or increase in size. Refer to the *Release Contingency Plan.* • In the event of a release of any size, the Contractor shall immediately report the release to the Environmental Inspector(s) or designate. • In the event of a release, refer to the *Release Contingency Plan.* **Fire** • In the event of a fire or high fire hazard conditions, follow the measures outlined in the *Fire Suppression Contingency Plan*. • Ensure the Contractor has the necessary fire-fighting equipment on hand that is capable of controlling any fire that may occur as a result of their activities, as identified by provincial regulations and responsible government agencies.	• With the implementation of mitigation, preventative and response measures, the residual effects of accidents and malfunctions on VCs considered in this assessment are predicted to be not significant.	None	Monitoring/ Inspection will occur during construction and operation.

Element	Interaction (Y/N)	Description of Interaction(s) (If no interaction is predicted, provide justification)	Status of Element-Specific Study or Survey (Complete, Underway, Date Expected, or N/A)	Description of Potential Effects	Mitigation Will Be Implemented to Resolve Potential Adverse Effect (Y/N)	Specify the Mitigation	Description of Residual Effects after Mitigation	Description of the Cumulative Effects	Monitoring Plan/Details
						• Prior to commencement of construction, the Contractor will designate one of his staff as Fire Boss. The Fire Boss will be familiar with fire-fighting techniques and equipment. A Fire Boss should have some degree of fireline certification and fire experience, or knowledge of fire weather and fire behavior. • All motorized equipment must carry a fully charged fire extinguisher. The Fire Boss will ensure that fire extinguishers are present and fully charged and all fireline equipment is present and in working order. **Hazardous Materials Release** • In the event of a release, refer to the *Release Contingency Plan.* • 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. • All fuel tanks, hazardous materials and chemicals shall be stored within appropriate secondary containment per requirements outlined in the *Chemical and Waste Management Pla*n. **Vehicle Accident** • Restrict all construction activities to the approved construction footprint. All construction traffic will adhere to safety and road closure regulations. **Damage to Existing Pipelines and/or Facilities** • Mark and locate all foreign lines and cables using Ontario One-Call services before the start of construction to ensure the safety of the workers and public.			
Effects of the Environment on the Project	Y	Interactions could occur due to the following events: • severe weather events • wildfires	N/A	Effects on the Project may arise during construction due to: • extreme temperatures • heavy precipitation and flooding • lightning	Y	**For All Weather Events** • In the event of adverse weather that could result in rutting, sedimentation and erosion, and/or compaction, the Environmental Inspector(s) or designate, in consultation with the Construction Manager, may	N	None	Monitoring/ Inspection will occur during construction and operation.

Element	Interaction (Y/N)	Description of Interaction(s) (If no interaction is predicted, provide justification)	Status of Element-Specific Study or Survey (Complete, Underway, Date Expected, or N/A)	Description of Potential Effects	Mitigation Will Be Implemented to Resolve Potential Adverse Effect (Y/N)	Specify the Mitigation	Description of Residual Effects after Mitigation	Description of the Cumulative Effects	Monitoring Plan/Details
				• high winds and tornadoes • wildfires		implement contingency measures as outlined in the *Adverse Weather Contingency Plan*. A soils specialist and/or the responsible regulatory agency may be consulted, if warranted. • Following an adverse weather event, the Contractor will confirm the efficacy of sediment and erosion control measures and whether corrective action is required. • Should high winds or heavy rains damage the tackifier during construction, the Environmental Inspector(s) or designate, in consultation with the Construction Manager, may implement contingency measures as outlined in the *Adverse Weather Contingency Plan.* **Wildfires** • In the event of a fire or high fire hazard conditions, follow the measures outlined in the *Fire Suppression Contingency Plan*. • Ensure the Contractor has the necessary fire-fighting equipment on hand that is capable of controlling any fire that may occur as a result of their activities, as identified by provincial regulations and responsible government agencies. • All motorized equipment must carry a fully charged fire extinguisher. The Fire Boss will ensure that fire extinguishers are present and fully charged and all fireline equipment is present and in working order.			

NOTE:
TransCanada confirms that all the standard environmental mitigation noted in the above table as well as the following contingency plans and management plans will be included in a Project-specific Environmental Protection Plan : *Release Contingency Plan; Adverse Weather Contingency Plan; Flood and Excessive Flow Contingency Plan; Wet Soils Contingency Plan; Fire Suppression Contingency Plan; Soil Handling Contingency Plan; Soil Erosion Contingency Plan; Contaminated Soils Contingency Plan; Plant Species and Ecological Communities of Concern Discovery Contingency Plan; Wildlife Species of Concern Discovery Contingency Plan; Heritage Resource Discovery Contingency Plan; TLU Sites Discovery Contingency Plan; Chemical and Waste Management Plan; Traffic Control Management Plan; Hydrovac Slurry Handling Management Plan;* and *Breeding, Bird and Nest Management Plan*.

REFERENCES:
Environment and Climate Change Canada. 2017. Safeguarding Migratory Birds: Technical Information. Website: https://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=8D910CAC-1#_03. Accessed February 2017.