

# **Basic Impact Analysis**

**Poonamalie Dam - Phase II - Access Road  
Rideau Canal Waterway  
Salter Lane, Smith Falls, Ontario**



**September 2018**





## ***Environmental Impact Assessment Version Control***

This section serves to control the development and distribution of revisions to the Environmental Assessment.

<b>Document Number</b>	<b>Amendment Number</b>	<b>Date</b>	<b>Brief Description of Change</b>
1	0	2018-09-04	Original





## 1. GENERAL PROJECT INFORMATION

### 1.1. Location:

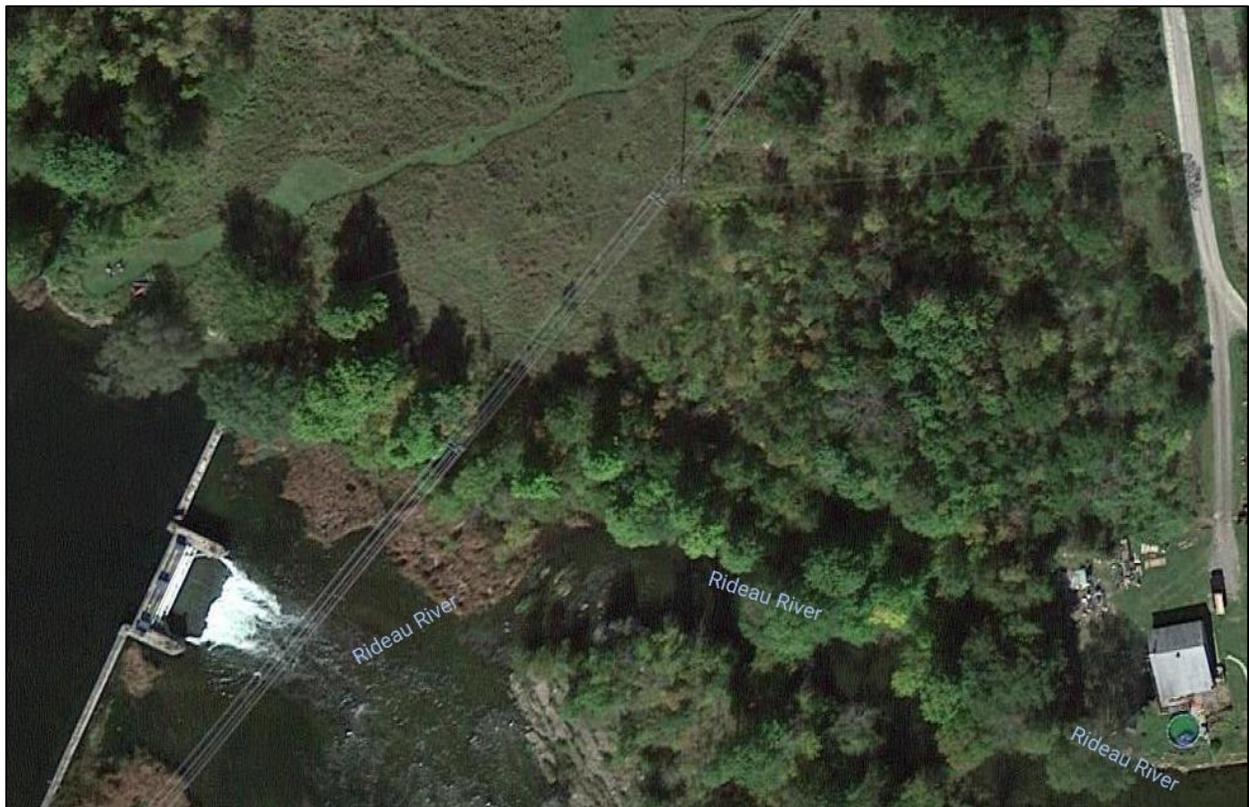
Poonamalie Dam – Phase II – Access Road Construction  
Rideau Canal Waterway  
Salter Lane, Smith Falls, Ontario  
44° 53' 32.4528"N Latitude; 76° 3'50.2848"W Longitude

### 1.2. Background:

The Poonamalie Dam radial gate is a critical asset on the Rideau Canal (RC) and safe and effective operation and maintenance of the gate is essential to water management of the RC. Access to the dam from the north, either to mobilize equipment for gate repair, or for dam operations, is not currently possible. This deficiency shall be resolved via the development of an access road leading from Salter Lane to the embankment area adjacent to the northern end of the dam.

### 1.3. Land Ownership:

All work will be undertaken on Federal Lands under the jurisdiction of Parks Canada Agency (PCA) – RC. The area featured in **Figure 2** as a green strip with white lettering was purchased from the private landowner and is now PCA owned.



**Figure 1:** Google Earth aerial image of the proposed project area.





**Figure 2:** Map of the property ownership of PCA lands and the surrounding area. Areas with covered in a pink opaque hue and the strip highlighted in red are PCA property. The green strip with white lettering was purchased from the private landowner and is now PCA owned. All other property is privately owned.

**2. PROPONENT INFORMATION**

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**3. PROPOSED PROJECT DATES**

Planned commencement: Fall 2018  
Planned completion: Winter 2018/2019

**4. INTERNAL PROJECT FILE #** EA: RIC-2018-002 (I); R.066861.200

**5. NOTE ON BASIC IMPACT ASSESSMENT DOCUMENT:**

The environmental constraints, best management practices and mitigation measures outlined within this Basic Impact Analysis (BIA) shall be adhered to and implemented accordingly. The information presented within this document may be appended to subsequent future BIA(s) for similarly-scoped projects, or for possible future amendments to this BIA to address changes in the scope of work of this project. Additional prescribed mitigation within the future BIA(s) are to be adhered to and implemented in conjunction with that of this (the Initial) BIA, with the exception of mitigation measures which are detailed to supersede specific mitigative measure outlined within (this) the Initial BIA.







### **6.3 Schedule:**

Mobilization and site preparation is anticipated for fall (October) 2018. The completion of the road and fencing is anticipated for winter (November-December) 2018-2019.

Project environmental constraints were considered as part of the design process:

- In-water works which may occur (i.e. riprap placement and slope grading) must be timed to adhere to appropriate fisheries timing windows (restriction from March 15th to June 30th) of any year to protect fish, including their eggs, juveniles, spawning adults and/or the organisms upon which they feed. Plan to minimize duration of in-water works wherever possible.
- Construction in areas of potential turtle habitat(s) during the turtle nesting season from May 15th to August 15th of any year should be avoided to best extent possible in order to protect potential local turtle residents (Blanding's Turtle (*Emydoidea blandingii*), Eastern Musk Turtle (*Sternotherus odoratus*), and Snapping Turtle (*Chelydra serpentina*)), as well as Blanding's Turtle Critical Habitat which is located west of the Poonamalie Dam.
- In compliance with the *Migratory Bird Convention Act*, no removal of trees or other vegetation during the breeding bird window from April 1st to August 31<sup>st</sup> is to take place of any year. Golden-winged Warbler (*Vermivora chrysoptera*) Critical Habitat is located throughout the project area.

## **7. VALUED COMPONENTS POTENTIALLY AFFECTED**

### **7.1. Navigability and Public Safety:**

The RC is a designated navigable waterway pursuant to the List of Scheduled Waters as defined by the *Navigation Protection Act (NPA)*. Navigation is thereby managed and regulated by Parks Canada as part of the RC in accordance with the *Historical Canals Regulations (HCR)*.

No effects to navigability are expected during the dam rehabilitation, or the construction of any temporary in-water works associated with the project. Work is not being undertaken within the navigation channel within the navigation season of the RC. No effects to the navigability of the RC are predicted post-construction. Repairs to this asset ensure that safe navigation continues on the RC. Safety of both water-based and land-based visitors is a priority.

### **7.2. Water Quality:**

Although not anticipated, if required, the in-water work area for these sites will be isolated and/or dewatered for the construction season, some water, resultant from leakage of isolation barriers may pass through this area. By this, there is potential for contamination of water from spills and/or leaks from equipment. Also, potential of reduced water quality and clarity due to increased erosion, sedimentation and transport of debris, (e.g. discharge of waters).

Baseline water quality measures have been taken near the project areas prior to initiation of construction in order to get an accurate picture of background levels. Additional water quality measurements will be taken prior to the commencement of construction activities. This information will form the baseline for the mitigations measures outlined in this assessment.



**Table 1:** Baseline Water Quality for Poonamalie Lockstation 32

Quality Component	Downstream Lock 32	Upstream Lock 32
Temperature (°C)	22.16	21.9
pH	7.66	8.13
Turbidity (NTU)	0.81	0.60

\*Data Collected June 27<sup>th</sup> 2018 (Temp and NTU and °C), and July 21<sup>st</sup> 2017 (pH).

### 7.3. Fish and Fish Habitat:

The general location of the access road to the Poonamalie dam/weir is adjacent to the Rideau River, north-east (upstream) of the Lower Rideau Lake. The Rideau River has a diverse coolwater fish community.

**Table 2:** Fish species which have been recorded to be observed, or are reported to possibly reside within proximity to, the Poonamalie Dam and surrounding area.

FISH AND AQUATIC SPECIES			
Common Name	Scientific Name	Sp. Note	Source
<b>Fish</b>			
Banded Killfish	<i>Fundulus diaphanus</i>		CMN
Black Crappie	<i>Pomoxis nigromaculatus</i>		AA, CMN
Blacknose Shiner	<i>Notropis heterolepis</i>		CMN
Bluegill	<i>Lepomis macrochirus</i>		AA, CMN
Bluntnose Minnow	<i>Pimephales notatus</i>		CMN
Brassy Minnow	<i>Hybognathus hankinson</i>		CMN
Brook Silverside	<i>Labidesthes sicculus</i>		CMN
Brown Bullhead	<i>Ameiurus nebulosus</i>		AA, CMN
Central Mudminnow	<i>Umbra limi</i>		CMN
Common Carp	<i>Cyprinus carpio</i>		AA, CMN
Golden Shiner	<i>Notemigonus crysoleucas</i>		CMN
Greater Redhorse	<i>Moxostoma valenciennesi</i>		CMN
Largemouth Bass	<i>Micropterus salmoides</i>		AA, CMN
Logperch	<i>Percina sp.</i>		CMN
Mimic Shiner	<i>Notropis volucellus</i>		CMN
Northern Pike	<i>Esox lucius</i>		AA, CMN
Pumpkinseed	<i>Lepomis gibbosus</i>		AA, CMN
Rock Bass	<i>Ambloplites rupestris</i>		CMN
Silver Redhorse	<i>Moxostoma anisurum</i>		CMN
Smallmouth Bass	<i>Micropterus dolomieu</i>		CMN
Tessellated Darter	<i>Etheostoma olmstedii</i>		CMN
Walleye	<i>Sander vitreus</i>		AA
Yellow Perch	<i>Perca flavescens</i>		AA, CMN
<b>Invertebrates</b>			
Black Sandshell	<i>Ligumia recta</i>		CMN
Eastern Elliptio	<i>Elliptio complanata</i>		CMN
Eastern Lampmussel	<i>Lampsilis radiata</i>		CMN
Elktoe	<i>Alasmidonta marginata</i>		CMN
Floater	<i>Pyganodon sp</i>		CMN
Fluted Shell	<i>Lasmigona costata</i>		CMN
Zebra Mussel	<i>Dreissena polymorpha (Pallas)</i>	INV	EDM





Aquatic Vegetation			
Cattail sp.	<i>Typhaceae sp.</i>	HX? INV?	2018-06 SV, PCA
Common Waterweed	<i>Elodea Canadensis</i>		CMN
Curly-leaved Pondweed	<i>Potamogeton crispus</i>	INV	EDM
Eurasian Water Milfoil	<i>Myriophyllum spicatum</i>		CMN
Fragrant Water Lily	<i>Nymphaea odorata</i>		CMN
Northern Water Milfoil	<i>Myriophyllum sibiricum</i>		CMN

AA = Angler's Atlas

CMN = Canadian Museum of Nature, 2001

EDM = EDDmaps

INV = Invasive Species

Habitat surrounding the Dam likely provides spawning, nursery, rearing, migration and feeding habitat for a variety of bait and sport fish species; however, as the habitat is above the backwatered area upstream of the dam, the habitat is not rare or limited in the Rideau system.

No fish Species at Risk (SAR) Critical Habitat are known to be present in the designated construction areas of the Poonamalie Dam Access Road.

Overall, fish habitat which may potentially be impacted by the planned works is restricted to the shoreline area of the southern end of the western parking area where riprap is to be placed along the shoreline. The footprint for rip-rap placement is estimated to be 48 m<sup>2</sup> (3 m x 16 m). The area between the edge of the rip-rap and shoreline is to remain in its natural vegetated state. In-water works is not anticipated, however depending on water levels and site conditions at the time of construction, there is potential for this area to be flooded and low-scale in-water works may be required.

#### **7.4. Erosion and Sediment Control:**

According to Chapman and Putnam (1984), the BIA Study Area is in a physiographic region known as the Napanee Plain, which is characterized as a flat-to-undulating limestone plain (Gull River and Bobcaygeon Formations) and has had most of the overburden removed through glacier activity. The Napanee Plain is underlain by sandstones and dolostones of the Beckmantown Group and covers an area approximately 1,800 km<sup>2</sup>. A layer of soil several centimeters thick covers much of the region, except in depressions where deposits of glacial till and clay may be found. According to a geotechnical investigation report prepared by LRL (2006), the maps provided by the Department of Energy, Mines and Resources Canada indicated that the BIA Study Area would be located within the organic deposits with local till veneer outcrops less than 1 m thick resting over dolomite bedrock (LRL, 2006).

The bedrock geological map of the site, obtained from Ontario Geological Survey (<http://www.mndm.gov.on.ca>), identified that the site is underlain by Paleozoic limestone belonging to the middle Ordovician Simcoe Group, overlain with Phanerozoic Quaternary coarse-textured glaciomarine deposits, Phanerozoic Quaternary fine-textured glaciolacustrine deposits, and Phanerozoic Mesozoic Ordovician sedimentary rock mineral deposits.

Soils and landforms consisting of, and immediately surrounding, the dams and earthdams have been historically disturbed by development including the building of the original canal infrastructure, municipal infrastructure, and agricultural and residential development.

There is potential for contamination of soil from spills and/or leaks from equipment; depending on winter conditions/snow cover. With clearing, grubbing, minor excavation and grading, there is also potential for soil exposure and terrain alteration resulting in erosion, sedimentation and slope instability.





### 7.5. Vegetation:

The Poonamalie dam and Earthdam areas are heavily influenced by past and present human development and activities. The footprint of the to-be-constructed dam access road lies mainly on the footprint of the former access road with approximately 20-years' worth of successional growth, leading out to an open long-grassed field area.

The former access road area is largely clear, save for some young trees such as White Oak (*Quercus alba*) and Elm (*Ulmus sp.*), low-lying undergrowth such as Poison Ivy (*Toxicodendron radicans*) and Virginia Creeper (*Parthenocissus quinquefolia*), and some smaller scrubby-plants and brush such as Red Wild Raspberry (*Rubus idaeus*) (see **Appendix A – Photos 3 to 6** and **Appendix C** for a species list of vegetation in the project area).

An assortment of common wild grasses such as Timothy Grass (*Phleum pratense*), scrubby-plants such as Staghorn Sumac (*Rhus typhina*), brush, climbing plants such as Purple Cow Vetch (*Vicia cracca*), assorted small trees such as Trembling Aspen (*Populus tremuloides*), and wild flowers such as clover sp. (*Trifolium sp.*) grow in the long-grassed field area, with a few large mature trees closer to the shoreline (see **Appendix A – Photos 9 to 15**).

It may be assumed that a large portion of these areas were previously disturbed and impacted from the historical dam, earthdam, and former access road construction and maintenance.

Of this, the anticipated footprint of the access road and parking area is 1350 m<sup>2</sup>. The existing vegetation within this footprint is to be permanently removed (see **Figure 4** below). Approximately half of this area is forested habitat (688.5 m<sup>2</sup>) and the other half is long-grass meadow habitat (661.5 m<sup>2</sup>).

It should also be noted that Poison Ivy was recorded to be predominant around the site area, particularly along remnants of the former access road and around the old access gate.





**Figure 4:** Estimated footprint of new access road and parking area, as well as anticipated footprint for permanent vegetation removal outlined in Red (approximately 1350 m<sup>2</sup>). Solid red shading represents forested area to be impacted (approximately 688.5 m<sup>2</sup>), and red-hatched area represents the open field and mowed area to be impacted (approximately 661.5 m<sup>2</sup>).

#### 7.6. **Wildlife:**

The area surrounding the Poonamalie Dam and access road construction area is likely utilized by a variety of aquatic and terrestrial wildlife.

Migratory birds utilize the vegetation adjacent to the dam, and waterfowl can also be found on the water as well and on the surrounding lands. It may be possible that there is turtle overwintering habitat both up and downstream of the dam, however as in-water works is not anticipated for the projects, suitable over-wintering habitat which meets the appropriate winter water-level depth requirements, will not be impacted by the project. Some potential nesting habitat may exist along the embankment parallel to the construction area, however is unlikely as the shoreline area mainly consists of dense Cattail sp. (*Typha sp.*) vegetation.

Due to that vegetation will be disturbed, there is potential to affect birds and other wildlife species, both aquatic and terrestrial. Migratory birds, their nests and eggs are protected under the *Migratory Birds Convention Act (1994)*. Project works that are potentially disruptive activities to nesting birds, such as vegetation clearing, should be avoided during the nesting period.

#### 7.7. **Species at Risk:**

The Federal *Species at Risk Act (SARA)* provides protection to all Species at Risk (SAR) listed under *Schedule 1* of the Act. SAR which may be found within the project areas, both federally listed species and species listed under the *Ontario Endangered Species Act (ESA)*, have been identified using the National Heritage Information Center's (NHIC) database, the Atlas of Breeding Birds of Ontario and the Ontario Reptile and Amphibian Atlas. These species can be found in **Table 3**.





Basic habitat characteristics for each species have been included in **Table 3** and an assessment given as to the likelihood of that species using habitat within the study area. For SAR that do not have critical habitat described in a recovery strategy, mitigation measures will be employed to ensure that individuals and their habitat are protected.

#### **7.7.1. Birds:**

The project site resides within the 10 x 10 km area proposed for Golden Winged-warbler Critical Habitat, however there have been no recorded observations of this species within proximity to the Poonamalie Dam.

Observations have been reported within approximately a 1 km radius of the site of Barn Owl (*Tyto alba*), Eastern Meadowlark (*Sturnella magna*), Golden Eagle (*Aquila chrysaetos*), and Least Bittern (*Ixobrychus exilis*), however none of these sightings appear to have occurred within the project area itself.

Of these species, the biophysical attributes of preferred primary and/or Critical Habitat are not present within/adjacent to the project site area for Eastern Meadowlark, Golden Eagle or Least Bittern (see **Table 3** below). The project site may possess suitable foraging habitat for Barn Owl (see **Table 3** below).

#### **7.7.2. Herpetiles:**

##### **7.7.2.1. Snakes:**

NHIC has reported observations of Eastern Milksnake (*Lampropeltis triangulum*) far east down the river adjacent to the Poonamalie Lockstation. Additionally, Gray Ratsnake (*Pantherophis spiloides*) was also reported within proximity of the Lockstation within a 2007 Field Study.

##### **7.7.2.2. Turtles:**

The project site does not reside within any Critical Habitat for SAR for Turtles, however the Poonamalie Dam resides within close proximity to the zone identified as proposed Critical Habitat classified Threatened species under the SARA; the Blanding's Turtle (located approximately 500 km west of the dam).

Formerly proposed Critical Habitat for Eastern Musk Turtle resides throughout the project area. While Eastern Musk Turtle has recently been re-assessed by COSEWIC to Special Concern, previous designation of Critical Habitat indicates that individuals are likely to be present within the area.

Blanding's Turtle, Eastern Musk Turtle, Midland Painted Turtle (*Chrysemys picta*), and Snapping Turtle have all been observed and reported within proximity of the general lock area

Blanding's Turtle, Midland Painted Turtle, and Snapping Turtle are spring nesters, laying eggs anywhere from May to late June-early July. They all may use sand and gravel banks along waterways, road shoulders, fissures in rocky shorelines and freshly dug gravel and soil. Eggs generally hatch between late August and late October. However, in the case of Painted Turtles, eggs can hatch in the fall or even overwinter, hatching in the following spring.

Conversely, following spring mating, Eastern Musk Turtles dig shallow excavations in soil, decaying vegetation and rotting wood or lay eggs in muskrat lodges, on the open ground or in rock crevices. The eggs hatch in late summer or early fall. Piles of rotting vegetation, in the





case of suitable nesting habitat for Eastern Musk Turtle, was not observed within the anticipated footprint/ROW of the access road. Ground cover mostly consisted of long-grasses, clover and vetch sp. in the open-meadowed area, and within the forested section of the access road, ground cover consisted of open bare ground, mixed with some long grasses and creeping plants such as Red Wild Raspberry and Virginia Creeper, with a scattering of dry leaf litter.

The overall project area may provide breeding/laying habitat for several species of turtle, particularly the shoreline area directly adjacent to the river's edge, however to date there has been no observable/recorded evidence of sightings of nesting activity within, or directly adjacent to the project area. Only a small percentage of the project's permanent footprint is anticipated to encroach upon potentially adequate habitat.

With respect to hibernation potential at the project site itself, as in-water works is not anticipated for this project, turtle overwintering activity is not likely to be adversely impacted.

#### **7.7.3. Insects:**

Milkweed has been observed to be present within the 'wild' vegetative areas of the project site, particularly in the long-grassed areas and on the western side of the site (See **Photos 3 and 6 of Appendix A**).

As Monarchs Butterflies (*Danaus plexippus*) can be found wherever milkweed and wildflowers grow, it can be assumed that Monarchs may select to utilize these areas.

#### **7.7.4. Mammals:**

Bats have been recently listed as Endangered, attributed to species declines as a result of a fungal disease: white-nose syndrome, which has accounted for at least 90% mortality rates (COSEWIC 2013). Little Brown Bats (*Myotis lucifugus*) are especially susceptible to this fungus. Winter hibernation habitats do not occur on site however, summer roost sites may still be under the loose bark of dead trees, the hollows of trees, or man-made structures. The Northern Myotis (*Myotis septentrionalis*) and Tri-coloured Bats (*Perimyotis subflavus*) primarily prefers forested, natural cavities or loose leaves for roosting as opposed to constructed features primarily preferred by the Little Brown Myotis. Eastern Small-footed Bat (*Myotis leibii*) are known to roost in a variety of habitats, including in or under rocks, in rock outcrops, in buildings, under bridges, or in caves, mines, or hollow trees. Importantly, all bats will use forested habitats beneath the canopy and will forage on the forest floor. Proximity to water is also an important habitat requirement.

Trees within the footprint of the access road through the forested area were observed to be quite young and lean. Hallows within trees within this footprint were not noted during any site visits. Furthermore given their age, it is unlikely that trees within this area would possess hallows, if any. Larger trees in the more mature successional sections of the forested area adjacent to the former/to-be-constructed access road, may possess tree hallows and bark-peels.





**7.7.5. Vegetation:**

Butternut Trees (*Juglans cinerea*) have been previously reported to reside within the approximate project area, as a large Butternut Tree was identified on the adjacent property.

A survey conducted of the construction footprint in June 2018 determined that previously marked individuals with Butternut-potential are actually Black Walnut (*Juglans nigra*). No Butternuts were identified within the access road path. With this, it is not anticipated that any Butternut individuals will be impacted by the planned construction activities. However, there is a slight possibility that Butternut individuals, missed in the June 2018 survey, may still be present.





**Table 3:** Federally and Provincially-Ranked Species with Potential to be found within the Project Area.

Common Name	Scientific Name	COSEWIC	SARA Status	ESA Status	Preferred Habitat	Habitat Potential on Project Site	Likelihood to be Found on Project Site
<b>BIRDS</b>							
Bank Swallow <sup>3</sup>	<i>Riparia riparia</i>	Threatened	Threatened	Threatened	Bank swallows nest in burrows in natural and human-made settings where there are vertical faces in silt and sand deposits. Many nests are on banks of rivers and lakes, but they are also found in active sand and gravel pits or former ones where the banks remain suitable. The bank swallow migrates south for the winter, primarily to South America. Migration in U.S. and Canada peaks early Aug-late Sept.	No	No
<b>Barn Owl<sup>2, 3</sup></b>	<i>Tyto alba</i>	Threatened	Threatened	Endangered	Barn Owls require landscapes that provide adequate foraging habitat for their primary prey (voles and mice), and suitable sites for nesting. Biophysical attributes of foraging habitat for Barn Owls include, upland grasslands, lowland sedge meadows and marshes, reclaimed pits and quarries, grassy ditches along roads and railways, edge habitats including margins between row crop fields, agricultural areas including hayfields, pastureland, open cultivated and abandoned fields, farmsteads and orchards. Biophysical attributes of nesting and roosting sites include the presence of a structure which has an elevated cavity or partially enclosed space that is accessible through an entry hole measuring at least 15 cm in diameter. This could include natural features, such as dead and live trees with cavities, or a wide variety of non-natural structures such as nest boxes, barns, silos, airport hangars, water towers, bridges/overpasses, attics,	<b>Yes – Foraging Habitat</b>	<b>Possible Foraging Habitat</b>





Common Name	Scientific Name	COSEWIC	SARA Status	ESA Status	Preferred Habitat	Habitat Potential on Project Site	Likelihood to be Found on Project Site
					grain elevators, flour mills, crevices between stacked hay bales, and behind insulation in buildings. Autumn migration is between late Sep and mid Nov, returning Mar 15 - Apr 15.		
Black Tern <sup>3</sup>	<i>Chlidonias niger</i>	Not at Risk	No Status	Special Concern	Shallow marshes, generally comprised of cattails. Breeding in Ontario typically takes place between early May and mid-August. In winter months Black Tern migrate south to central-America, the Atlantic coast and Mexico.	No	No
Bobolink <sup>3</sup>	<i>Dolichonyx oryzivorus</i>	Threatened	No Status	Threatened	Bobolink nest in tallgrass prairie and other open meadows, including hayfields. Bobolink microhabitat preferences are best matched in regularly maintained hayfields and grasslands. Bobolink respond negatively to the presence of nearby forest edges, particularly within ~ 50 m of the tree line. Bobolink is also sensitive to habitat patch size, preferring larger grasslands <u>greater than 10 hectares</u> . Fall migration initiates Late July – early August; returning in spring around mid-May. Breeding in Ontario typically takes place between mid-May and mid-July.	No - Fielded Area Approximately 75 m Between Treelines, and Smaller than 10 Ha	No
Canada Warbler <sup>3</sup>	<i>Cardellina canadensis</i>	Threatened	Threatened	Special Concern	The Canada Warbler breeds in a range of deciduous and coniferous, usually wet forest types, all with a well- developed, dense shrub layer. Dense shrub and understory vegetation help conceal Canada Warbler nests that are usually located on or near the ground on mossy logs or roots, along stream banks or on hummocks. It winters in South America, departing Canada	Possible	Unlikely





Common Name	Scientific Name	COSEWIC	SARA Status	ESA Status	Preferred Habitat	Habitat Potential on Project Site	Likelihood to be Found on Project Site
					in August, to return in late-April/early-May for breeding.		
Chimney Swift <sup>3</sup>	<i>Chaetura pelagica</i>	Threatened	Threatened	Threatened	Likely to be found in and around urban settlements where they nest and roost (rest or sleep) in chimneys and other manmade structures. They also tend to stay close to water as this is where the flying insects they eat congregate. Migrants move south in the fall, returning to Ontario in late-April, early-May.	No	No
Common Nighthawk <sup>3</sup>	<i>Chordeiles minor</i>	Threatened	Threatened	Special Concern	Open, vegetation-free habitats (dunes, beaches, recently harvested forests, burnt-over areas, rocky outcrops, rocky barrens, grasslands, pastures, peat bogs, marshes, lakeshores, and river banks). Fall departures begin in July and continue into fall. Birds generally return in spring by May.	No	No
Eastern Meadowlark <sup>2,3</sup>	<i>Sturnella magna</i>	Threatened	No Status	Threatened	Nest in moderately tall grasslands, such as pastures and hayfields, but also nest in alfalfa fields, weedy borders of croplands, roadsides, orchards, shrubby overgrown fields, or other open areas. Large tracts of grasslands are generally preferred over smaller ones, with a minimum size requirement of <u>at least 5 hectares</u> . The peak period of fall migration extends from about 21 September through to about 10 November. In southern Ontario, spring migration extends from late March through much of May.	No – Fielded Area Smaller Than 5 Ha	No
<b>Eastern Whip-poor-will<sup>3</sup></b>	<i>Caprimulgus vociferus</i>	Threatened	Threatened	Threatened	The Eastern Whip-poor-will is usually found in areas with a mix of open and forested areas, such as savannahs, open woodlands or openings in more mature, deciduous, coniferous and mixed forests. It forages in	<b>Yes</b>	<b>Possible</b>





Common Name	Scientific Name	COSEWIC	SARA Status	ESA Status	Preferred Habitat	Habitat Potential on Project Site	Likelihood to be Found on Project Site
					<p>these open areas and uses forested areas for roosting (resting and sleeping) and nesting. Biophysical attributes of habitat suitable for both nesting and foraging requires an area at least 3 Ha in size, which is either a forested area with sparse (&lt;25%) to moderate (25% – 75%) tree cover or an open area. Said area is to have sparse (&lt;25%) to moderate (25% - 75%) shrub and herbaceous cover, as well as well-drained soils. Biophysical attributes of habitat suitable solely for nesting requires a forested area with dense (&gt;75%) tree cover, with sparse (&lt;25%) to moderate (25% - 75%) shrub and herbaceous cover, and well-drained soils. Said area must be located adjacent to suitable foraging habitat, and within 30 m on the interior side of the forest edge. Biophysical attributes of habitat suitable solely for foraging require forested areas with sparse (&lt;25%) tree cover or open habitats. Said area must have dense (&gt;75%) shrub cover and deficient soil drainage. Said area must also be located within 1250 m<sup>2</sup> of suitable nesting habitat. Alternatively, Biophysical attributes for Whip-poor-will foraging habitat may include agricultural land with scattered shrubs or trees (e.g., hedgerows) which can be used as perches. Said area must also be located within 1250 m<sup>2</sup> of suitable nesting habitat. Whip-poor will leave Ontario early September–early October, with latest date 10 October. Arrives in spring early May, with earliest date 24 April.</p>		





Common Name	Scientific Name	COSEWIC	SARA Status	ESA Status	Preferred Habitat	Habitat Potential on Project Site	Likelihood to be Found on Project Site
Eastern Wood-pewee <sup>3</sup>	<i>Contopus virens</i>	Special Concern	Special Concern	Special Concern	In Canada, the Eastern Wood-pewee breeds mostly in mature and intermediate-age deciduous and mixed forests (less often in coniferous forest) having an open understory. It is often associated with forests dominated by Sugar Maple ( <i>Acer saccharum</i> ), Elm ( <i>Ulmus sp.</i> ) and Oak ( <i>Quercus sp.</i> ). It is usually associated with forest clearings and edges within the vicinity of its nest. The Eastern Wood-pewee is a long distance migrant, wintering in the tropics. Fall migration begins mid to late August and peaks in early to mid-September. Birds typically return to northern breeding grounds in mid-May.	Yes	Possible
Evening Grosbeak <sup>3</sup>	<i>Coccothraustes vespertinus</i>	Special Concern	No Status	Special Concern	Generally found in open, mature mixed-wood forests dominated by fir species, White Spruce and/or Trembling Aspen.	No	No
Golden-winged Warbler <sup>1, 3</sup>	<i>Vermivora chrysoptera</i>	Threatened	Threatened	Special Concern	Golden-winged Warblers prefer to nest in areas with young shrubs surrounded by mature forest – locations that have recently been disturbed, such as field edges, hydro or utility right-of-ways, or logged areas, characterized by plant succession of 10 to 30 years that include extensive patches of dense shrubby growth, interspersed with dense herbaceous growth and are adjacent to a forested edge. The warblers frequent clusters of herbaceous plants and low bushes (where they place their nests, which are built on the ground). They favour environments where the trees are spread out, as well as the forest edge, and use this setting for perching, singing and looking for food. Golden-winged Warblers are found	<b>Not Likely</b> - Forested area within 5 km x 5 km grid around project area is estimated at 35 % (see <b>Figure 5</b> below)	<b>Not Likely</b>





Common Name	Scientific Name	COSEWIC	SARA Status	ESA Status	Preferred Habitat	Habitat Potential on Project Site	Likelihood to be Found on Project Site
					<p>in dry uplands, swamp forests and marshes. The Golden-winged Warbler is a habitat specialist given its reliance on areas of early successional scrub (10-30 years into succession); they will not persist in an area when the stage of succession has exceeded their requirements. Critical Habitat for Golden-winged Warbler is highly specialized as viable nesting and foraging habitat which meets required biophysical attributes, but also reside within a 5 km x 5 km area in which 50% - 75% of the area is forest covered, and said forest consists primarily (<math>\geq 50\%</math>) of deciduous or mixed forest type, AND at least <math>&lt; 30\%</math> coniferous forest cover. Within this 5 km x 5 km grid, the biophysical attributes for viable breeding and foraging habitat for Golden-winged warbler is defined as an open forest and shrub habitat where the entire length of an open/shrub habitat and forest habitat interface AND a width that extends from that interface 200 m into the suitable forest habitat types and 200 m into the suitable open/shrub habitat types OR if the suitable open/shrub habitat is open grassland the width extends 50 m into the open grassland.</p> <p>The Golden-winged Warbler is a long-distance migrant and migrates south mainly through a corridor of states east of the Mississippi River and west of the Appalachians, with peak movement in September. They begin to return on spring migration in April, during which month they</p>		





Common Name	Scientific Name	COSEWIC	SARA Status	ESA Status	Preferred Habitat	Habitat Potential on Project Site	Likelihood to be Found on Project Site
					are still regularly recorded in Costa Rica as well as in Texas and Kentucky.		
Golden Eagle <sup>5</sup>	<i>Aquila chrysaetos</i>	Not at Risk	Not at Risk	Endangered	Golden Eagles nest in remote, undisturbed areas, usually building their nests on ledges on a steep cliff or riverbank, but they will also use large trees if needed. Golden Eagles favor partially or completely open country where most hunting is done near open areas such as large bogs or tundra. Individuals leave northern areas from Sept to early Oct; returning to breeding areas from late Mar to mid-May.	No	No
Grasshopper Sparrow <sup>3</sup>	<i>Ammodramus savannarum pratensis</i>	Special Concern	Special Concern	Special Concern	In Canada, the Eastern Grasshopper Sparrow typically breeds in large human-created grasslands (5 ha or greater), such as pastures and hayfields, and natural prairies, such as alvars, characterized by well-drained, often poor soil dominated by relatively low, sparse perennial herbaceous vegetation. Its nests are well-hidden in the field and woven from grasses in a small cup-like shape. The Grasshopper Sparrow is a short-distance migrant and leaves Ontario in the fall to migrate to the southeastern United States and Central America for the winter, returning in May.	Unlikely – Fielded Area Smaller Than 5 Ha	Unlikely
Least Bittern <sup>2, 3, 5</sup>	<i>Ixobrychus exilis</i>	Threatened	Threatened	Threatened	The Least Bittern breeds strictly in marshes dominated by emergent vegetation surrounded by areas of open water. Most breeding grounds in Canada are dominated by cattails, but breeding also occurs in areas with other robust emergent plants and in shrubby swamps. Breeding habitats are occupied from mid-May to mid-September. In winter months Least bitterns migrate to	No	No





Common Name	Scientific Name	COSEWIC	SARA Status	ESA Status	Preferred Habitat	Habitat Potential on Project Site	Likelihood to be Found on Project Site
					the southern United States, Mexico and Central America.		
Red-shouldered Hawk <sup>3</sup>	<i>Buteo lineatus</i>	Not at Risk	Special Concern	Not at Risk	Deciduous or mixed-wood forests containing shade-tolerant hardwood trees close to wetland areas. Large woodlots (10 to 100 hectares) can sustain viable Red-shouldered Hawk populations.	No	No
Wood Thrush <sup>3</sup>	<i>Hylocichla mustelina</i>	Threatened	Threatened	Special Concern	Mature mixed or deciduous forests, often moist, well-developed undergrowth, large forest stands. The Wood Thrush is a long-distance migrant, wintering in southern America and Mexico. Individuals depart northern breeding areas mid-Aug to mid-Sep. Spring migrants typically arrive mid to late May.	No	No
<b>REPTILES AND AMPHIBIANS</b>							
<b>Blanding's Turtle</b> <sup>1, 2, 4, 5</sup>	<i>Emydoidea blandingii</i>	Endangered	Threatened	Threatened	Blanding's Turtles can be found in several types of freshwater environments, including lakes, permanent or temporary pools, slow-flowing streams, marshes and swamps. They will travel long distances overland (>410m) for basking and nesting sites. Blanding's Turtles are spring nesters, laying eggs anywhere from May to late June-early July. They may use sand and gravel banks along waterways, road shoulders, fissures in rocky shorelines and freshly dug gravel and soil. Eggs generally hatch between late August and late October.	<b>Yes</b>	<b>Possible</b>
<b>Eastern Milksnake</b> <sup>4, 5</sup>	<i>Lampropeltis triangulum</i>	Special Concern	Special Concern	Not Listed	Found in a wide variety of habitats, from prairies, pastures, and hayfields, to rocky hillsides and a wide variety of forest types. Often in close proximity to water. The milksnake hibernates underground, in	<b>Yes</b>	<b>Possible</b>





Common Name	Scientific Name	COSEWIC	SARA Status	ESA Status	Preferred Habitat	Habitat Potential on Project Site	Likelihood to be Found on Project Site
					rotting logs or in the foundations of old buildings.		
<b>Eastern Musk Turtle</b> <sup>1, 2, 4, 5</sup>	<i>Sternotherus odoratus</i>	Special Concern	Special Concern	Special Concern	Eastern Musk Turtle require shallow water with little or no current, and soft earth to bury into when they hibernate. Nesting habitat is variable, but it must be close to the water and exposed to direct sunlight. Eastern Musk Turtle prefer to lay eggs in rotting vegetation.	<b>Yes</b>	<b>Possible</b>
Eastern Ribbonsnake <sup>4, 5</sup>	<i>Thamnophis sauritus</i>	Special Concern	Special Concern	Special Concern	Along the edges of shallow ponds, streams, marshes, swamps, or bogs bordered by dense vegetation that provides cover.	No	Unlikely
<b>Gray Ratsnake</b> <sup>4, 5</sup>	<i>Pantherophis spiloides</i>	Threatened	Threatened	Threatened	Gray Ratsnake inhabit a wide variety of habitats, with a preference for a mosaic of forest and open habitats, such as fields and rocky outcrops. In winter, they hibernate underground in communal hibernation sites which provide protection against freezing and dehydration. Individuals show strong fidelity to hibernacula. During summer, snakes seek refuge in snags, hollow logs, rock crevices and under rocks to shed and to escape from extreme heat and predators.	<b>Yes</b>	<b>Possible</b>
<b>Midland Painted Turtle</b> <sup>4, 5</sup>	<i>Chrysemys picta marginata</i>	Special Concern	No Status	No Status	Prefers slow moving rivers, streams, ponds, lakes, and marshes with muddy bottoms, lots of submerged vegetation and exposed rocks, logs and dead heads; utilized for basking. Egg laying typically takes place May-June, with hatching occurring July – Sept.	<b>Yes</b>	<b>Possible</b>
<b>Snapping Turtle</b> <sup>2, 4, 5</sup>	<i>Chelydra serpentina</i>	Special Concern	Special Concern	Special Concern	Usually found in large bodies of water, but will sometimes inhabit small ponds. Rarely leave water except to nest and migrate to overwintering habitat. Snapping Turtles are	<b>Yes</b>	<b>Possible</b>





Common Name	Scientific Name	COSEWIC	SARA Status	ESA Status	Preferred Habitat	Habitat Potential on Project Site	Likelihood to be Found on Project Site
					spring nesters, laying eggs anywhere from May to late June-early July. They may use sand and gravel banks along waterways, road shoulders, fissures in rocky shorelines and freshly dug gravel and soil. Eggs generally hatch between late August and late October		
Western Chorus Frog <sup>4</sup>	<i>Pseudacris triseriata</i>	Threatened	Threatened	Not Listed	Marshes or wooded wetland areas; it is found on the ground or in low shrubs and grass	No	No
<b>INSECTS</b>							
<b>Monarch Butterfly</b>	<i>Danaus plexippus</i>	Endangered	Special Concern	Special Concern	Monarchs can be found wherever milkweed and wildflowers grow. This includes abandoned farmland, along roadsides, and other open spaces. Monarch butterflies are not able to survive the cold winters of Canada and most of the United States so they migrate south and west each autumn to escape the cold weather. The monarch migration usually starts in about September to October but may initiate earlier if the weather turns cold sooner than that. The monarch butterflies will spend their winter hibernation in Mexico and some parts of Southern California.	<b>Yes</b>	<b>Possible</b>
<b>MAMMALS</b>							
<b>Eastern Small-footed Bat</b>	<i>Myotis leibii</i>	Not Assessed	Not Assessed	Endangered	Often found hibernating in same locations as Little Brown Myotis and Northern Myotis, but they tend to occupy cooler, drier areas of the cave. In summer they forage at night and roost in a variety of habitats, including in or under rocks, in rock outcrops, in buildings, under bridges, or in caves, mines, or hollow trees.	<b>Possible</b>	<b>Possible</b>





Common Name	Scientific Name	COSEWIC	SARA Status	ESA Status	Preferred Habitat	Habitat Potential on Project Site	Likelihood to be Found on Project Site
<b>Little Brown Myotis</b>	<i>Myotis lucifugus</i>	Endangered	Endangered	Endangered	Little Brown Myotis hibernate from October or November to March or April, most often in caves or abandoned mines that are humid and remain above freezing. In summer they forage at night and roost in trees and buildings during the day.	<b>Possible</b>	<b>Possible</b>
<b>Northern Myotis</b>	<i>Myotis septentrionalis</i>	Endangered	Endangered	Endangered	Similar habitat preferences to Little Brown Myotis - they bats hibernate from October or November to March or April, most often in caves or abandoned mines. Northern Myotis often roost under loose bark or in tree cavities.	<b>Possible</b>	<b>Possible</b>
<b>Tri-coloured Bat</b>	<i>Perimyotis subflavus</i>	Endangered	Endangered	Endangered	Often found hibernating in same locations as Little Brown Myotis and Northern Myotis – abandoned mines and caves. Relatively rare species in Canada.	<b>Possible</b>	<b>Possible</b>
<b>VEGETATION</b>							
<b>Butternut</b>	<i>Juglans cinerea</i>	Endangered	Endangered	Endangered	In Ontario, Butternut usually grows alone or in small groups in deciduous forests. It prefers moist, well-drained soil and is often found along streams. It is also found on well-drained gravel sites and rarely on dry rocky soil. This species does not do well in the shade, and often grows in sunny openings and near forest edges.	<b>Yes</b>	<b>Possible - But None Located in 2018</b>

<sup>1</sup>COSEWIC Draft Critical Habitat Mapping

<sup>2</sup>NHIC

<sup>3</sup>Atlas of Breeding Birds of Ontario

<sup>4</sup>Ontario Reptile and Amphibian Atlas

<sup>5</sup>SAR Field Observation

**Critical Habitat identified in 10km x 10km square  
Potentially found on the site**





Due to the nature and the location of the project and the environmental setting, the species identified as having the most potential to be within the vicinity of the project site and possibly affected by the work are:

- Barn Owl
- Eastern Whip-poor-will (*Caprimulgus vociferus*)
- Eastern Wood-pewee (*Contopus virens*)
- Blanding’s Turtle
- Eastern Milksnake
- Eastern Musk Turtle
- Gray Ratsnake
- Midland Painted Turtle
- Snapping Turtle
- Monarch Butterfly
- Eastern Small-footed Bat
- Little Brown Myotis
- Northern Myotis
- Tri-coloured Bat
- Butternut

**7.8. Air Quality and Noise:**

The project site is located within a largely undeveloped area bordered by natural landscapes and residential property. There are little-to-no ambient noise/pollution generating sources. Air quality in the area is assumed to be good.

The use of diesel-powered machinery and concrete may result in temporary, localized effects on air quality around the project site. Noise from construction may be disruptive for property owners adjacent to the project sites, recreational users of the associated lands adjacent to the project site.

**7.9. Invasive Species:**

As the project involves soil excavation, vegetation removal activities, and work in/adjacent to water, there is a possibility for invasive species to be accidentally introduced into and/or spread throughout the project sites.

The following invasive species have been recorded and confirmed within the TSW and/or within proximity of the project site locations:

**Table 4:** Invasive Species within Proximity of the Project Site Location

Species	Source
Curly-leaved Pondweed – <b>Potamogeton crispus</b>	EDDmaps
Zebra Mussel - <b>Dreissena polymorpha (Pallas)</b>	EDDmaps

See <https://www.eddmaps.org/ontario/> for further information on invasive species sightings

**7.10. Cultural Resources:**

For the construction of the Poonamalie Dam access road, a Cultural Resource Impact Analysis (CRIA) may be required. The CRIA is now a component of the Agency’s Project Management Standard and is to be considered as part of each request for project approval. Cultural Resource Management (CRM) general mitigation measures are incorporated into the BIA report by PCA (see **Section 9** below), however a more detailed assessment will be completed as part of a CRIA

The proposed project involves a landscape that is a cultural resource of heritage value. An updated Heritage Value Statement (HVS) may be required in order to provide further information on the heritage value and identify character-defining elements of the key elements in the landscape that will





be impacted by this project. The heritage value ascribed to a cultural resource guides conservation efforts and investments

#### **7.11. Archaeology:**

With any project that involves disturbing the landscape and the area around historic structures, there is the potential to impact archaeological resources (both terrestrial and aquatic). As part of the CRIA process, an Archaeological Assessment (AOA) should be completed for the project area, including vehicular access routes, staging areas and areas proposed for signage and fencing. Based on the results of the AOA, an Archaeological Impact Assessment (AIA) and/or additional mitigation measures may be required, prior to construction activities. This BIA may be amend to include these recommendations.

#### **7.12. Health and Safety:**

The health and safety of on-site workers and members of the general public within vicinity of the work areas must be ensured throughout the duration of construction. This may be enforced by restricting public accessibility of the project sites and ensuring proper compliance with Health and Safety procedures and mitigation by work personnel.

### **8. EFFECTS ANALYSIS**

The following sections outline the potential impact of the proposed works on valued components in the study area.

This project takes place within close proximity to residential properties and lands maintained and utilized for the RC system. The locks, dam and associated park areas are heavily influenced by past and present human development and activities. See **Figures 1, 2 and 4** above for satellite imagery of the general project site areas and their surrounding environmental conditions.

#### **8.1. Water Quality, Fish and Fish Habitat:**

Sensitive fish habitat is not anticipated at the project site as the work is terrestrial-based. Should in-water activity and/or dewatering be required for the project, such work will be low-risk in nature and will take place along the immediate shoreline/embankment area adjacent to the southern edge of the parking area where rip-rap shall be placed. The footprint for rip-rap placement is estimated to be 48 m<sup>2</sup> (3 m x 16 m). The area between the edge of the rip-rap and shoreline is to remain in its natural vegetated state. In this case, in-water work restrictions will protect the potential for nesting species in downstream and upstream areas.

The potential environmental effects of project activities on fish and fish habitat include interference with biological time periods (i.e., migration or spawning), the addition of suspended solids to the water column through erosion and sedimentation, potential stranding of fish during dewatering and direct mortality of fish. Should in-water work and dewatering be required, the in-water work area will be altered during construction but should be restored to pre-construction conditions before being re-watered.

Erosion and sedimentation events may occur as a result of project activities, potentially increasing the amount of suspended solids in the water column. Such events can cause increased sediment loads potentially harming fish by altering foraging behaviour and causing physical damage to gills and scales.





Increased sediment loads can also smother benthic invertebrates (a primary food source for many fish species) and cover/infill coarse spawning habitat as silt settles.

Spills of fuels or hydraulic fluid from construction equipment could negatively impact surface water quality.

Should in-water work and dewatering be required, there is potential for fish to be present within this area; with this, any stranded fish in the dewatered area must be live captured and released.

The planned work in this location can be conducted with the proper and efficient implementation of the appropriate Best Management Practices (BMPs) and mitigation measures, and timing phases of in-water works, such that there are minimal adverse impacts to the environment.

### **8.2. Erosion and Sediment Control:**

The use of heavy machinery, removal of vegetation, minor excavation, grading, use of concrete, and the potential in/near-eater works increases the risk of soil disturbance and sediment movement.

The terrain of the future access road shall be modified to form an more level grade than presently existing, with a gradual 1.2 % decline from the middle of the road downwards towards the forested east end (the road entrance). Ditched shoulders shall divert any drainage towards the residential/municipal road drainage in the east, away from the south-eastern moving river.

Vegetation removal and excavation activities will be kept to the minimum area required for construction activities, and will be appropriately managed through the installation and maintenance of effective erosion and sediment control measures. Identifying and keeping work activities within areas identified in approved site plans and to previously disturbed areas, in addition to employing best practices, mitigation and monitoring, will further minimize this impact (see **Section 9**).

### **8.3. Vegetation:**

The anticipated 1350 m<sup>2</sup> vegetation removal is essentially limited to vegetated areas which have been influenced by (historical) human activity and would thereby not be considered significant or specialized habitat. The footprint of the to-be-constructed dam access road lies mainly on the footprint of the former access road with approximately 20-years' worth of successional growth, leading out to an open long-grassed field area. Approximately half of this anticipated footprint is forested habitat (688.5 m<sup>2</sup>) and the other half is long-grass meadow habitat (661.5 m<sup>2</sup>).

The width of the access road and shoulder area is anticipated to be 9.14 m (30 feet) across (see **Figures 3 and 4** above). The vegetation diversity and distribution is relatively consistent throughout, between the northern and southern sides of the anticipated access road for both the forested and meadowed areas of the project, respectively. As the majority of this area was once previously disturbed and clear of vegetation with the former access road with no observable significantly adverse impacts to the species diversity and succession of the area, it is not anticipated that the re-fragmentation (re-disturbance and (re)devegetation and grubbing) of the area will negatively impact the ecological quality of the encompassing habitat.

It may be assumed that a large portion of these areas were previously disturbed and impacted from the historical dam, earthdam, and former access road construction and maintenance. Furthermore, upon visiting the site, it was observed that a mowed path and lookout area has been established and





maintained by the adjacent northern property owner, throughout much of the long-grassed area which is to be encompassed by the footprint of the to-be-established parking area.

The vegetation to be removed may include a variety of young trees, shrubs, grasses and forbs common to the area, both native and exotic invasive species. Such vegetation is not rare, nor exclusive to the areas to be impacted and is readily available within the surrounding area of the project site. By this, the anticipated vegetation removal and loss is not considered a significant or adverse impact to the environment.

Vegetation loss will be kept to the minimum area required for construction activities, and a revegetation planting plan may be developed to replace and compensate for trees removed or damaged during the project.

#### **8.4. Wildlife:**

The project's site mobilization and clearing activities will largely take place outside of fish, reptile, amphibian, bird and many mammals' nesting/breeding season. Measures shall be put in place in order to establish barriers to prevent and discourage wildlife from accessing the site throughout the duration of the construction process. Also, attractants (i.e. waste) shall be regularly removed from site to further deter the presence of wildlife in the work area.

Reptiles and amphibians may still be found on site as they migrate to and from overwintering habitat (in the case of turtles), or as they forage (in the case of snakes). Mitigation measures employed to reduce the risk of turtles from entering the site, shall also be effective in reducing the risk of snakes and amphibians from entering the site.

While some tree clearing will be necessary, all vegetation removal will be undertaken outside of the important migratory bird nesting period. If this is not feasible, a certified biologist must screen the area for nests prior to any cutting. Identified nests are to be left undisturbed until young have successfully fledged the nest.

Foraging opportunities for wildlife may be impacted by the disturbance (i.e. noise, dust, smells, etc.) generated during construction, but such disturbance will be temporary in nature. Other viable and diverse landscape is readily available outside of the construction zone.

With the proper implementation of mitigation measures, there should be no residual negative impact to wildlife.

#### **8.5. Species at Risk:**

As identified in **Table 3** above, 15 SAR have the potential to be present within the project area; Barn Owl, Eastern Whip-poor-will, Eastern Wood-pewee, Blanding's Turtle, Eastern Milksnake, Eastern Musk Turtle, Gray Ratsnake, Midland Painted Turtle, Snapping Turtle, Monarch Butterfly, Eastern Small-footed Bat, Little Brown Myotis, Northern Myotis, Tri-coloured Bat, and Butternut.





Of these species, Blanding's Turtle possesses Critical Habitat within proximity to (but not on or directly adjacent to) the project site (approximately 500 m west of the Poonamalie Dam respectively).

Additionally, the project site resides within the 10 x 10 km area proposed for Golden Winged-warbler Critical Habitat.

The anticipated footprint of the access road and parking area is 1350 m<sup>2</sup>. Approximately half of this area is forested habitat (688.5 m<sup>2</sup>) and the other half is long-grass meadow habitat (661.5 m<sup>2</sup>). The existing vegetation within this footprint is to be permanently removed (see **Figure 4** above). With this, the loss of viable habitat for each SAR is dependent on the site's physical characteristics coinciding with the biophysical attribute habitat requirements for each species. This is further discussed in subsections below.

On a daily basis, an inspection or sweep of the work area shall be performed prior to commencement of project works and activities to ensure that snakes, turtles, SAR, and any other wildlife are not present in the work area. Species at Risk training will be required for all employees before they begin work on site, with a focus on Butternut. Such material can be incorporated as part of the Environmental Management Plan to be provided to PCA. Employees must be able to identify SAR with potential to be present on the site and know the proper procedures to follow should a SAR be encountered.

If discovered, work within the immediate vicinity of the individual shall stop and the specimen is to be left alone and permitted to exit the project site of its own will. Should this not be possible (i.e. individual is injured or entrapped), PCA is to be contacted for further guidance.

Key project mitigations shall include (but are not limited to – see **Section 9** below for additional mitigation):

- All construction crews shall be trained in how to identify SAR species and provided with the protocols detailing who to contact, information to document and actions to take if a SAR is found (e.g., all work temporarily stopped until advised by the biologist.;
- Pre-stressing and visual sweeps by qualified personnel will be conducted prior to grubbing and site preparation;
- Exclusion fencing will be necessary to prevent SAR from entering the work zone;
- Soils will be protected by laying geotextile and covering with a suitable depth of gravel to prevent crushing/compaction;
- Where feasible/applicable, stumps will be ground down, rather than completely removed by grubbing in attempts to preserve these features. If grinding is not feasible, this shall be identified within the EMP and require acceptance by PCA;
- Brush and mulch piles, which may attract snakes, will not be stored on site, or shall be isolated with exclusion fencing (i.e. sediment fencing); and
- Areas will be actively restored upon de-mobilization.





### 8.5.1. Birds:

Construction activities are scheduled between fall 2018 and winter 2018/2019; all vegetation removal and disturbance is then scheduled to take place outside of the bird-breeding window of April 1st to August 31st. This largely coincides with the timing for when the above-listed SAR bird species would be migrating or occupying winter habitat ranges, and would thereby not be present on site or affected by ongoing site activities.

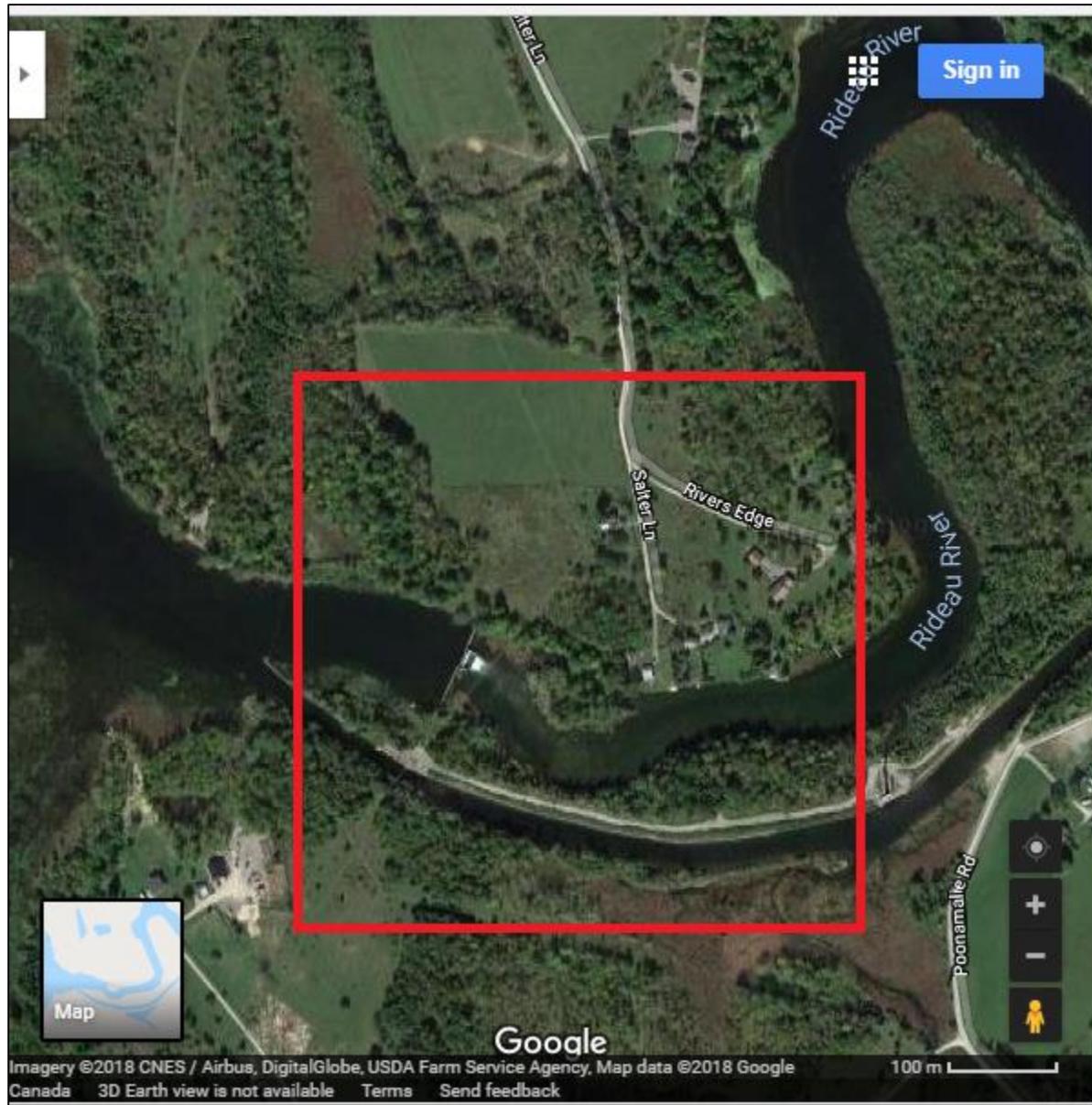
#### 8.5.1.1. *Golden-winged Warbler:*

As discussed above in **Table 3**, the biophysical attributes representative preferential Golden-winged Warbler habitat (*'plant succession of 10 to 30 years that include extensive patches of dense shrubby growth, interspersed with dense herbaceous growth and are adjacent to a forested edge'* – SAR Public Registry) is not predominantly featured within the Poonamalie Dam and associated access road area. The meadow/long-grassed areas adjacent to the forested edge does not feature much shrubby vegetation, which is a key biophysical attributes of Golden-winged Warbler nesting and breeding habitat, as nests are constructed within these, on the ground.

Critical Habitat for Golden-winged Warbler is highly specialized as viable nesting and foraging habitat which meets required biophysical attributes, but also reside within a 5 km x 5 km area in which 50% - 75% of the area is forest covered, and said forest consists primarily ( $\geq 50\%$ ) of deciduous or mixed forest type, AND at least  $< 30\%$  coniferous forest cover. Within this 5 km x 5 km grid, the biophysical attributes for viable breeding and foraging habitat for Golden-winged warbler is defined as an open forest and shrub habitat where the entire length of an open/shrub habitat and forest habitat interface AND a width that extends from that interface 200 m into the suitable forest habitat types and 200 m into the suitable open/shrub habitat types OR if the suitable open/shrub habitat is open grassland the width extends 50 m into the open grassland.

As illustrated in **Figure 5** below, forested cover within a 5 km x 5 km grid around the project side is approximately 35%. With this, the biophysical attribute requirements for foraging and nesting habitat are not met for Golden-winged Warbler, and the areas designated for permanent vegetation removal is not considered loss of Critical Habitat. The presence and utilization of habitat by this species within the project area, or areas immediately adjacent to it, are highly unlikely. Furthermore, the likeliness of any adverse impacts to the survivability and success of Golden-winged Warbler or its respective Critical Habitat resultant of this project, is negligible.





**Figure 5:** Red square outlines a 5 km x 5 km grid around the project site. Forested area within grid is estimated at 35 %.

**8.5.1.2. Barn Owl:**

Biophysical attributes of nesting and roosting sites include the presence of a structure which has an elevated cavity or partially enclosed space that is accessible through an entry hole measuring at least 15 cm in diameter. This could include natural features, such as dead and live trees with cavities, or a wide variety of non-natural structures such as nest boxes, barns, silos, airport hangars, water towers, bridges/overpasses, attics, grain elevators, flour mills, crevices between stacked hay bales, and behind insulation in buildings.





As trees within the footprint of the access road through the forested area were observed to be quite young and lean, it is unlikely that trees within this area would be large/mature enough to provide viable owl nesting and roosting habitat.

Biophysical attributes of foraging habitat for Barn Owls are described to include, upland grasslands, lowland sedge meadows and marshes, reclaimed pits and quarries, grassy ditches along roads and railways, edge habitats including margins between row crop fields, agricultural areas including hayfields, pastureland, open cultivated and abandoned fields, farmsteads and orchards. The long-grassed meadowed area of the project site may meet these features, providing potentially suitable foraging habitat.

Permanent vegetation removal and permanent potential foraging habitat amount to approximately 661.5 m<sup>2</sup>. Given that this habitat type is not specialized and is quite abundant within the area (see **Figure 5** above), it is not anticipated that foraging activity of local owl populations will be adversely affected.

#### **8.5.1.3. Eastern Whip-poor-will:**

Biophysical attributes of habitat suitable for both nesting and foraging requires an area at least 3 Ha in size, which is either a forested area with sparse (<25%) to moderate (25% – 75%) tree cover or an open area. Said area is to have sparse (<25%) to moderate (25% - 75%) shrub and herbaceous cover, as well as well-drained soils.

Biophysical attributes of habitat suitable solely for nesting requires a forested area with dense (>75%) tree cover, with sparse (<25%) to moderate (25% - 75%) shrub and herbaceous cover, and well-drained soils. Said area must be located adjacent to suitable foraging habitat, and within 30 m on the interior side of the forest edge.

Biophysical attributes of habitat suitable solely for foraging require forested areas with sparse (<25%) tree cover or open habitats. Said area must have dense (>75%) shrub cover and deficient soil drainage. Said area must also be located within 1250 m<sup>2</sup> of suitable nesting habitat. Alternatively, Biophysical attributes for Whip-poor-will foraging habitat may include agricultural land with scattered shrubs or trees (e.g., hedgerows) which can be used as perches. Said area must also be located within 1250 m<sup>2</sup> of suitable nesting habitat

With this, it may be assumed that the majority of the project area designated for vegetation removal meets these biophysical attributes, thereby resulting in a volume of potential habitat loss for this species of 1350 m<sup>2</sup>. However, as the biophysical attribute requirements for Eastern Whip-poor-will habitat preference is very general in description and range, habitat which successfully meets this criteria is neither specialized, nor limited in the area of the project or greater areas adjacent to.

#### **8.5.1.4. Eastern Wood Pewee:**

In Canada, the Eastern Wood-pewee breeds mostly in mature and intermediate-age deciduous and mixed forests (less often in coniferous forest) having an open understory. It is often associated with forests dominated by Sugar Maple (*Acer saccharum*), Elm (*Ulmus sp.*) and Oak (*Quercus sp.*). It is usually associated with forest clearings and edges within the vicinity of its nest.





With this, it may be assumed that the majority of the project area designated for vegetation removal meets these biophysical attributes, thereby resulting in a volume of potential habitat loss for this species of 1350 m<sup>2</sup>. However, as the biophysical attribute requirements for Eastern Wood Pewee habitat preference is very general in description and range, habitat which successfully meets this criteria is neither specialized, nor limited in the area of the project or greater areas adjacent to.

Overall, it is highly unlikely that any of the above-listed avian SAR would be adversely impacted in any way resultant of the project and/or its associated activities.

#### **8.5.2. Herpetiles:**

Given that the anticipated timing of the project is scheduled to take place from late fall to mid-winter when most (if not all) Herpetiles are engaged in seasonal hibernation activities and not likely present/active on site., the probability of adverse incidences or encounters between herpetiles due to construction activity is low-to-negligible.

##### **8.5.2.1. Snakes:**

Given that the majority of the land area to be impacted by the anticipated project activities are restricted to areas which do not match the general habitat requirements for overwintering of snakes (i.e. hibernacula-suitable structures; fallen logs, wood debris piles, rock piles, etc.), the overwintering survivability of snakes (SAR and non-SAR) should not be impacted due to lack of/destruction of viable habitat.

The main impact to snakes and amphibians possibly residing in the area is the potential to temporarily exclude/deter individuals from transient habitat throughout the project duration, as well as destruction of potential summer feeding and basking habitat.

Given that the footprint of habitat/vegetation destruction is relatively small to that is readily available within the surrounding area of the project site, and that the quality of habitat is not rare, nor exclusive to the areas to be impacted, the significance of adverse impact to snake survivability within and adjacent to the project area is negligible.

There is also the potential for machines on site to directly kill or injure herpetiles if they are unseen during grubbing, excavation and backfilling. Furthermore, with increased traffic within the construction site and associated access road, there raises the potential for herpetiles to be injured/killed by moving vehicles.

Herpetile exclusion fencing placed around the laydown, staging and stockpile/storage area, and along the access road construction area, shall be required. Guidance is available in the document titled Species at Risk Branch, Best Practices Technical Note, Reptile and Amphibian Fencing, Ver. 1.1, developed by the Ontario Ministry of Natural Resources and Forestry.

##### **8.5.2.2. Turtles:**

Blanding's Turtle, Eastern Musk Turtle, Midland Painted Turtle, and Snapping Turtle may reside within proximity to the project site.

It is expected that activities such as soil excavation, stock piling of materials, and other forms of landscape disturbance has the potential to attract turtles to the area for nesting. Due to that the project is scheduled to take place over the course of multiple seasons, temporary





reptile exclusion fencing shall be required to be installed completely around gravel and soil stockpiles and all other disturbed areas in order to prevent and discourage turtle nesting in the project area. Regular site inspections prior to the commencement of construction activities shall be conducted to observe for the possibility of new nesting sites or individual specimens.

Given that some species of turtle eggs can hatch as late as October (dependant on average ambient temperatures of the season), and that the project initiation is scheduled for some time in fall 2018, there is some possibility that hatchlings may emerge on the site when construction is ongoing.

In order to avoid this, a thorough sweep of the project area for potential turtle nests should be completed by a certified biologist prior to the contractor's site occupancy. Nest spots should be examined for contents, safely exhuming any eggs and then transporting them to a certified herpetile husbandry center for incubation and hatching.

Should evidence of nesting or a turtle be discovered, all work within the immediate vicinity of the nest is to cease, and TSW EA staff are to be notified for further guidance. Additional measures to avoid impacts may be required before work can resume. If found in the project area, turtles may need to be relocated prior to commencing work (with permits required from Ontario Ministry of Natural Resources and Forestry (OMNRF) for relocation).

In-water works is not anticipated for this project, however should it be required, activity and work shall be exclusively restricted to a small strip of the shoreline along the northern embankment, adjacent to the southern end of the parking area. As this area will likely be exposed/be extremely shallow with winter water levels, this area is not-likely utilized as viable overwintering habitat by turtles and will only be temporarily unavailable for single season, with no net-change in footprint. With this, it is unlikely that the project would have any adverse impact to turtle over-wintering activity.

Some potential nesting habitat may exist along the embankment parallel to the construction area, however is unlikely as the shoreline area mainly consists of dense Cattail sp. vegetation. Given that the footprint of habitat/vegetation destruction is relatively small to that is readily available within the surrounding area of the project site, and that there are no critically important landscape features such as highly-specialized or rare nesting and over-wintering habitat within the project area, the significance of adverse impact to turtle survivability within and adjacent to the project area is negligible.

### **8.5.3. Insects:**

Fielded areas containing mixtures of long-grasses and flowering and seeding plants are not uncommon to this area, so it is not anticipated that the permanent destruction/modification of a relatively small footprint (in comparison to that of accessible fielded areas within vicinity of the project area) will have significant adverse impacts upon the survival hood of local butterfly populations.

In compensation for this minute loss and inaccessibility, rehabilitation and replantation efforts should include the planation of Milkweed and butterfly-friendly flowers:

- Common Milkweed (*Asclepias syriaca*) – grows in well-drained soil;





- Butterfly Milkweed (*Asclepias tuberosa*) – grows in well-drained soil;
- Swamp Milkweed (*Asclepias incarnata*) – grows in damper, marshy areas;
- Purple Coneflower (*Echinacea purpurea*);
- Black-eyed Susan (*Rudbeckia hirta*); and
- Canada Goldenrod (*Soilidago canadensis*)

#### **8.5.4. Mammals:**

It is important to note that trees have not been assessed for bat roosting potential along the entire length of the project area. It is not likely that bat winter hibernation habitat occurs on site, or within areas to be impacted by the project, however, summer roost sites could be present under the loose bark of dead trees, the hollows of trees, or man-made structures.

Although vegetation removal is not designated to significantly large areas, with the removal of large trees, there is potential for some roosting trees and habitat to be removed. However, as discussed above, trees within the footprint of the access road through the forested area were observed to be quite young and lean. With this, it is unlikely that trees within this area would provide viable bat roosting habitat. Furthermore, as the area contains a wide mixture of vegetation, ranging from treed and scrubby areas to open, sparse and long-grassed areas, the impacted areas in question are not significant nor specialized, and much more viable and suitable bat habitat is widely available within proximity to the project area.

As the width of the access road is not particularly distant (9.14 m [30 ft.]), the intermediary buffer between the north and south (to-be) fragmented sections of vegetation is not considerably significant. Conversely, the ROW clearing may provide an opportunistic bat foraging habitat between stretches of (potentially viable) roosting habitat. Thereby, it is not anticipated that the re-fragmentation (re-disturbance and (re)devegetation and grubbing) of the area will adversely impact the success and survivability of local bat populations.

It should also be noted, construction activities are scheduled between fall 2018 and winter 2018/2019, coinciding with timing for when bats would be occupying winter-hibernation habitat, and would thereby not be present on site or affected by ongoing site activities.

As general due diligence, the removal of mature and snag trees (particularly all large Poplar, Maple, Oak and Pine) should be limited where feasible. Furthermore, if possible, vegetation clearing should be restricted/limited between April 1<sup>st</sup> and July 31<sup>st</sup>.

#### **8.5.5. Vegetation:**

In June 2018, a species inventory survey was conducted of the construction footprint and determined that individuals with Butternut-potential are most likely Black Walnut. With this, it is not anticipated that any Butternut individuals will be impacted by the planned construction activities.

Workers should be provided awareness training on Butternut Trees, as a proactive preventative measure should Butternut specimens be present in the area, but were missed. Should a Butternut individual be identified within the work area, if possible, the individual should be preserved or relocated (see **Section 9**). Alternatively, a compensation plans for the destruction of a SAR individual(s) shall be developed and a SAR permit should be sought.





### **8.6. Air Quality and Noise:**

Use of diesel-powered machinery may result in temporary, localized effects on air quality around the project site. Noise from construction may be disruptive for local residences. However, these types of disturbances are temporary and not foreseen to be a threat to local flora, fauna, and people with appropriate mitigation measures in place. The project is expected to employ well-maintained heavy equipment and machinery, fitted with emission control systems, mufflers, exhaust baffles, engine covers, etc. All on-site vehicles are expected to have a Drive Clean Emissions Report in compliance with O. Reg. 361/98: Motor Vehicles under the Environmental Protection Act, R.S.O. 1990, c. E.19.

PCA will monitor public complaints and address any air quality/noise issues raised by the public. Key mitigation will be to conduct work during normal business hours in accordance with local noise bylaws and to inform local residents in advance of potential disruption from noisy activities.

### **8.7. Invasive Species:**

Given that the project's activities are planned to occur on previously disturbed terrestrial areas, and that any near/in-water work is to be conducted in the dry, there is a limited potential to bring in new, or further spread presently existing invasive species as the contractor moves equipment into and out of the site. Appropriate mitigation measures will be applied to reduce the risk of moving invasive species by means of proper identification and documentation of species, taking precaution when handling potentially contaminated/infested soils and vegetation, and effective cleaning of clothing, equipment and vehicles (see **Section 9** below).

### **8.8. Cultural Resources:**

The RC is a NHS owned and managed by PCA on behalf of all Canadians. PCA is committed to protecting and enhancing the RC in a manner that ensures its long-term functionality, safety, cultural integrity and sustainability. RC Conservation Guidelines pertaining to the heritage design considerations are provided by PCA. This guidance is meant primarily to ensure that new works promote the protection and conservation of the historic sites and that the RC Vision and Commemorative Integrity is not compromised.

A complete assessment of potential adverse impacts to cultural resources, and mitigation and advice to employ in order to minimize/eliminate such effects, shall be provided in full by CRM within the CRIA document.

### **8.9. Archaeology:**

Following implementation of archaeological mitigation measures (see **Section 9**), Impacts from construction activities, including staging areas and access roads, are deemed to not likely cause significant adverse impacts to known or potential archaeological resources. If significant archeological resources (i.e., Indigenous artifacts, structural remains and/or artifact concentrations) are encountered during construction, work will cease and PCA shall be contacted for advice and assessment of significance, which will in turn determine what will be required to mitigate impacts.

A complete assessment of potential adverse impacts to archaeological resources, and mitigation and advice to employ in order to minimize/eliminate such effects, shall be provided in full by PCA's Terrestrial Archaeology division within the AOA document.

### **8.10. Health and Safety:**





A Health and Safety Plan will be submitted by the contractor to PCA for review and acceptance as part of the permitting agreement. The Canadian Occupational & Safety Regulations and all approved Parks Canada Safe Work Practices will be strictly adhered to during all stages of work perform, in order to ensure safety of staff and others at all times. Additionally, Health and safety measures must be taken according to the *Occupational Health and Safety Act* during decommissioning, and construction activities.

Workers should also be made aware that Poison Ivy has been reported to reside throughout the remnants of the former access road and around the old access gate, and possibly elsewhere within the work area. Workers should learn to properly identify Poison Ivy, and avoid areas where Poison Ivy has been confirmed to be present. Workers should wear appropriate protective clothing while on site.

#### **8.11. Other Environmental Considerations:**

Extreme weather events, which may be no longer considered an uncommon occurrence, are a concern and must be factored into project planning and mitigation. Heavy rainfall will cause rivers and lakes to rise suddenly. Elevated water levels, large water volumes and high velocities are the result (see **Section 9.15**).

***Possible adverse effects upon Valued Components will not be considered significant once the mitigation measures outlined in Section 9 of this document have been implemented.***

## **9. MITIGATION MEASURES**

**To mitigate for the potential harmful effects of the project, the following measures shall be implemented:**

### **9.1. General:**

- 9.1.1.** Inform the Departmental Representative and PCA's Environmental Authority (EA) (Environmental Officer, RC in Smith Falls) regarding any changes to project plans and/or scheduling. Any changes not assessed under this Basic Impact Assessment (BIA) will require approval from PCA and may require further mitigation measures.
- 9.1.2.** Contractor is required to submit an Environmental Management Plan (EMP) to the Department Representative and Parks Canada that outlines all the measures to be implemented by the contractor on the project site to eliminate or reduce environmental effects and address mitigation measures outlined in this BIA. In order to allow for the timely commencement of project activities, the EMP can be submitted as separate components as project details become available. The EMP, or its components, will be submitted in writing prior to implementation of project activities and must be accepted by Parks Canada and the Departmental Representative.
- 9.1.3.** It is recommended that an environmental professional(s) (EP) prepare the EMP or its component plans incorporating guidance found in PCA's Environmental Standards and Guidelines - Ontario Waterways (2017). The EMP will detail frequency of monitoring and list high-risk construction activities where an environmental professional must be onsite. Monitoring and testing should be adaptable to changing site conditions and will capture any event/incident for the length and scope of that event.





- 9.1.4. The contractor is to ensure that all on-site personnel are aware of, and comply with the prescribed mitigation measures within this BIA and any measures outlined within subsequent amendments to this BIA.
- 9.1.5. Should conditions at the work site indicate that there are negative impacts to fish, fish habitat, wildlife, cultural or visitor experience resources, all works shall cease until the problem has been corrected and PCA's ES staff have been consulted/notified. PCA has the right to require that work be altered or ceased immediately.
- 9.1.6. As per the *Historic Canal Regulations (HCR)* applicable to lands administered by the Rideau Canal National Historic Site of Canada, a permit signed by PCA's Ontario Waterways Director will be required to authorize the project work prior to commencement of the project.

## 9.2. **Equipment and Site Condition:**

- 9.2.1. Maintain equipment and machinery to avoid leakage of fuels and liquids. Ensure measures are in place to minimize impacts of accidental spills.
- 9.2.2. All materials and equipment used for the purpose of site preparation and project completion shall be operated and stored in a manner that prevents any deleterious substance (e.g. petroleum productions, debris etc.) from entering the water.
- 9.2.3. Any stockpiled materials, or concrete debris shall be stored and stabilized a safe distance away from any watercourse, drainage course or swales to prevent erosion and subsequent entry into the TSW or removed from the site, in accordance with all federal, municipal and provincial regulations.
- 9.2.4. Store all oils, lubricants, fuels and chemicals in secure areas on impermeable pads.
- 9.2.5. Vehicle and equipment re-fueling and/or maintenance shall be conducted on a permeable pad to allow full containment of spill, off of slopes and away from the water at a recommended distance of 30 m if possible. If not possible, fueling sites shall be as per the EMP and mitigations to prevent substances from entering the watercourse applied.
- 9.2.6. A designated re-fueling depot will minimize the potential for extensive impacts at the site due to accidental releases of substances; proper spill management equipment shall be in place for fueling.
- 9.2.7. Drip trays shall be placed under all fuel-powered equipment. Drip trays shall be sized appropriately to encompass the outer perimeter of the equipment/machinery, providing adequate spacing for refueling activities.
- 9.2.8. All compressed air/fuel tanks shall be stored off to the side, away from on-going activity, and be adequately protected with an impact-protection barrier.
- 9.2.9. Any Above-ground Storage Tanks (ASTs) or other fuel storage tanks on site, are to be stored in compliance with Federal and Provincial storage tank requirements. Specifically ASTs are to be placed within a secondary containment system of adequate holding capacity,





based on the volume of the AST. See: <https://www.canada.ca/en/environment-climate-change/services/canadian-environmental-protection-act-registry/publications/code-practice-storage-tank-systems/part-3.html>.

- 9.2.10.** There shall be no discharge of chemicals and cleaning agents in or near aquatic habitats; all such substances shall be disposed of at a facility licensed to receive them
- 9.2.11.** Spill control and emergency plans will be in place prior to initiation of construction; an emergency spill kit shall be kept on-site and employed immediately should a spill occur. The contractor shall ensure that adequate additional spill clean-up resources are available.
- 9.2.12.** In the event of a spill, PCA and the Ontario Spill Action Centre (1-800-268-6060) shall be notified immediately. Remediation will be conducted immediately to contain and clean up in accordance with federal and provincial regulatory requirements. Documentation of remediation, testing and results will be provided to PCA. Spills should be reported directly to the PCA Environmental Officer on file (705-750-4900).
- 9.2.13.** Operate machinery from stable location.
- 9.2.14.** Only the working end of machinery shall directly enter the water. Any part of a machine or equipment entering the water shall be free of fluid leaks and externally degreased to prevent any deleterious material from entering the water. Complete the in-water activity as quickly as possible to minimize the time equipment is in the water. Do not leave equipment in water during breaks in work activity.
- 9.2.15.** The use of biodegradable hydraulic fluids for machinery that will be working in or around the river is preferred.
- 9.2.16.** The Material Safety Data Sheet (MSDS) of any unapproved substances to be utilized onsite (particularly that of substances to be in use in/adjacent to water) shall be provided to PCA EA for review and acceptance. MSDS information of known products to be utilized in/adjacent to water throughout the duration of the project should be incorporated as part of the EMP.

**9.3. Water Quality:**

- 9.3.1.** Ontario Drinking Water Quality Guidelines cannot be exceeded (beyond parameters that currently exist) due to project activities.
- 9.3.2.** Only washed and clean material free of fine particulate matter shall be placed in or near water where it has been previously planned and authorized.
- 9.3.3.** Salt and other road chemicals should be properly stored in designated areas only, preferably in dry sheds to prevent infiltration of leachate to the water table and surface runoff.
- 9.3.4.** Accumulated snow that may be contaminated with salt should be disposed of only at approved dumpsites or designated areas.





- 9.3.5. Snow containing salt or sand should never be dumped in, or allowed to melt and run off into watercourses.

#### 9.4. **Fish and Fish Habitat:**

- 9.4.1. If required, all in-water work should be started after June 30<sup>th</sup> and completed before March 15<sup>th</sup> to protect fish populations during their spawning and nursery periods. Should work be required beyond this date, additional mitigation measures may be required based on site specific characteristics. Work beyond March 15<sup>th</sup> must be approved by the Departmental Representative and PCA prior to work occurring, and may not be granted if site conditions do not allow it.
- 9.4.2. Should dewatering/in water work be required, fish shall be removed from the work area prior to complete dewatering and released alive downstream into the river.
- 9.4.2.1. PCA's EA shall be advised 24 hours prior to fish rescue.
- 9.4.2.2. Minimize the length of time fish are out of the water.
- 9.4.2.3. Use appropriate equipment to remove any stranded fish in the dewatered area. As water levels drop in the work area monitor the deeper pool areas where fish are congregating. If safe to do so, seine nets or dip nets can be operated by field staff to remove the fish.
- 9.4.2.4. Contact PCA EA staff should there be any issues with fish removal.
- 9.4.2.5. Any fish found within the dewatered cofferdam areas will be documented by species, counted and removed and placed downstream if found in the downstream cofferdam and upstream if found upstream.
- 9.4.2.6. Round Gobies (*Neogobius melanostomus*) or other invasive species found during dewatering activities shall be euthanized humanely and not returned to the water system; this shall be reported to PCA.
- 9.4.2.7. Sediment/turbidity curtains shall be deployed in a manner – e.g. moved in a direction from close to shore/structures outward – which prevents the entrapment of fish inside the curtain.
- 9.4.3. Canadian Council of Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Aquatic Life will form the baseline for water and streambed quality (see <http://ceqg-rcqe.ccme.ca/en/index.html#void>).
- 9.4.4. Activities causing turbidity or release of sediment will comply with the CCME Guidelines on Total Particulate Matter (see <http://ceqg-rcqe.ccme.ca/download/en/217>).
- 9.4.5. The proponent is advised to abide by those mitigation measures and best management practices outlined within Fisheries and Oceans Canada's (DFO's) online guidance materials: Measures to Avoid Causing Harm to Fish and Fish Habitat (<http://www.dfo-mpo.gc.ca/pnw-pppe/measures-mesures/measures-mesures-eng.html> ).
- 9.4.6. If dewatering is required, ensure that there is a fish screen that complies with DFO *Freshwater Intake End-of-Pipe Fish Screen* Guideline when pumping in fish-bearing water to prevent impingement or entrainment of fish.

#### 9.4. **Erosion and Sediment Control:**





**9.4.1. Mandatory submission – and acceptance by PCA – of an Erosion and Sediment Control Plan, as stand-alone or part of the EMP, demonstrating:**

- 9.4.1.1. A focus on erosion control primarily and sediment control secondary;
  - 9.4.1.2. Erosion and sediment controls will be tailored to the type of sediment found onsite (e.g. if clay is present, additional controls are necessary).
  - 9.4.1.3. The area to be controlled. In addition to the construction site, it is necessary to identify adjacent areas that could be negatively impacted by construction activities;
  - 9.4.1.4. Drainage areas and patterns based on pre-construction topography and construction design;
  - 9.4.1.5. The EMP will have, as a principal to reduce the amount of sediment laden water produced, a focus on separating offsite and infiltrating water into the construction site from construction activities and sediment sources.
  - 9.4.1.6. How clean storm run-on will be diverted around the site and away from exposed areas;
  - 9.4.1.7. How sediment-laden run-off will be directed to detention or retention facilities on-site. Large drainage areas can produce a significant amount of run-off, resulting in a need for large detention or retention structures;
  - 9.4.1.8. Channels that are designed and constructed to the necessary design discharge;
  - 9.4.1.9. Temporary and permanent erosion control needs for all drainage channels;
  - 9.4.1.10. Consideration of project schedule in selecting, designing and laying out environmental controls; and
  - 9.4.1.11. Consideration of seasonal requirements (for longer-term projects); select and design controls and practices for controlling erosion and sedimentation including shutdown periods.
  - 9.4.1.12. The EMP shall provide plans and mitigation for the installation and removal of any temporary structures (i.e. cofferdams, temporary bridges, etc.).
  - 9.4.1.13. The EMP shall include a Traffic Control Plan which shall include measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. This shall also include measures to minimize the amount of mud transported onto paved public roads by vehicles and/or runoff.
  - 9.4.1.14. Trees and vegetation that are required to be removed should be clearly identified within the EMP and justification of removal should be made clear.
  - 9.4.1.15. The EMP shall include a replantation plan which shall outline the replacement and compensation of trees and vegetation which have been removed/impacted.
  - 9.4.1.16. The EMP shall include a Waste Water Management Plan, identifying methods and procedures for management, treatment and discharge of waste waters.
- 9.4.2. Erosion and sediment control measures shall be implemented prior to work and maintained during the work phase, to prevent entry of sediment into the water where site access or other activities cause exposed soil. The following principles should be considered:**
- 9.4.2.1. Diversions to limit run-on water;
  - 9.4.2.2. Reduction of erosional forces by surface water velocity reduction;
  - 9.4.2.3. Reduction of sediment development through sediment collection or anchoring;
  - 9.4.2.4. Sedimentation of mobilized sediments;
  - 9.4.2.5. Filtration of sediment-carrying flows;
  - 9.4.2.6. Collection of captured or contained sediments;
  - 9.4.2.7. Treatment of pH (hydronium and hydroxide).





- 9.4.3.** The size of particles present in the sediment is a key consideration for selecting the appropriate sediment treatment option(s):
- 9.4.3.1.** If the sediment consists primarily of gravel or sand, which are relatively large particles, a single treatment using a more basic technology, such as a sediment trap or sediment bag, may be adequate.
  - 9.4.3.2.** If the sediment consists of silt and/or clay, which are relatively small particles, the effluent will most likely need a more advanced technology, such as a filter press or chemical treatment with anionic flocculent and a filtration method.
  - 9.4.3.3.** If the sediment consists of a large spectrum of particle sizes, the water may need primary treatment to remove larger particles, followed by secondary treatment to remove finer particles.
- 9.4.4.** Sediment control measures shall be implemented during any in-water work (should it be required) to control turbidity levels. Sediment/turbidity curtains, or other appropriate measures, shall be implemented prior to any in-water work that may result in sedimentation. These shall remain in place until all suspended sediments have settled.
- 9.4.5.** Monitor water quality for unacceptable suspended sediment levels during in water activities. Monitoring shall include the full scope and breadth of any incident.
- 9.4.6.** All erosion and sediment control measures shall be inspected daily to ensure they are functioning properly and are maintained and/or upgraded as required to prevent entry of sediment into the water.
- 9.4.7.** Environmental protection measures shall be checked after each extreme weather event.
- 9.4.8.** If sediment and erosion control measures are not functioning properly, no further work shall occur until the sediment and/or erosion problem is addressed.
- 9.4.9.** All disturbed areas of the work site shall be stabilized immediately and re-vegetated as soon as conditions allow. All exposed areas should be covered with erosion control blankets or other measures to keep the soil in place and prevent erosion until vegetated in the spring.
- 9.4.10.** Soils shall be protected by laying geotextile and covering with a suitable depth of gravel, >100mm to prevent crushing/compaction of existing soils; alternative methodology for soil-compaction prevention may be utilized (ex. blast mats), as reviewed and approved by PCA.
- 9.4.10.1.** Laying of geotextile and gravel should not occur prior to the beginning of May (after 2 or more 15°C sunny days), once snakes have emerged from their hibernacula.
- 9.4.11.** Sediment and erosion control measures shall be left in place until all areas of the work site have been stabilized.
- 9.4.12.** Upon completion of the work all debris shall be completely removed and the area restored to its original state or better. Repair all damages to property due to project activities.
- 9.4.13.** Sediment control measures and exclusion fencing must be removed in a way that prevents the escape or re-suspension of sediments.





- 9.4.14. Erosion and Sediment controls shall not be removed without acceptance from PCA.
- 9.4.15. If utilized, Turbidity curtains are to be anchored or weighted down across its length to form a continuous seal on the substrate bed, with adequate floatation at the water's surface to prevent over spills of water.
- 9.4.16. If in-water works are required, turbidity curtains should not be used as a primary or secondary settling area for dewatering activities. Supplementary sediment and erosion control measures should be installed prior to construction activities and should be added upon/reinforced as necessary.
- 9.4.17. Fine materials such as unwashed rocks or materials that have the possibility of being suspended or transported downstream will not be used.
- 9.4.18. No acid-generating rock (containing sulphides) will be used.
- 9.4.19. In the event of a significant sedimentation or debris caused by construction activities, the contractor will take appropriate measures to contain and mitigate the problem including the installation of additional downstream turbidity curtains.
- 9.4.20. The contractor will maintain a standby supply of pre-fabricated sediment fence barriers, or an equivalent ready-to install sediment control devices.
- 9.4.21. Avoid activities that could lead to erosion during excessively wet weather conditions; monitor forecasts for heavy rainfall watches & warnings.

**9.5. Concrete:**

- 9.5.1. All concrete, sealants, or other compounds used for this project shall be utilized according to the appropriate Product Technical Data Sheet, stating guidelines and methods for proper use, and provided by the manufacturer of the product.
- 9.5.2. Ensure that all works involving the use of concrete, cement, mortars, and other Portland cement or lime-containing construction materials (concrete) will not deposit, directly or indirectly, sediments, debris, concrete, concrete fines, wash or contact water into or about any watercourse.
- 9.5.3. Concrete debris and dust generated as a result of various concrete work shall be removed in a way that will ensure material does not enter the waterway. All debris including unused aggregate/concrete rubble shall be completely removed and area restored to original state upon completion of work.
- 9.5.4. Concrete debris shall be placed into an enclosed container daily, or more frequently if required, in order to ensure that no debris escape or remain at the site.
- 9.5.5. Any concrete wash water shall be directed to a collection and treated to effectively remove all suspended solids, dissipate velocity and prevent deleterious substances from entering the watercourse.





**9.5.6.** In the event of a release of concrete or grout, PCA and the Ontario Spill Action Centre (1-800-268-6060) shall be notified; remediation will be conducted immediately contain and clean up in accordance with federal and provincial regulatory requirements **AND to the satisfaction of PCA**. Documentation of remediation, testing and results will be provided to Parks Canada.

**9.5.7.** Wash equipment away from water and provide containment facilities for the wash-down water from concrete delivery trucks (if applicable), concrete pumping equipment, and other tools and equipment. Wash-out locations will be identified within the EMP.

**9.6. Dewatering and Pumping Activities (If required):**

**9.6.1.** Discharged water should be filtered by means of an appropriately designed sediment basin, anionic flocculation or by physical means such as a filter press.

**9.6.2.** Discharge of pumped water must be a manner that does not cause additional erosion.

**9.6.3.** Dewatering, demolition and construction is staged such that clean is pumped back to the system and turbid water is managed through a waste water system.

**9.7. Vegetation:**

**9.7.1.** Site clearing/commencement of construction should be planned to occur outside of sensitive nesting times - April 1 to August 31. If this is not feasible, then the site must be inspected by a certified biologist prior to clearing, to check for the presence of nests and other wildlife (particularly snakes and turtles).

**9.7.2.** Phase vegetation removal to reflect construction activity; grubbing should not be conducted unnecessarily early in the schedule, and/or over an area that is larger than realistically required, to be properly mitigated with Erosion and Sediment controls

**9.7.3.** If large tree roots are extracted, they should be retained for post-construction restoration.

**9.7.4.** Where it is necessary to remove mature vegetation at any time of year, an inventory of species to be removed, coupled with a replanting plan using native species shall be submitted to PCA staff for approval.

**9.7.5.** Trees, shrubs and vegetation which are to remain throughout construction should be properly identified and delineated.

**9.7.6.** Where practical, the branches of the large trees should be trimmed back as the first option rather than cutting the entire tree.

**9.7.7.** Should any woody vegetation require chipping/mulching, the after product will be stored onsite for the duration of the project to supplement erosion and sediment control methods where required.

**9.7.8.** Minimize clearing as much as possible to maintain riparian vegetative cover and windbreaks, where possible maintain vegetated buffer at shoreline and minimize clearing





near water bodies. If buffers cannot be maintained, avoid grubbing of vegetation root mass in proximity to shorelines and stream banks.

- 9.7.9.** Clear vegetation from unstable or erodible banks by hand, and where possible, avoid the use of heavy machinery. If machinery must be used, operate machinery on land and in a manner that minimizes disturbance to the banks of the water body.
- 9.7.10.** Only cut trees using tools designed for tree cutting activities (e.g. chainsaw, brush saw).
- 9.7.11.** Whenever possible, vegetation should be trimmed in early spring, late fall or winter. Trimming when the plant is actively growing (i.e. late spring summer and early fall) can further stimulate growth, weakening the plant and making it susceptible to disease.
- 9.7.12.** Prune limbs close to the tree trunk. For a clean cut, make a shallow undercut first, then follow with the top cut. This prevents the limb from peeling bark off the tree as it falls. Do not use an axe for pruning.
- 9.7.13.** If over half of a tree needs pruning, in most circumstances it will be best to cut it down instead of pruning. Cut trees off at ground level and do not leave pointed stumps.
- 9.7.14.** In larger areas to be cleared attempts should be made to keep trees >15 cm DBH intact and instead remove lower limbs (< 2.5 m high).
- 9.7.15.** Delineate areas to be avoided with flagging tape or temporary fences.
- 9.7.16.** Ensure appropriate handling procedures are followed for noxious weeds such as Giant Hogweed (*Heracleum mantegazzianum*), Poison Ivy (*Toxicodendron radicans*) or Wild Parsnip (*Pastinaca sativa*).
- 9.7.17.** In disturbed areas not designated for sodding, native species are to be used for tree planting and/or ground cover with mulch to prevent erosion and to help seeds germinate.
- 9.7.18.** If there is insufficient time (at least four weeks) in the growing season remaining for the seeds to germinate, or at risk of germinating and being damaged by frost, the site shall be stabilized (e.g., cover exposed areas with erosion control blankets to keep the soil in place and prevent erosion) and vegetated the following spring. Frost can occur as early as August 31<sup>st</sup> and late as June 25<sup>th</sup>.
- 9.7.19.** Root systems of trees identified to remain should be properly delineated and fenced off, so as to protect the root systems from being crushed and impacted by machinery.
- 9.7.20.** In the event that the installation of root-protectant fencing is not possible and/or ideal, alternative measures, as approved by PCA, must then be implemented. Such measures must provide a sufficient amount of soil compaction prevention with regards to the highest level of activity to occur within the immediate area of protection.
- 9.7.21.** The success of all vegetative plantings shall be assessed through visual site inspections conducted at least once each spring and each fall for the first two growing seasons following planting. If at any time during the monitoring period any plantings are found dead or failing,





mitigation measures shall be implemented to reduce the risk of future failure and the plants shall be replaced and monitored accordingly.

**9.7.22.** Burning of cleared vegetation is not be permitted.

**9.7.23.** Transplanting of trees or vegetation on site it not permitted without approval from PCA.

**9.7.24.** The removal of mature and snag trees (particularly all large Poplar (*Populus sp.*), Maple (*Acer sp.*), Oak (*Quercus sp.*) and Pine (*Pinaceae sp.*)) should be limited where feasible

## **9.8. Wildlife:**

**9.8.1.** If a turtle is found within the limits of the fencing it should be left alone to leave the area if possible. If found in the project area, turtles may need to be relocated prior to commencing work (with permits required from Ontario Ministry of Natural Resources and Forestry (OMNRF) for relocation). Contact PCA for guidance

**9.8.2.** The EMP must detail procedures (e.g. exclusion fencing) for preventing turtle entry/nesting within disturbed project gravels/soils during all stages of project activity.

**9.8.3.** Once cleared and before staging set-up, temporary reptile fencing, such as polythene/ woven geotextile secured with timber stakes, or material of a similar nature/function, should be installed completely around gravel stockpiles to prevent turtle nesting in the project area. Exclusion fencing should also be installed completely around stockpiled material (wood chips, gravel, earth, etc.) to prevent turtle nesting in the project area. Fencing shall not have mesh or netted backing. For guidance on how to plan and install exclusion fencing, refer to the document titled Species at Risk Branch, Best Practices Technical Note, Reptile and Amphibian Fencing, Ver. 1.1, developed by the Ontario Ministry of Natural Resources and Forestry: [http://files.ontario.ca/environment-and-energy/species-at-risk/mnr\\_sar\\_tx\\_rptl\\_amp\\_fnc\\_en.pdf](http://files.ontario.ca/environment-and-energy/species-at-risk/mnr_sar_tx_rptl_amp_fnc_en.pdf)

**9.8.4.** The EMP must demonstrate procedures for avoiding disturbance/harm to wildlife and nesting birds.

**9.8.5.** Synthetic plastic Erosion Control Blankets/Mats should not be utilized, particularly during nesting season, as they pose as an entrapment hazard to turtles. Fibre-based bio-degradable Erosion Control Blankets/Mats are only to be utilized.

**9.8.6.** If recommended by an environmental professional and approved by PCA, exclusion zones or “no go” areas will be established to protect areas with known residences (e.g., hibernacula, dens, nests).

**9.8.7.** If recommended by an environmental professional and approved by PCA, conduct “Pre-stressing” activities within a few days prior to the onset of site preparation (vegetation clearing and grubbing) to identify potential turtle nests, and to encourage wildlife to move away from a site.

**9.8.8.** Field information regarding incidental encounters with wildlife (non-SAR wildlife) shall be compiled and reported on a daily basis.





**9.8.9. For incidental encounters, the following information should be recorded in the field:**

- 9.8.9.1.** Locations, dates and time of day where the species were encountered;
- 9.8.9.2.** Names of species encountered;
- 9.8.9.3.** Photographs of the species, if taken;
- 9.8.9.4.** Condition of animal.

**9.8.12.** If injured/dead wildlife are encountered report to PCA immediately. PCA may require retrieval and storage on ice of carcass for laboratory testing

**9.8.13.** All vehicles and equipment used by project personnel will follow any construction zone speed limits to reduce the risk of hitting wildlife, as enforced by the site supervisor.

**9.8.14.** Work areas will be kept clean and free of potential hazards to wildlife such as wire, cable, tubing, plastic, antifreeze or other materials that wildlife may eat or become entangled in.

**9.8.15.** Waste will be stored, handled, and transported in accordance with the Waste Management Plan, including storage of all solid waste in sealed, bear-proof containers.

**9.8.16.** Feeding of wildlife is prohibited.

**9.8.17.** Attractants (i.e. waste) shall be regularly removed from site to further deter the presence of wildlife in the work area.

**9.9. Species At Risk:**

**9.9.1.** Species at risk training shall be provided to all employees before they begin work on site (materials can be part of the Environmental Protection Plan). Employees must be able to identify potential species at risk and know the proper procedures to follow when they encounter a species at risk. Special focus shall be given the Butternut Trees (*Juglans cinerea*)

**9.9.2.** If a Species at Risk is observed or suspected on or near the worksite (this includes snakes, turtles and/or eggs), the species must not be harmed or harassed. If the species does not leave or cannot leave the site, the contractor must immediately stop the works and contact PCA's EA staff on how to proceed. Additional measures to avoid impacts may be required before work can restart. Stand back and allow the animal to leave the site.

**9.9.3.** Minimize the disturbed area; clearly mark the work space.

**9.9.4.** Park on roads or disturbed area only.

**9.9.5.** Rehabilitation and replantation efforts should include the planation of milkweed and butterfly-friendly flowers.

***By following these specific mitigation measures, the federal Species at Risk Act (SARA) and the provincial Endangered Species Act (ESA) will not be contravened.***

**9.10. Invasive Species:**





- 9.10.1.** To reduce the risk of introducing invasive species, all equipment must be thoroughly cleaned prior to coming to the site. Any machinery that appears to have not been cleaned will not be permitted on site. For additional information or guidance on how to properly clean equipment, see the Clean Equipment Protocol for Industry developed by the Ontario Invasive Plant Council and found here:  
[http://www.ontarioinvasiveplants.ca/wp-content/uploads/2016/07/Clean-Equipment-Protocol\\_June2016\\_D3\\_WEB-1.pdf](http://www.ontarioinvasiveplants.ca/wp-content/uploads/2016/07/Clean-Equipment-Protocol_June2016_D3_WEB-1.pdf)
- 9.10.2.** Any equipment or vehicles which are to be used in water, should be thoroughly cleaned before and after use of any visible mud, vegetation, mussels, etc.:
- 9.10.2.1.** Vessels/equipment should be drained of standing water.
  - 9.10.2.2.** Vessels/equipment should ideally be cleaned with high pressure water (> 250 psi).
  - 9.10.2.3.** Vessels/equipment should be dried for 2 – 7 days in sunlight before transported between waterbodies.
  - 9.10.2.4.** Cleaning of vessels/equipment should be conducted away from waterbodies at a recommended distance of at least 30 m from the shoreline.
- 9.10.3.** Mud, dirt and vegetation should be cleaned from clothing and footwear prior to entering the work site, and prior to leaving the work site.
- 9.10.4.** Should an invasive species be encountered (or at least suspected), a photo and report of the specimen should be sent to PCA's EA staff and the Invading Species Hotline at 1-800-563-7711 or online at EDDMapS Ontario:  
<https://www.eddmaps.org/ontario/>.
- 9.10.5.** Conduct a site assessment for invasive plant infestations prior to carrying out field activities.
- 9.10.6.** Use weed-free material (i.e. sand, gravel, etc.) for erosion control and stabilization and weed-free seed and confirm that seed mix to be used for revegetation purposes does not (potentially) contain invasive plants.
- 9.10.7.** Seed purchased commercially should have a label that states the following:
- 9.10.7.1.** Species;
  - 9.10.7.2.** Purity: Most seed should be no less than 75 % pure and preferably over 85 % pure. The rest is inert matter or other seed;
  - 9.10.7.3.** Weed seed content: The tag should state NO invasive plants are present. Only certified weed-free seed should be used; and
  - 9.10.7.4.** Germination of desired seed: Germination generally should not be less than 50 % for most species, although some shrubs and forbs will have lower percentages.
- 9.10.8.** Move only weed/contaminate-free materials into non-infested areas. Moving materials from one infested location to another within a particular zone may not cause contamination, but moving materials from infested to non-infested areas could lead to the introduction and spread of invasive plants.
- 9.10.9.** If removal of invasive species occurs, individuals will be disposed of appropriately, offsite to ensure no further propagation.





**9.10.10.** Workers should familiarize themselves with invasive species potentially present within the work sit areas:

**9.10.10.1. Curly-leaved Pondweed:**

<http://www.eddmaps.org/ontario/Species/subject.cfm?sub=6219>

**9.10.10.2. Zebra Mussel:**

<http://www.eddmaps.org/ontario/species/subject.cfm?sub=10567>

**9.11. Cultural Resources and Archaeology:**

**9.11.1.** Before any on-site mobilisation/construction work commences, PCA staff will clearly delineate any archaeologically sensitive areas and photo-document this activity for PCA records. These areas will be deemed no-go zones for staging, vehicular traffic and machinery.

**9.11.2.** Ensure that all personnel working on site undergo a heritage induction to clearly identify the value of the place and how to avoid inadvertent impacts on cultural and archeological resources (known and unknown).

**9.11.3.** Vehicular access routes and staging areas will be restricted to present-day roadways, parking lots, exposed bedrock areas and significantly disturbed areas. If this is not possible, the use of protective covering is required. All protective measures employed must be removed following construction and the area restored to a pre-construction state. Excavation is not permitted outside of cleared/reviewed areas in the AOA during installation or removal of protective covering.

**9.11.4.** If archaeological, cultural resources, or character-defining elements (e.g. structural features or artifact concentrations) are encountered or damaged during construction activities, work will cease in the immediate area and the PCA PM shall be informed. The PM should then contact PCA's Terrestrial Archaeology section for advice and assessment of significance, and if necessary, any further mitigation measures. Ensure that all exposed underwater cultural materials are kept submerged and/or wet while waiting direction.

**9.11.5.** Inform the CRM Advisor, Ontario Waterway regarding any changes to project plans and/or scheduling. Any changes not assessed under this BIA will require approval from PCA and may require further mitigation measures.

**9.12. Air Quality and Noise:**

**9.12.1.** All on-site vehicles are expected to have a Drive Clean Emissions Report in compliance with O. Reg. 361/98: Motor Vehicles under the Environmental Protection Act, R.S.O. 1990, c. E.19. EA Officers may stop a vehicle if they believe the vehicle is emitting excessive exhaust smoke or suspect that emission control equipment has been tampered with or removed.

**9.12.2.** Use well-maintained heavy equipment and machinery, preferably fitted with fully functional emission control systems/muffler/exhaust baffles, engine covers, etc. In addition, employ timing and location of construction activities to reduce or minimize the effect of noise on nearby residents, recreational users, and wildlife.





9.12.3. Machines shall not be left to unnecessarily idle in order to avoid emissions.

9.12.4. Adhere to local and municipal noise by-laws.

9.12.5. Notify residents of planned activities that may cause disturbance and schedule them to avoid sensitive time periods.

**9.13. Waste Disposal:**

9.13.1. Recyclable material and waste shall be removed from the site, in accordance with all federal, provincial and municipal regulations, to disposal facilities licensed to receive them.

9.13.2. Waste containers should be sealed or lined to prevent leakage of liquid wastes.

9.13.3. Waste generated will be disposed according to regulations (i.e., O. Reg. 102/94 and O. Reg. 558/00, R.R.O. 1990, 347).

**9.14. Work Area Commissioning:**

9.14.1. If applicable, ensure that all construction debris is removed from the work area prior to rewatering. This may involve sweeping and hosing down the bottom of work area. All wash water is to be collected and treated.

**9.15. Floods, Extreme or Inclement Weather, and Ice Formation:**

9.15.1. Undertake construction under normal weather conditions, to the extent possible, and design the project worksite to withstand variable weather conditions.

9.15.2. Apply wet weather restrictions on construction activities to reduce surface run-off from exposed work areas and to minimize the risk of inundation.

9.15.3. The work area shall be stabilized against the impacts of high flow/heavy rainfall events at the end of each workday.

9.15.4. Work shall be suspended and the work area stabilized when there is a high probability of a rainfall event.

**10. PUBLIC/STAKEHOLDER ENGAGEMENT & ABORIGINAL CONSULTATION**

- Indicate whether public/stakeholder engagement was undertaken in relation to potential adverse effects of the proposed project:

- No
- Yes

Public and Stakeholder Communications Included (but was not limited to):

- Liaison with Municipality and Community. Addressed arisen community questions and concerns through public statement.

- Indicate whether Aboriginal consultation was undertaken in relation to potential adverse effects of the proposed project:

- No





Yes

Comments: Parks Canada is engaged with the Algonquins of Ontario (AOO) in ensuring Aboriginal and Treaty Rights issues are properly addressed and where warranted accommodation made on all projects and activities within the Rideau Canal under the management of Parks Canada. Given the nature of the works (maintenance of an existing structure), with the appropriate mitigation measures in place, and taking into account engagement on similar matters to date specific Aboriginal Consultation was not undertaken. The AOO will be updated regularly on the status of the project and if needed further engagement may be undertaken.

## 11. SIGNIFICANCE OF RESIDUAL ADVERSE EFFECTS

Although there are plans for vegetation removal, the majority of these areas have been influenced and impacted to some degree from historical construction of the Dam, the earthdam, and the former access road.

Furthermore, these areas are not considered specialized, nor sensitive in nature, and vegetation and landscape in-kind can be found elsewhere within close proximity of the work area. Residual effects resultant of this disturbance is not anticipated to be significantly adverse to those valued environmental component assessed above.

With implementation of project mitigation, no significant residual adverse effects and/or adverse effects on ecological integrity (EI), commemorative integrity (CI), and visitor experience (VE) objectives are anticipated.

## 12. SURVEILLANCE

- Surveillance is not required
- Surveillance is required
- Required in accordance with the *Parks Canada Cultural Resource Management Policy*

Parks Canada's Environmental Authority will visit the site regularly during construction to ensure that mitigation measures are in place, working as anticipated and are effective at preventing adverse effects to natural and cultural heritage features.

Surveillance by Cultural Resource Management Staff is also recommended to ensure effectiveness of proposed mitigation measures.

## 13. FOLLOW-UP MONITORING

Follow-up monitoring is:

- Not required
- Legally required (e.g. under the *Species at Risk Act* or *Fisheries Act*)
- Required in accordance with the *Parks Canada Cultural Resource Management Policy*





**14. SARA NOTIFICATION**

Notification is:

- Not required
- Required under the *Species at Risk Act* (outline the nature of and response to any notification).

The activity will not lead to residual adverse effects that contravene a SARA prohibition for a listed species at risk, its residence or its Critical Habitat.

**15. EXPERTS CONSULTED**

Department/Agency/Institution: Parks Canada Agency	Date of Request: June 27 <sup>th</sup> , 20178
Expert's Name & Contact Information: Barbara Leskovec	Title: Federal Infrastructure Investments Archaeologist
Expertise Requested: Archaeological assessment of the work area at the Poonamalie Dam Access Road.	
Response: Recommendations and mitigation measures provided and integrated into BIA.	

Department/Agency/Institution: Parks Canada Agency	Date of Request: June 27 <sup>th</sup> , 2018
Expert's Name & Contact Information: Nathalie Desrosiers	Title: Policy Advisor, Cultural Resources Management
Expertise Requested: Cultural Resource Assessment and Statement of Heritage Value	
Response: Recommendations and mitigation measures provided	

Department/Agency/Institution: Parks Canada Agency	Date of Request: June 14 <sup>th</sup> , 2018
Expert's Name & Contact Information: Stephane Jolicoure	Title: Project Manager, Rideau Canal National Historic Site
Expertise Requested: Project overview and construction process details	
Response: Project Documents and details provided	

**16. DECISION**

Taking into account implementation of mitigation measures the project is:

- Not likely to cause significant adverse environmental effects.
- Likely to cause significant adverse environmental effects.

FOR SARA REQUIREMENTS:

- There are no residual adverse effects to species at risk and therefore the SARA-Compliant Authorization Decision Tool was not required





## 17. RECOMMENDATION AND APPROVAL

<b>Prepared by (EIA Author):</b> Sarah Bunting, Environmental Assessment Officer	Date:
<b>Signature:</b>	
<b>Recommended by:</b> Valerie Minelga, Environmental Assessment Scientist	Date:
<b>Signature:</b>	
<b>Approved by (Director of Ontario Waterways):</b> Jewel Cunningham, Director, Ontario Waterways	Date:
<b>Signature:</b>	

## 18. REFERENCES

<https://www.anglersatlas.com/place/692072/rideau-river>  
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Chapman, L.J. and D.F. Putnam. 1984. *The Physiography of Southern Ontario*. Third Edition. Ontario Geological

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Parks Canada Agency (PCA). 2007. Environmental Assessment Screening Report For: Repairing leaks in the earth dam at Poonamalie lockstation, Rideau Canal NHSC. Parks Canada Report.

Species at Risk Public Registry - Recovery Strategy for the Golden-winged Warbler (*Vermivora chrysoptera*) in Canada - 2014 [Proposed]. [https://www.registrelep-sararegistry.gc.ca/default.asp?lang=En&n=86D89339-1#\\_07](https://www.registrelep-sararegistry.gc.ca/default.asp?lang=En&n=86D89339-1#_07)  
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## 19. ATTACHMENTS

Appendix A: Poonamalie Dam Access Road - Site Photos

Appendix B: Poonamalie Dam – Phase II - Access Road – Construction Drawings 99% - 18-06-2018

Appendix C: Species Index for Poonamalie Dam and Surrounding Area





## 20. NATIONAL IMPACT ASSESSMENT TRACKING SYSTEM

- Project registered in [tracking system](#)
- Not yet registered (*CEAA 2012 requires PCA submit a report to Parliament annually. EIAs must be entered in the tracking system **by the end of April** to enable reporting.*)

**\*\*\*Ensure that all required mitigation measures and conditions (e.g. follow-up monitoring requirements) are included in project permits and authorizations\*\*\***

### **Appendix A: Poonamalie Dam Access Road - Site Photos**





**Photo 1:** Poonamalie Weir, facing shoreline and to-be parking area (facing north). Photo taken March 19<sup>th</sup>, 2018.



**Photo 2:** Poonamalie Dam and Weir, facing shoreline (facing south). Photo taken March 19<sup>th</sup>, 2018.





**Photo 3:** Open field facing to-be access road (facing east). Milkweed visible (*Asclepias L.*). Photo taken by Environmental Officer, Sarah Bunting June 20th, 2018.



**Photo 4:** Two trees large to be removed. Facing to-be parking area (facing south). Photo taken by Environmental Officer, Sarah Bunting June 20th, 2018.





**Photo 5:** Facing to-be parking area (facing south). Photo taken by Environmental Officer, Sarah Bunting June 20th, 2018.



**Photo 6:** Open field facing to-be access road (facing east) Milkweed visible. Photo taken by Environmental Officer, Sarah Bunting June 20th, 2018.





**Photo 7:** Facing shoreline where rip-rap to be placed (facing west). Photo taken by Environmental Officer, Sarah Bunting June 20th, 2018.



**Photo 8:** Facing shoreline where rip-rap to be placed (facing north). Photo taken by Environmental Officer, Sarah Bunting June 20th, 2018.





**Photo 9:** Facing remnants of former access road through forested area, where new access road shall be placed (facing east). Photo taken by Environmental Officer, Sarah Bunting June 20th, 2018.



**Photo 10:** Facing remnants of former access road through forested area and old access gate, where new access road shall be placed (facing east). Poison Ivy (*Toxicodendron radicans*) visible. Photo taken by Environmental Officer, Sarah Bunting June 20th, 2018.





**Photo 11:** Facing remnants of former access road through forested area and old access gate, where new access road shall be placed (facing east). Poison Ivy visible. Photo taken by Environmental Officer, Sarah Bunting June 20th, 2018.



**Photo 12:** Facing remnants of former access road through forested area, where new access road shall be placed (facing east). Poison Ivy visible. Photo taken by Environmental Officer, Sarah Bunting June 20th, 2018.





**Photo 13:** Facing remnants of former access road through forested area, where new access road shall be placed (facing west). Poison Ivy visible. Photo taken by Environmental Officer, Sarah Bunting June 20th, 2018.



**Photo 14:** Facing remnants of former access road through forested area, where new access road shall be placed (facing east). Photo taken by Environmental Officer, Sarah Bunting June 20th, 2018.





**Photo 15:** Facing remnants of former access road through forested area, where new access road shall be placed (facing north). Photo taken by Environmental Officer, Sarah Bunting June 20th, 2018.





**Appendix B: Poonamalie Dam – Phase II - Access Road – Construction Drawings 99% - 18-06-2018**





### Appendix C: Species Index for Poonamalie Dam and Surrounding Area

The following table is a compilation of aquatic and terrestrial wildlife species which have been recorded to be observed, or are reported to possibly reside, within the Poonamalie Dam and the surrounding area.

Common Name	Scientific Name	Sp. Note	Source
<b>ANIMALS</b>			
<b>BIRDS</b>			
Alder Flycatcher	<i>Empidonax alorum</i>		ABBO
American Bittern	<i>Botaurus lentiginosus</i>		ABBO
American Black Duck	<i>Anas rubripes</i>		ABBO
American Coot	<i>Fulica americana</i>		ABBO
American Crow	<i>Corvus brachyrhynchos</i>		ABBO, PCA
American Goldfinch	<i>Spinus tristis</i>		2018-06 SV, ABBO, PCA
American Kestrel	<i>Falco sparverius</i>		ABBO
American Redstart	<i>Setophaga ruticilla</i>		ABBO
American Robin	<i>Turdus migratorius</i>		2018-06 SV, ABBO, PCA
American Woodcock	<i>Scolopax minor</i>		ABBO
Baltimore Oriole	<i>Icterus galbula</i>		ABBO, PCA
Bank Swallow	<i>Riparia</i>	SAR	ABBO
Barn Swallow	<i>Hirundo rustica</i>	SAR	ABBO, NHIC
Barred Owl	<i>Strix varia</i>		ABBO
Belted Kingfisher	<i>Megaceryle alcyon</i>		ABBO, PCA
Black Tern	<i>Chlidonias niger</i>	SAR	ABBO
Black-and-white Warbler	<i>Mniotilta varia</i>		ABBO, PCA
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>		ABBO
Blackburnian Warbler	<i>Setophaga fusca</i>		ABBO, PCA
Black-capped Chickadee	<i>Poecile atricapillus</i>		2018-06 SV, ABBO, PCA
Blue Jay	<i>Cyanocitta cristata</i>		ABBO, PCA
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>		ABBO
Blue-winged Teal	<i>Anas discors</i>		ABBO
Bobolink	<i>Dolichonyx oryzivorus</i>	SAR	ABBO
Broad-winged Hawk	<i>Buteo platypterus</i>		ABBO
Brown Creeper	<i>Certhia americana</i>		ABBO
Brown-headed Cowbird	<i>Molothrus ater</i>		2018-06 2018, ABBO, PCA
Brown Thrasher	<i>Toxostoma rufum</i>		ABBO, PCA
Canada Goose	<i>Branta canadensis</i>		ABBO
Canada Warbler	<i>Cardellina canadensis</i>	SAR	ABBO
Cape May Warbler	<i>Setophaga tigrina</i>		ABBO
Caspian Tern	<i>Hydroprogne caspia</i>		
Cedar Waxwing	<i>Bombycilla cedrorum</i>		2017 SV, ABBO, PCA





Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>		ABBO
Chimney Swift	<i>Chaetura pelagica</i>	SAR	ABBO
Chipping Sparrow	<i>Spizella passerina</i>		2018-06 SV, ABBO
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>		ABBO
Common Gallinule	<i>Gallinula galeata</i>		ABBO
Common Grackle	<i>Quiscalus quiscula</i>		ABBO
Common Loon	<i>Gavia immer</i>		ABBO
Common Merganser	<i>Mergus merganser</i>		ABBO
Common Nighthawk	<i>Chordeiles minor</i>	SAR	ABBO
Common Snipe	<i>Gallinago</i>		ABBO
Common Tern	<i>Sterna hirundo</i>		ABBO
Common Yellowthroat	<i>Geothlypis trichas</i>		ABBO, PCA
Cooper's Hawk	<i>Accipiter cooperii</i>		ABBO
Dark-eyed Junco	<i>Junco hyemalis</i>		ABBO
Double-crested Cormorant	<i>Phalacrocorax auritus</i>		ABBO
Downy Woodpecker	<i>Picoides pubescens</i>		2018-06 SV, ABBO
Eastern Bluebird	<i>Sialia sialis</i>		ABBO
Eastern Kingbird	<i>Tyrannus</i>		ABBO
Eastern Meadowlark	<i>Sturnella magna</i>	SAR	ABBO, NHIC
Eastern Phoebe	<i>Sayornis phoebe</i>		PCA
Eastern Whip-poor-will	<i>Caprimulgus vociferus</i>	SAR	ABBO
Eastern Wood-pewee	<i>Contopus virens</i>	SAR	ABBO
European Starling	<i>Sturnus vulgaris</i>	INV	2018-06 SV, ABBO
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	SAR	ABBO
Field Sparrow	<i>Spizella pusilla</i>		ABBO
Golden-crowned Kinglet	<i>Regulus satrapa</i>		ABBO
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	CH, SAR	ABBO, COSEWIC
Golden Eagle	<i>Aquila chrysaetos</i>	SAR	2017 SV
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	SAR	ABBO
Gray Catbird	<i>Dumetella carolinensis</i>		ABBO, PCA
Great Blue Heron	<i>Ardea herodias</i>		2018-06- SV, ABBO, PCA
Great Crested Flycatcher	<i>Myiarchus crinitus</i>		ABBO, PCA
Great Horned Owl	<i>Bubo virginianus</i>		ABBO
Green Heron	<i>Butorides virescens</i>		ABBO
Hairy Woodpecker	<i>Leuconotopicus villosus</i>		ABBO, PCA
House Finch	<i>Haemorhous mexicanus</i>		ABBO
House Sparrow	<i>Passer domesticus</i>		ABBO
House Wren	<i>Troglodytes aedon</i>		ABBO, PCA
Indigo Bunting	<i>Passerina cyanea</i>		ABBO
Killdeer	<i>Charadrius vociferus</i>		ABBO
Least Bittern	<i>Ixobrychus exilis</i>	SAR	ABBO, NHIC, SFO
Least Flycatcher	<i>Empidonax minimus</i>		ABBO, PCA
Lesser Scaup	<i>Aythya affinis</i>		ABBO
Magnolia Warbler	<i>Setophaga magnolia</i>		ABBO
Mallard	<i>Anas platyrhynchos</i>		ABBO, PCA





Marsh Wren	<i>Cistothorus palustris</i>		ABBO
Merlin	<i>Falco columbarius</i>		ABBO
Mourning Dove	<i>Zenaida macroura</i>		ABBO, PCA
Mourning Warbler	<i>Geothlypis philadelphia</i>		ABBO
Nashville Warbler	<i>Leiothlypis ruficapilla</i>		ABBO, PCA
Northern Cardinal	<i>Cardinalis</i>		ABBO, PCA
Northern Flicker	<i>Colaptes auratus</i>		ABBO, PCA
Northern Goshawk	<i>Accipiter gentilis</i>		ABBO
Northern Harrier	<i>Circus cyaneus</i>		ABBO
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>		ABBO
Northern Waterthrush	<i>Parkesia noveboracensis</i>		ABBO
Osprey	<i>Pandion haliaetus</i>		2017 SV, ABBO
Ovenbird	<i>Seiurus aurocapilla</i>		ABBO
Pied-billed Grebe	<i>Podilymbus podiceps</i>		ABBO, PCA
Pileated Woodpecker	<i>Hylatomus pileatus</i>		2017 SV, ABBO, PCA
Pine Siskin	<i>Spinus pinus</i>		ABBO
Pine Warbler	<i>Setophaga pinus</i>		ABBO
Purple Finch	<i>Haemorhous purpureus</i>		ABBO
Purple Martin	<i>Population stable</i>		ABBO
Red-breasted Nuthatch	<i>Sitta canadensis</i>		ABBO
Red-eyed Vireo	<i>Vireo olivaceus</i>		ABBO, PCA
Red-shouldered Hawk	<i>Buteo lineatus</i>	SAR	ABBO
Red-winged Blackbird	<i>Agelaius phoeniceus</i>		ABBO, PCA
Ring-billed Gull	<i>Larus delawarensis</i>		ABBO
Ring-necked Duck	<i>Aythya collaris</i>		ABBO
Rock Pigeon	<i>Columba livia</i>		ABBO
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>		ABBO, PCA
Ruby-throated Hummingbird	<i>Archilochus colubris</i>		2017 SV, ABBO
Ruffed Grouse	<i>Bonasa umbellus</i>		ABBO, PCA
Savannah Sparrow	<i>Passerculus sandwichensis</i>		ABBO
Scarlet Tanager	<i>Piranga olivacea</i>		ABBO, PCA
Sharp-shinned Hawk	<i>Accipiter striatus</i>		ABBO
Song Sparrow	<i>Melospiza melodia</i>		ABBO, PCA
Sora	<i>Porzana carolina</i>		ABBO
Spotted Sandpiper	<i>Actitis macularius</i>		ABBO, PCA
Swamp Sparrow	<i>Melospiza georgiana</i>		ABBO, PCA
Tree Swallow	<i>Tachycineta bicolor</i>		ABBO, PCA
Turkey Vulture	<i>Cathartes aura</i>		2017 SV, ABBO
Upland Sandpiper	<i>Bartramia longicauda</i>		ABBO
Veery	<i>Catharus fuscescens</i>		ABBO, PCA
Vesper Sparrow	<i>Pooecetes gramineus</i>		ABBO
Virginia Rail	<i>Rallus limicola</i>		ABBO
Warbling Vireo	<i>Vireo gilvus</i>		ABBO
White-breasted Nuthatch	<i>Sitta carolinensis</i>		ABBO, PCA
White-throated Sparrow	<i>Zonotrichia albicollis</i>		ABBO





Wild Turkey	<i>Meleagris gallopavo</i>		2017 SV, ABBO
Willow Flycatcher	<i>Empidonax traillii</i>		ABBO
Winter Wren	<i>Troglodytes hiemalis</i>		ABBO
Wood Duck	<i>Aix sponsa</i>		ABBO, PCA
Wood Thrush	<i>Hylocichla mustelina</i>	SAR	ABBO
Yellow Warbler	<i>Setophaga petechia</i>		ABBO, PCA
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>		ABBO, PCA
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>		ABBO
Yellow-rumped Warbler	<i>Setophaga coronata</i>		ABBO, PCA
<b>HERPETILES</b>			
American Bullfrog	<i>Lithobates catesbeianus</i>		ORAA, PCA
American Toad	<i>Anaxyrus americanus</i>		ORAA
Blanding's Turtle	<i>Emydoidea blandingii</i>	CH, SAR	COSEWIC, NHIC, ORAA, PCA
Dekay's Brownsnake	<i>Storeria dekayi</i>		PCA
Eastern Garter Snake	<i>Thamnophis sirtalis</i>		ORAA, PCA
Eastern Milksnake	<i>Lampropeltis triangulum</i>	SAR	ORAA, PCA
Eastern Musk Turtle	<i>Sternotherus odoratus</i>	CH, SAR	COSEWIC, NHIC, ORAA, PCA, SFO
Eastern Ribbonsnake	<i>Thamnophis sauritus</i>	SAR	ORAA, SFO
Gray Ratsnake	<i>Pantherophis spiloides</i>	SAR	ORAA, PCA
Gray Treefrog	<i>Hyla versicolor</i>		ORAA, PCA
Green Frog	<i>Rana clamitans</i>		ORAA, PCA
Midland Painted Turtle	<i>Chrysemys picta</i>	SAR	ORAA, PCA
Mink Frog	<i>Lithobates septentrionalis</i>		ORAA
Northern Leopard Frog	<i>Lithobates pipiens</i>		2018-06 SV, ORAA, PCA
Northern Water Snake	<i>Nerodia sipedon</i>		ORAA, PCA
Red-bellied Snake	<i>Storeria occipitomaculata</i>		ORAA, PCA
Snapping Turtle	<i>Chelydra serpentina</i>	SAR	2017 SV, ORAA, NHIC, PCA, SFO
Spring Peeper	<i>Pseudacris crucifer</i>		ORAA
Western Chorus Frog	<i>Pseudacris triseriata</i>	SAR	ORAA
Wood Frog	<i>Lithobates sylvaticus</i>		ORAA
<b>MAMMALS</b>			
Canadian Beaver	<i>Castor canadensis</i>		PCA
Chipmunk	<i>Tamias sp.</i>		2018-06 SV, PCA
Eastern Gray Squirrel	<i>Sciurus carolinensis</i>		PCA
North American River Otter	<i>Lontra canadensis</i>		2017 SV
Red Squirrel	<i>Tamiasciurus hudsonicus</i>		2018-06 SV, PCA
Weasel	<i>Mustela sp.</i>		2017 SV
White-tailed Deer	<i>Odocoileus virginianus</i>		2017 SV
<b>INVERTEBRATE</b>			
Black Sandshell	<i>Ligumia recta</i>		CMN
Eastern Elliptio	<i>Elliptio complanata</i>		CMN
Eastern Lampmussel	<i>Lampsilis radiata</i>		CMN





Elktoe	<i>Alasmidonta marginata</i>		CMN
Floater	<i>Pyganodon sp</i>		CMN
Fluted Shell	<i>Lasmigona costata</i>		CMN
Zebra Mussel	<i>Dreissena polymorpha (Pallas)</i>	INV	EDM
<b>FISH</b>			
Banded Killfish	<i>Fundulus diaphanus</i>		CMN
Black Crappie	<i>Pomoxis nigromaculatus</i>		AA, CMN
Blacknose Shiner	<i>Notropis heterolepis</i>		CMN
Bluegill	<i>Lepomis macrochirus</i>		AA, CMN
Bluntnose Minnow	<i>Pimephales notatus</i>		CMN
Brassy Minnow	<i>Hybognathus hankinson</i>		CMN
Brook Silverside	<i>Labidesthes sicculus</i>		CMN
Brown Bullhead	<i>Ameiurus nebulosus</i>		AA, CMN
Central Mudminnow	<i>Umbra limi</i>		CMN
Common Carp	<i>Cyprinus carpio</i>		AA, CMN
Golden Shiner	<i>Notemigonus crysoleucas</i>		CMN
Greater Redhorse	<i>Moxostoma valenciennesi</i>		CMN
Largemouth Bass	<i>Micropterus salmoides</i>		AA, CMN
Logperch	<i>Percina sp.</i>		CMN
Mimic Shiner	<i>Notropis volucellus</i>		CMN
Northern Pike	<i>Esox lucius</i>		AA, CMN
Pumpkinseed	<i>Lepomis gibbosus</i>		AA, CMN
Rock Bass	<i>Ambloplites rupestris</i>		CMN
Silver Redhorse	<i>Moxostoma anisurum</i>		CMN
Smallmouth Bass	<i>Micropterus dolomieu</i>		CMN
Tessellated Darter	<i>Etheostoma olmstedii</i>		CMN
Walleye	<i>Sander vitreus</i>		AA
Yellow Perch	<i>Perca flavescens</i>		AA, CMN
<b>VEGETATION</b>			
<b>YOUNG AND MATURE TREES</b>			
Ash	<i>Fraxinus sp.</i>		PCA
Basswood sp.	<i>Tilia sp.</i>		2018-06 SV
Black Cherry	<i>Prunus serotina</i>		2018-06 SV
Black Walnut	<i>Juglans nigra</i>		2018-06 SV
Common Buckthorn	<i>Rhamnus cathartica</i>		2018-06 SV, PCA
Eastern White Cedar	<i>Thuja occidentalis</i>		PCA
Elm sp.	<i>Ulmus sp.</i>		2018-06 SV
Ironwood	<i>Ostrya virginiana</i>		2018-06 SV
Prickly Ash	<i>Zanthoxylum americanum</i>		2018-06 SV
Red Maple	<i>Acer rubrum</i>		2018-06 SV
Staghorn Sumac	<i>Rhus typhina</i>		2018-06 SV, PCA
Sugar Maple	<i>Acer saccharum</i>		PCA
Trembling Aspen	<i>Populus tremuloides</i>		2018-06 SV
Weeping Willow	<i>Salix babylonica</i>		2018-06-SV
White Birch	<i>Betula papyrifera</i>		PCA
White Oak	<i>Quercus alba</i>		2018-06 SV





OTHER TERRESTRIAL VEGETATION			
Bladder Campion	<i>Silene vulgaris</i>		2018-06 SV
Black Medic	<i>Medicago lupulina</i>		2018-06 SV
Butter and Eggs	<i>Linaria vulgaris</i>		2018-06 SV
Canada Lilly	<i>Lilium canadense</i>		2018-06 SV
Clover	<i>Trifolium sp.</i>		2018-06 SV
Current	<i>Ribes sp.</i>		PCA
Dogwood	<i>Cornus sp.</i>		PCA
Forget-me-not	<i>Myosotis sp.</i>		2018-06 SV
Goldenrod sp.	<i>Solidago sp.</i>		2018-06 SV, PCA
Hawkweed	<i>Hieracium sp.</i>		2018-06 SV
Milkweed	<i>Asclepias L.</i>		2018-06 SV
Orchard Grass	<i>Dactylis glomerata</i>		PCA
Oxeye Daisy	<i>Leucanthemum vulgare</i>		2018-06 SV
Poison Ivy	<i>Toxicodendron radicans</i>	NPS	2017 SV, 2018-06 SV
Purple Cow Vetch	<i>Vicia cracca</i>		2018-06 SV
Red Osier Dogwood	<i>Cornus sericea</i>		2018-06-SV
Timothy Grass	<i>Phleum pratense</i>		2018-06 SV
Virginia Creeper	<i>Parthenocissus quinquefolia</i>		2018-06 SV
Wild Carrot/Queen Anne's Lace	<i>Daucus carota</i>		2018-06 SV, PCA
Wild Grape Wine	<i>Vitis vinifera</i>		2018-06 SV
Wild Parsnip	<i>Pastinaca sativa</i>	INV	2017 SV
Wild Red Raspberry	<i>Rubus idaeus</i>		2018-06 SV
AQUATIC VEGETATION			
Cattail sp.	<i>Typhaceae sp.</i>	HX? INV?	2018-06 SV, PCA
Fragrant Water Lily	<i>Nymphaea odorata</i>		CMN
Common Waterweed	<i>Elodea Canadensis</i>		CMN
Curly-leaved Pondweed	<i>Potamogeton crispus</i>	INV	EDM
Northern Water Milfoil	<i>Myriophyllum sibiricum</i>		CMN
Eurasian Water Milfoil	<i>Myriophyllum spicatum</i>		CMN

AA = Angler's Atlas

CH = Critical Habitat (within proximity of site)

COSEWIC = Committee on the Status of Endangered Wildlife in Canada

EX = Exotic

INV = Invasive Species

NPS = Noxious/ Pest Species

PCA = Parks Canada Agency, 2007

SFO = SAR Field Observation

ABBO = Atlas of Breeding Birds of Ontario

CMN = Canadian Museum of Nature

EDM = EDDmaps

HX = Hybrid

NHIC = National heritage Information Centre

ORAA = Ontario Reptile and Amphibian Atlas

SAR = Species at Risk

SV = PCA Site Visit

