

# **Appendix B**

## **Additional Tables**

**BOW LAKE WIND FARM**

NATURAL HERITAGE ASSESSMENT AND ENVIRONMENTAL IMPACT STUDY

APPENDIX B: Tables

January 2013

<b>Table 1: Agencies Contacted, Records Requested and Records Received</b>		
<b>Information Source and Contact Information</b>	<b>Records Requested</b>	<b>Records Received</b>
<u>Source:</u> Ministry of Natural Resources <u>Name, position of contact:</u> Renewable Energy Planner and A/District Biologist, MNR - Sault Ste. Marie District <u>Date(s) contacted:</u> weekly, from January 25, 2012 until September 26, 2012	Weekly MNR check-in calls	N/A
<u>Source:</u> Ministry of Natural Resources <u>Name, position of contact:</u> Renewable Energy Planner, MNR - Sault Ste. Marie District <u>Date(s) contacted:</u> April 2, 2012	Updated NHA Records Review for the district including: - Provincial Parks, Conservation Reserves, ANSIs - Wetlands - Woodlands - Valleylands - Significant Wildlife Habitat	NHA Records review for the district including: - Provincial Parks, Conservation Reserves, ANSIs - Wetlands - Woodlands - Valleylands - Significant Wildlife Habitat
<u>Source:</u> Ministry of Natural Resources <u>Name, position of contact:</u> Renewable Energy Planner and A/District Biologist, MNR - Sault Ste. Marie District <u>Date(s) contacted:</u> April 4, 2012	Meeting with MNR to discuss field survey program	MNR comments on field survey methodologies
<u>Source:</u> Ministry of Natural Resources <u>Name, position of contact:</u> Renewable Energy Planner and A/District Biologist, MNR - Sault Ste. Marie District <u>Date(s) contacted:</u> May 30, 2012	Meeting with MNR to provide update on field survey program	N/A
<u>Source:</u> Ministry of Natural Resources <u>Name, position of contact:</u> Renewable Energy Planner and A/District Biologist, MNR - Sault Ste. Marie District and MNR Bat Ecologist - Peterborough <u>Date(s) contacted:</u> June 25, 2012	Clarification on bat maternity roost site investigation and evaluation of significance approaches	N/A

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<b>Table 2: Potential Wildlife Occurring within the Project Study Area</b>					
<b>Common Name</b>	<b>Scientific Name</b>	<b>S-Rank</b>	<b>G-Rank</b>	<b>COSSARO</b>	<b>COSEWIC</b>
<b>AMPHIBIANS</b>					
Mudpuppy	<i>Necturus maculosus</i>	S4	G5	NAR	NAR
Red-spotted Newt	<i>Notophthalmus viridescens</i>	S5	G5T5		
Blue-spotted Salamander	<i>Ambystoma laterale</i>	S4	G5		
Spotted Salamander	<i>Ambystoma maculatum</i>	S4	G5		
Northern Redback Salamander	<i>Plethodon cinereus</i>	S5	G5		
American Toad	<i>Anaxyrus americanus</i>	S5	G5		
Tetraploid Gray Treefrog	<i>Hyla versicolor</i>	S5	G5		
Spring Peeper	<i>Pseudacris crucifer</i>	S5	G5		
Bullfrog	<i>Lithobates catesbeiana</i>	S4	G5		
Northern Green Frog	<i>Lithobates clamitans</i>	S5	G5		
Wood Frog	<i>Lithobates sylvatica</i>	S5	G5		
Northern Leopard Frog	<i>Lithobates pipiens</i>	S5	G5	NAR	NAR
Mink Frog	<i>Lithobates septentrionalis</i>	S5	G5		
Pickerel Frog	<i>Lithobates palustris</i>	S4	G5	NAR	NAR
<b>REPTILES</b>					
Midland Painted Turtle	<i>Chrysemys picta marginata</i>	S5	G5T5		
Eastern Gartersnake	<i>Thamnophis sirtalis</i>	S5	G5		
<b>BIRDS</b>					
Canada Goose	<i>Branta canadensis</i>	S5	G5		
Wood Duck	<i>Aix sponsa</i>	S5	G5		
American Black Duck	<i>Anas rubripes</i>	S4	G5		
Mallard	<i>Anas platyrhynchos</i>	S5	G5		
Ring-necked Duck	<i>Aythya collaris</i>	S5	G5		
Lesser Scaup	<i>Aythya affinis</i>	S4	G5		
Common Goldeneye	<i>Bucephala clangula</i>	S5	G5		
Hooded Merganser	<i>Lophodytes cucullatus</i>	S5B,S5N	G5		
Common Merganser	<i>Mergus merganser</i>	S5B,S5N	G5		
Yellow Rail	<i>Coturnicops noveboracensis</i>	S4B	G4	SC	SC
Ruffed Grouse	<i>Bonasa umbellus</i>	S5	G5		
Common Loon	<i>Gavia immer</i>	S5B,S5N	G5	NAR	NAR
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	S5B	G5	NAR	NAR
Bald Eagle	<i>Haliaeetus leucocephalus</i>	S2B,S4N	G4	SC	NAR
Broad-winged Hawk	<i>Buteo platypterus</i>	S5B	G5		
Red-tailed Hawk	<i>Buteo jamaicensis</i>	S5	G5	NAR	NAR
Merlin	<i>Falco columbarius</i>	S5B	G5	NAR	NAR
Spotted Sandpiper	<i>Actitis macularia</i>	S5	G5		
Solitary Sandpiper	<i>Tringa solitaria</i>	S4B	G5		
Herring Gull	<i>Larus argentatus</i>	S5B,S5N	G5		
Belted Kingfisher	<i>Ceryle alcyon</i>	S4B	G5		

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Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	S5B	G5		
Hairy Woodpecker	<i>Picoides villosus</i>	S5	G5		
Olive-sided Flycatcher	<i>Contopus borealis</i>	S4B	G4	SC	THR
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	S5B	G5		
Least Flycatcher	<i>Empidonax minimus</i>	S4B	G5		
Blue-headed Vireo	<i>Vireo solitarius</i>	S5B	G5		
Red-eyed Vireo	<i>Vireo olivaceus</i>	S5B	G5		
American Crow	<i>Corvus brachyrhynchos</i>	S5B	G5		
Common Raven	<i>Corvus corax</i>	S5	G5		
Black-capped Chickadee	<i>Poecile atricapillus</i>	S5	G5		
Red-breasted Nuthatch	<i>Sitta canadensis</i>	S5	G5		
Brown Creeper	<i>Certhia americana</i>	S5B	G5		
Winter Wren	<i>Troglodytes hiemalis</i>	S5B	G5		
Golden-crowned Kinglet	<i>Regulus satrapa</i>	S5B	G5		
Ruby-crowned Kinglet	<i>Regulus calendula</i>	S4B	G5		
Swainson's Thrush	<i>Catharus ustulatus</i>	S4B	G5		
Hermit Thrush	<i>Catharus guttatus</i>	S5B	G5		
American Robin	<i>Turdus migratorius</i>	S5B	G5		
Ovenbird	<i>Seiurus aurocapilla</i>	S4B	G5		
Nashville Warbler	<i>Oreothlypis ruficapilla</i>	S5B	G5		
Canada Warbler	<i>Cardellina canadensis</i>	S4B	G5	SC	THR
American Redstart	<i>Setophaga ruticilla</i>	S5B	G5		
Northern Parula	<i>Setophaga americana</i>	S4B	G5		
Magnolia Warbler	<i>Setophaga magnolia</i>	S5B	G5		
Blackburnian Warbler	<i>Setophaga fusca</i>	S5B	G5		
Black-throated Blue Warbler	<i>Setophaga caerulescens</i>	S5B	G5		
Yellow-rumped Warbler	<i>Setophaga coronata</i>	S5B	G5		
Black-throated Green Warbler	<i>Setophaga virens</i>	S5B	G5		
White-throated Sparrow	<i>Zonotrichia albicollis</i>	S5B	G5		
Purple Finch	<i>Haemorhous purpureus</i>	S4B	G5		
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	S4B	G5		

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<b>MAMMALS</b>					
Masked Shrew	<i>Sorex cinereus</i>	S5	G5		
Pygmy Shrew	<i>Sorex hoyi</i>	S4	G5		
Northern Short-tailed Shrew	<i>Blarina brevicauda</i>	S5	G5		
Star-nosed Mole	<i>Condylura cristata</i>	S5	G5		
Small-footed Bat	<i>Myotis leibii</i>	S2S3	G3		
Little Brown Bat	<i>Myotis lucifugus</i>	S5	G5		END-NS
Northern Long-Eared Bat	<i>Myotis septentrionalis</i>	S3?	G4		END-NS
Silver-haired Bat	<i>Lasionycteris noctivagans</i>	S4	G5		
Eastern Pipistrelle	<i>Pipistrellus subflavus</i>	S3?	G5		END-NS
Red Bat	<i>Lasiurus borealis</i>	S4	G5		
Big Brown Bat	<i>Eptesicus fuscus</i>	S5	G5		
Snowshoe Hare	<i>Lepus americanus</i>	S5	G5		
Least Chipmunk	<i>Tamias minimus</i>	G5	S5		
Eastern Chipmunk	<i>Tamias striatus</i>	S5	G5		
Woodchuck	<i>Marmota monax</i>	S5	G5		
Grey Squirrel	<i>Sciurus carolinensis</i>	S5	G5		
Red Squirrel	<i>Tamiasciurus hudsonicus</i>	S5	G5		
Northern Flying Squirrel	<i>Glaucomys sabrinus</i>	S5	G5		
Beaver	<i>Castor canadensis</i>	S5	G5		
Deer Mouse	<i>Peromyscus maniculatus</i>	S5	G5		
Southern Red-backed Vole	<i>Clethrionomys gapperi</i>	S5	G5		
Muskrat	<i>Ondatra zibethicus</i>	S5	G5		
Southern Bog Lemming	<i>Synaptomys cooperi</i>	S4	G5		
Meadow Vole	<i>Microtus pennsylvanicus</i>	S5	G5		
Meadow Jumping Mouse	<i>Zapus hudsonicus</i>	S5	G5		
Woodland Jumping Mouse	<i>Napaeozapus insignis</i>	S5	G5		
Porcupine	<i>Erethizon dorsatum</i>	S5	G5		
Coyote	<i>Canis latrans</i>	S5	G5		
Grey Wolf	<i>Canis lupus occidentalis</i>	S4	G4	NAR	NAR
Red Fox	<i>Vulpes vulpes</i>	S5	G5		
Black Bear	<i>Ursus americanus</i>	S5	G5	NAR	NAR
Raccoon	<i>Procyon lotor</i>	S5	G5		
Marten	<i>Martes americana</i>	S5	G5		
Fisher	<i>Martes pennanti</i>	S5	G5		
Ermine	<i>Mustela erminea</i>	S5	G5		
Mink	<i>Mustela vison</i>	S4	G5		
Striped Skunk	<i>Mephitis mephitis</i>	S5	G5		
River Otter	<i>Lutra canadensis</i>	S5	G5		

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Lynx	<i>Lynx canadensis</i>	S5	G5		NAR
Bobcat	<i>Lynx rufus</i>	S4	G5		
White-tailed Deer	<i>Odocoileus virginianus</i>	S5	G5		
Moose	<i>Alces alces</i>	S5	G5		

**COSSARO** – Committee on the Status of Species at Risk in Ontario

**COSEWIC** – Committee on the Status of Endangered Wildlife in Canada

**Status:**

**S1** – Critically Imperiled

**S2** – Imperiled

**S3** – Vulnerable

**S4** – Apparently Secure

**S5** – Secure

**SNA** – Not applicable

**G5** – Very common globally

**?** – Rank uncertain

**END** – Endangered

**THR** - Threatened

**SC** – Special Concern

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Table 3: Potential Species of Conservation Concern occurring within the Project Study Area							
Common Name	Scientific Name	S-Rank	Provincial Status (COSSARO)	National Status (COSEWIC)	Source	Description of Habitat	Results of Site Investigation
<b>VEGETATION</b>							
Oval-leaved Bilberry	<i>Vaccinium ovalifolium</i>	S3			MNR	Moist coniferous woods, transitional habitats Adjacent to these coniferous stands, cut-over coniferous woods, verges of road cuts, mixed woods.	Suitable habitat is present in study area.
Woodland pine drops	<i>Pterospora andromedea</i>	S2			MNR	Nearly always in habitats with conifers (especially pines but also hemlock, spruce, fir, white-cedar), in dry-mesic (usually sandy or rocky) soil, often with common juniper and sometimes aspen or birch.	Suitable habitat is present in study area.
Boreal bedstraw	<i>Galium kamtschaticum</i>	S2			MNR	Known to inhabit coniferous and deciduous woods.	Suitable habitat is present in study area.
Wooly beach heath	<i>Hudsonia tomentosa</i>	S3			MNR	On sandy or silty beaches, on sand plains, or in sandy jack pine woods and clearings.	Suitable habitat is present in study area.
Braun's holly fern	<i>Polystichum braunii</i>	S3			MNR	Moist deciduous or mixed conifer-hardwood forests on slopes and in ravines, and especially frequent in rocky woods; some historical records from conifer plantations.	Suitable habitat is present in study area.
Mountain firmoss	<i>Huperzia appressa</i>	S3?			MNR	Bogs, marshes, ditches especially in saturated sandy areas with some organic material.	Suitable habitat is present in study area.
Blue wild rye	<i>Elymus glaucus</i>	S1			MNR	Moist to dry soil in meadows, thickets, and open woods.	Suitable habitat is present in study area.

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<b>Table 3: Potential Species of Conservation Concern occurring within the Project Study Area</b>							
<b>Common Name</b>	<b>Scientific Name</b>	<b>S-Rank</b>	<b>Provincial Status (COSSARO)</b>	<b>National Status (COSEWIC)</b>	<b>Source</b>	<b>Description of Habitat</b>	<b>Results of Site Investigation</b>
A Liverwort	<i>Mylia taylorii</i>	S1			MNR	Very wet forested areas, with heavy canopy cover (both deciduous and coniferous). Found along the north shore of Lake Superior where it is found on granite rock near small pools of water or on wet cliffs (Newmaster, pers comm, 2012).	Habitat not present in study area.
A Liverwort	<i>Odontoschisma macounii</i>	S4			MNR	Grow mostly in swamps, over and among mosses and other bog plants. An Arctic disjunct on North shore of Lake Superior where it is found on granite rock cliffs and ledges within 4-5 meters of Lake Superior (Newmaster, pers comm, 2012).	Habitat not present in study area.
A Liverwort	<i>Marsupella sparsifolia</i>	S1S2			MNR	Damp wet rocks, on rocks along streams. Arctic disjunct found on the N-Shore of Lake Superior where it is found on wet granite in rock crevices close to the shore line (Newmaster, pers comm, 2012).	Habitat not present in study area.
Hanging fringe lichen	<i>Anaptychia setifera</i>	S3			MNR	Limy cliffs, in full sun or partial shade overlooking streams or lakes; rarely on shrubs. North American reports of <i>A. setifera</i> are <i>A. crinalis</i> . <i>A. setifera</i> is only found in Europe. In Ontario it grows on exposed coastal limestone, or richly calcareous coastal rocks and is not known from the Study Area (Newmaster, pers comm, 2012).	Habitat not present in study area.
Quill Spike-rush	<i>Eleocharis nitida</i>	S2S3			NHIC	Moist, sandy bare depressions in jack pine stands. (Voss, et.al., 2012)	Suitable habitat is present in study area.



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Common Name	Scientific Name	S-Rank	Provincial Status (COSSARO)	National Status (COSEWIC)	Source	Description of Habitat	Results of Site Investigation
<b>AMPHIBIANS</b>							
Pickerel Frog	<i>Lithobates palustris</i>	S4	NAR	NAR	MNR	Pickerel frogs inhabit ponds and streams with stable water temperatures, particularly springs and cold seepages. This species spends the summer away from water (usually in damp locations), foraging in fields and meadows, and overwinters in the bottom of ponds or other water bodies (Ontario nature, 2011). The Project Study Area is outside of the historic range for Pickerel Frog, although an unconfirmed observation of the species has been made.	Suitable habitat is present in study area, although the Project Study Area is beyond the historic range for the species (Ontario nature, 2011).
<b>BIRDS</b>							
Bald Eagle	<i>Haliaeetus leucocephalus</i>	S2B,S4N	SC	NAR	MNR	Almost always nests near water, usually on large lakes. Large stick nests are placed in trees located within mature woodlots. They usually require 250 ha of mature forest for breeding (Sandilands, 2005).	Suitable habitat is present in study area.
Yellow Rail	<i>Coturnicops noveboracensis</i>	S4B	SC	SC	MNR	Inhabit sedge-dominated wetlands which retain standing water through their breeding season (Cadman, et.al., 2007).	Suitable habitat is present in study area.
Canada Warbler	<i>Cardellina canadensis</i>	S4B	SC	THR	MNR	Usually found in moist mixed deciduous-coniferous forests with a well-developed understory. It may also occur in shrub marshes, red maple stands, coniferous riparian woodlands, ravines and steep brushy slopes, and regenerating forests (COSEWIC, 2008).	Suitable habitat is present in study area.

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Olive-sided flycatcher	<i>Contopus borealis</i>	S4B	SC	THR	MNR	Breeds in the boreal forest, where it primarily uses coniferous trees to support its cup-shaped nest (Cadman, et.al. 2007).	Suitable habitat is present in study area.
<b>MAMMALS</b>							
Small-footed Bat	<i>Myotis leibii</i>	S2S3		END-NS	MA	This bat inhabits deciduous and coniferous forests, roosts in crevices or under bark, and hibernates in caves and mines (Reid, 2006).	Suitable habitat is present in study area.
Little Brown Bat	<i>Myotis lucifuga</i>	S5		END-NS	MA	The Little Brown Bat is commonly found in buildings, attics, roof crevices and loose bark on trees or under bridges (Eder, T., 2002).	Suitable habitat is present in study area.
Eastern Pipistrelle (Tri-coloured Bat)	<i>Pipistrellus subflavus</i>	S3?		END-NS	MA	Prefers partly open habitat such as fields with large trees or woodland edges while avoiding both denser and more open areas. It likely roosts in leaves, caves or buildings in the summer, and hibernates in caves and mines where the humidity is high. Maternity colonies are usually found either in tree cavities or man-made structures, but have also been recorded utilizing live and dead foliage as well as squirrel nests (naturserve, 2011).	Suitable habitat is present in study area.

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Northern Long-Eared Bat (Northern Myotis)	<i>Myotis septentrionalis</i>	S3?	G4	END-NS		A species that is closely associated with woodlands. In Ontario, there are records of the Northern Long-eared Bat throughout the southern part of the province and along the north shores of lakes Huron and Superior, including in the vicinity of the Project Study Area (Dobbyn, 1994).	Suitable habitat is present in study area.
<b>INVERTEBRATES</b>							
Uhler's Sundragon	<i>Helocordulia uhleri</i>	S3			NHIC	Habitat includes clear, slow-moving forest streams, beaver ponds and lakes with low acidity (Jones <i>et al.</i> , 2008; Dunkle, 2000).	Suitable habitat is present in study area.
Monarch	<i>Danaus plexippus</i>	S2N, S4B	SC	SC	NHIC	This species prefers abandoned farmland and roadsides, but is also found in city gardens and parks. The larval host plant is milkweed. Typical summer habitat consists of >10ha of mostly undisturbed grassland or fallow land with a combination of field and forest habitat present and an abundance of preferred nectar plants.	Habitat not present in study area.

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**COSSARO** – Committee on the Status of Species at Risk in Ontario

**COSEWIC** – Committee on the Status of Endangered Wildlife in Canada

**Source:**

**EC** – Environment Canada/Canadian Wildlife Service Species At Risk Website

**NHIC** – Natural Heritage Information Database

**OBBA** – Ontario Breeding Bird Atlas

**OHSA** – Ontario Herpetofaunal Summary Atlas

**AMO** – Atlas of the Mammals of Ontario

**DFO** – direct correspondence with DFO

**MNR** – direct correspondence with MNR

**Stantec** – observed in the Study Area during site investigations

**Status:**

**S1** – Critically Imperiled

**S2** – Imperiled

**S3** – Vulnerable

**S4** – Apparently Secure

**S5** – Secure

**S#B** - Breeding status rank

**S#N** – Non-breeding status rank

**?** – Rank uncertain

**END** – Endangered

**THR** - Threatened

**SC** – Special Concern

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<b>Table 4: Survey Dates, Methods, Weather Conditions and Personnel</b>					
<b>Purpose</b>	<b>Methods</b>	<b>Survey Date (m/dd/year)</b>	<b>Time, duration and effort</b>	<b>Weather Conditions*</b>	<b>Completed By</b>
<b>SITE INVESTIGATIONS</b>					
ELC/FEC and wetland delineation	Ecological Land Classification Wetland Delineation	6/18/2012	9:00-19:00 (10hr 0min)	Temperature of 23°C, with a wind of 3, 100% cloud cover, no precipitation, and no precipitation within previous 24hrs.	N. Charlton, J. Leslie
ELC/FEC and wetland delineation	Ecological Land Classification, Wetland Delineation	6/19/2012	9:00-19:00 (10hr 0min)	Temperature of 22°C, with a wind of 1, 100% cloud cover, no precipitation and no precipitation within previous 24hrs.	N. Charlton, J. Leslie
ELC/FEC and wetland delineation	Ecological Land Classification, Wetland Delineation	6/20/2012	9:00-19:00 (10hr 0min)	Temperature of 22°C with a wind of 2, 100% cloud cover, no precipitation, no precipitation within previous 24hrs.	N. Charlton, J. Leslie
ELC/FEC and wetland delineation	Ecological Land Classification, Wetland Delineation	6/21/2012	9:00-19:00 (10hr 0min)	Temperature of 21°C with a wind of 3, 100% cloud cover, no precipitation, no previous precipitation within 24hrs.	N. Charlton, J. Leslie
ELC/FEC and wetland delineation	Ecological Land Classification, Wetland Delineation	6/22/2012	9:00-19:00 (10hr 0min)	Temperature of 13°C, with a wind of 3, 100% cloud cover, rain and no previous precipitation.	N. Charlton, J. Leslie
ELC/FEC and wetland delineation	Ecological Land Classification, Wetland Delineation	7/29/2012	9:00-19:00 (10hr 0min)	Temperature of 28 °C with a wind of 1, no precipitation, no previous precipitation within 24hrs.	N. Charlton, J. Leslie
ELC/FEC and wetland delineation	Ecological Land Classification, Wetland Delineation	7/30/2012	9:00-19:00 (10hr 0min)	Temperature of 28 °C with a wind of 2, no precipitation, some rain within 24hrs.	N. Charlton, J. Leslie
ELC/FEC and wetland delineation	Ecological Land Classification, Wetland Delineation	7/31/2012	9:00-19:00 (10hr 0min)	Temperature of 31 °C with a wind of 3, no precipitation, some rain within 24hrs.	N. Charlton, J. Leslie
ELC/FEC and wetland delineation	Ecological Land Classification, Wetland Delineation	8/1/2012	9:00-19:00 (10hr 0min)	Temperature of 29 °C with a wind of 1, no precipitation, some rain within 24hrs.	N. Charlton, J. Leslie
ELC/FEC and wetland delineation	Ecological Land Classification, Wetland Delineation	8/2/2012	9:00-19:00 (10hr 0min)	Temperature of 26 °C with a wind of 2, no precipitation, some rain within 24hrs.	N. Charlton, J. Leslie
ELC/FEC and wetland delineation	Ecological Land Classification, Wetland Delineation	8/3/2012	9:00-19:00 (10hr 0min)	Temperature of 25 °C with a wind of 2, no precipitation, some rain within 24hrs.	N. Charlton, J. Leslie

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<b>Table 4: Survey Dates, Methods, Weather Conditions and Personnel</b>					
<b>Purpose</b>	<b>Methods</b>	<b>Survey Date (m/dd/year)</b>	<b>Time, duration and effort</b>	<b>Weather Conditions*</b>	<b>Completed By</b>
Significant wildlife habitat assessment	General habitat assessment - wetlands	3/30/2012	14:00-19:45 (5hr 45min)	Temperature of 3°C with a wind of 1, cloud cover of 100%, light flurries, previous precipitation not available.	MK Ince and Associates: R. Leshyk, D. Stuart
Significant wildlife habitat assessment	General habitat assessment – wetlands and woodlands (including candidate bat maternity roosting areas)	3/31/2012	12:30-18:50 (6hr 20min)	Temperature of 5°C with a wind of 1, cloud cover of 90%, no precipitation, light flurries in previous 24hours.	MK Ince and Associates: R. Leshyk, D. Stuart
Significant wildlife habitat assessment	General habitat assessment – woodlands (including candidate bat maternity roosting areas)	4/1/2012	9:45-18:45 (9hr 0min)	Temperature of 2°C with a wind of 0, cloud cover of 90%, light rain, light flurries in previous 24hours.	MK Ince and Associates: R. Leshyk, D. Stuart
Significant wildlife habitat assessment	General habitat assessment – wetlands and woodlands (including candidate bat maternity roosting areas)	4/2/2012	9:45-18:30 (9hr 45min)	Temperature of 3-10°C with a wind of 2, cloud cover of 0%, no precipitation, no precipitation in previous 24hours.	MK Ince and Associates: R. Leshyk, D. Stuart
Significant wildlife habitat assessment	General habitat assessment – wetlands and woodlands (including candidate bat maternity roosting areas)	4/3/2012	10:00-18:45 (8hr 45min)	Temperature of 7°C with a wind of 1, cloud cover of 100%, no precipitation, no precipitation in previous 24 hours.	MK Ince and Associates: R. Leshyk, D. Stuart
Significant wildlife habitat assessment	General habitat assessment – woodlands (including candidate bat maternity roosting areas)	4/4/2012	9:45-18:15 (8hr 30min)	Temperature of 4°C with a wind of 1, cloud cover of 90%, no precipitation, no precipitation in previous 24hours.	MK Ince and Associates: R. Leshyk, D. Stuart
Significant wildlife habitat assessment	General habitat assessment – wetlands and woodlands (including candidate bat maternity roosting areas)	4/5/2012	9:15-15:45 (6hr 30min)	Temperature of -1°C with a wind of 1, cloud cover of 0%, no precipitation, no precipitation in previous 24hours.	MK Ince and Associates: R. Leshyk, D. Stuart
Significant wildlife habitat assessment	General habitat assessment	4/17/2012	13:30-15:00 (1hr 30min)	Temperature of -4.8°C, with a wind of 3-4, 15% cloud cover, no precipitation, mix of snow and showers within previous 24hrs.	D. Charlton, V. Deschamps, J. Leslie, M. Pomeroy
Significant wildlife habitat assessment	General habitat assessment	4/18/2012	09:00-15:00 (6hr 0min)	Temperature of 0°C, with a wind of 2, 100% cloud cover, with mix of snow and rain, no precipitation within previous 24hrs.	D. Charlton, V. Deschamps, J. Leslie, M. Pomeroy
Significant wildlife habitat assessment	General habitat assessment	4/19/2012	09:00-15:00 (6hr 0min)	Temperature of 2.1°C , with a wind of 2, 100% cloud cover, no precipitation, rain and snow within previous 24hrs.	D. Charlton, V. Deschamps, J. Leslie, M. Pomeroy

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<b>Table 4: Survey Dates, Methods, Weather Conditions and Personnel</b>					
<b>Purpose</b>	<b>Methods</b>	<b>Survey Date (m/dd/year)</b>	<b>Time, duration and effort</b>	<b>Weather Conditions*</b>	<b>Completed By</b>
Significant wildlife habitat assessment	General habitat assessment – candidate bat maternity roosting areas	4/25/2012	17:30-20:00 (2hr 30min)	Temperature of 8° C with wind of 0, no precipitation, no precipitation within previous 24hrs.	MK Ince and Associates: J. Jameson
Significant wildlife habitat assessment	General habitat assessment – candidate bat maternity roosting areas	4/26/2012	07:15-09:05, 17:35-18:00 (2hr 15min)	Temperature of 8° C with wind of 0, no precipitation, no precipitation within previous 24hrs.	MK Ince and Associates: J. Jameson
Significant wildlife habitat assessment	General habitat assessment – candidate bat maternity roosting areas	4/27/2012	07:20-08:25, 09:50-10:55 (2hr 10min)	Temperature of -3° C with a wind of 1, no precipitation, no precipitation within previous 24hrs.	MK Ince and Associates: J. Jameson
Significant wildlife habitat assessment	General habitat assessment – candidate bat maternity roosting areas	4/28/2012	07:00-08:30, 19:20-20:00 (2hr 10min)	Temperature of -3 °C with a wind of 0, no precipitation, no precipitation in previous 24hrs.	MK Ince and Associates: J. Jameson
Significant wildlife habitat assessment	General habitat assessment – candidate bat maternity roosting areas	4/29/2012	06:45-09:40, 18:40-18:55 (3hr 10min)	Temperature of 4 °C with wind of 1, no precipitation, no precipitation within previous 24hrs.	MK Ince and Associates: J. Jameson
Significant wildlife habitat assessment	General habitat assessment – candidate bat maternity roosting areas	4/30/2012	07:15-07:30, 11:20-12:40 (1hr 55min)	Temperature of 6 °C with a wind of 2, light wet flurries, no precipitation within previous 24hrs.	MK Ince and Associates: J. Jameson
Significant wildlife habitat assessment	General habitat assessment – candidate bat maternity roosting areas	5/1/2012	16:45-18:45 (2hr 0min)	Temperature of 17°C, wind of 1, no precipitation, no precipitation within previous 24hrs.	MK Ince and Associates: J. Jameson
Significant wildlife habitat assessment	General habitat assessment	5/2/2012	15:15-n/a	Temperature of 9°C with a wind of 3-4, no precipitation, rained within previous 24hrs.	MK Ince and Associates: J. Jameson
Significant wildlife habitat assessment	General habitat assessment	5/7/2012	09:00-18:00 (9hr 0min)	Temperature of 15°C , 100% cloud cover, wind of 1, isolated showers, no precipitation within previous 24hrs.	D.Charlton, K. Walpole, J. Leslie, M.Ellah, C.Payette, D.Graham
Significant wildlife habitat assessment	General habitat assessment	5/8/2012	09:00-18:00 (9hr 0min)	Temperature of 14°C, with a wind of 2, 10% cloud cover, no precipitation, no precipitation within previous 24hrs.	D.Charlton, K. Walpole, J. Leslie, M.Ellah, C.Payette, D.Graham

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<b>Table 4: Survey Dates, Methods, Weather Conditions and Personnel</b>					
<b>Purpose</b>	<b>Methods</b>	<b>Survey Date (m/dd/year)</b>	<b>Time, duration and effort</b>	<b>Weather Conditions*</b>	<b>Completed By</b>
Significant wildlife habitat assessment	General habitat assessment	5/9/2012	09:00-22:00 (13hr 0min)	Temperature of 10°C, 30% cloud cover, wind of 2, no precipitation, no precipitation within previous 24hrs.	D.Charlton, K. Walpole, J. Leslie, M.Ellah, C.Payette, D.Graham
Significant wildlife habitat assessment	General habitat assessment	5/10/2012	09:00-18:00 (9hr 0min)	Temperature of 18°C, with a wind of 1, 20% cloud cover, no precipitation, no precipitation with previous 24hrs.	D.Charlton, K. Walpole, J. Leslie, M.Ellah, C.Payette, D.Graham
Significant wildlife habitat assessment	General habitat assessment	5/11/2012	09:00-15:00 (6hr 0min)	Temperature of 18°, with a wind of 1, 10% cloud cover, no precipitation, no precipitation within previous 24hrs.	D.Charlton, K. Walpole, J. Leslie, M.Ellah, C.Payette, D.Graham
<b>EVALUATIONS OF SIGNIFICANCE</b>					
Amphibian egg mass searches	Egg mass surveys as per MNR Wildlife Scientific Collector's Authorization Protocol	4/26/2012	07:15-09:05, 17:35-18:00 (2hr 15min)	Temperature of 8° C with wind of 0, no precipitation, no precipitation within previous 24hrs.	MK Ince and Associates: R. Leshyk, D. Stuart, J. Jameson, R. Tymstra, K. Meyer-Beck
Amphibian egg mass searches	Egg mass surveys as per MNR Wildlife Scientific Collector's Authorization Protocol.	4/27/2012	07:20-08:25, 09:50-10:55 (2hr 10min)	Temperature of -3° C with a wind of 1, no precipitation, no precipitation within previous 24hrs.	MK Ince and Associates: R. Leshyk, D. Stuart, J. Jameson, R. Tymstra, K. Meyer-Beck
Amphibian egg mass searches	Egg mass surveys as per MNR Wildlife Scientific Collector's Authorization Protocol.	4/28/2012	07:00-08:30, 19:20-20:00 (2hr 10min)	Temperature of -3 °C with a wind of 0, no precipitation, no precipitation in previous 24hrs.	MK Ince and Associates: R. Leshyk, D. Stuart, J. Jameson, R. Tymstra
Amphibian egg mass searches	Egg mass surveys as per MNR Wildlife Scientific Collector's Authorization Protocol.	4/29/2012	06:45-09:40, 18:40-18:55 (3hr 10min)	Temperature of 4 °C with wind of 1, no precipitation, no precipitation within previous 24hrs.	MK Ince and Associates: R. Leshyk, D. Stuart, J. Jameson, R. Tymstra



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<b>Purpose</b>	<b>Methods</b>	<b>Survey Date (m/dd/year)</b>	<b>Time, duration and effort</b>	<b>Weather Conditions*</b>	<b>Completed By</b>
Amphibian egg mass searches	Egg mass surveys as per MNR Wildlife Scientific Collector's Authorization Protocol.	4/30/2012	07:15-07:30, 11:20-12:40 (1hr 55min)	Temperature of 6 °C with a wind of 2, light wet flurries, no precipitation within previous 24hrs.	MK Ince and Associates: R. Leshyk, D. Stuart, R. Tymstra
Amphibian egg mass searches	Egg mass surveys as per MNR Wildlife Scientific Collector's Authorization Protocol.	5/1/2012	16:45-18:45 (2hr 0min)	Temperature of 17°C, wind of 1, no precipitation, no precipitation within previous 24hrs.	MK Ince and Associates: R. Leshyk, D. Stuart, R. Tymstra
Amphibian call count surveys	Point counts using Marsh Monitoring Protocol	5/1/2012	21:18-22:14 (56min)	Temperature of 10° C with a wind of 1, no precipitation.	MK Ince and Associates: R. Tymstra, R. Leshyk, D. Stuart
Amphibian egg mass searches	Egg mass surveys as per MNR Wildlife Scientific Collector's Authorization Protocol.	5/2/2012	17:45-18:45 (1hr 0min)	Temperature of 12°C, with a wind of 1, no precipitation, no precipitation within previous 24hrs.	MK Ince and Associates: D. Stuart, R. Tymstra
Amphibian call count surveys	Point counts using Marsh Monitoring Protocol.	5/2/2012	21:14-21:41 (27min)	Temperature of 11° C with a wind of 1, no precipitation, some fog.	MK Ince and Associates; R. Tymstra, D. Stuart
Amphibian call count surveys, salamander egg mass surveys	Point counts using Marsh Monitoring Protocol. Egg mass surveys as per MNR Wildlife Scientific Collector's Authorization Protocol.	5/7/2012	09:00-18:00 (9hr 0min)	Temperature of 15°C, 100% cloud cover, wind of 1, isolated showers, no precipitation within previous 24hrs.	D. Charlton, K. Walpole, J. Leslie, M. Ellah, C. Payette, D. Graham
Amphibian call count surveys, salamander egg mass surveys	Point counts using Marsh Monitoring Protocol. Egg mass surveys as per MNR Wildlife Scientific Collector's Authorization Protocol.	5/8/2012	09:00-18:00 (9hr 0min)	Temperature of 14°C, with a wind of 2, 10% cloud cover, no precipitation, no precipitation within previous 24hrs.	D. Charlton, K. Walpole, J. Leslie, M. Ellah, C. Payette, D. Graham
Amphibian call count surveys, salamander egg mass surveys	Point counts using Marsh Monitoring Protocol. Egg mass surveys as per MNR Wildlife Scientific Collector's Authorization Protocol.	5/9/2012	09:00-22:00 (13hr 0min)	temperature of 10°C, 30% cloud cover, wind of 2, no precipitation, no precipitation within previous 24hrs.	D. Charlton, K. Walpole, J. Leslie, M. Ellah, C. Payette, D. Graham
Amphibian call count surveys, salamander egg mass surveys	Point counts using Marsh Monitoring Protocol. Egg mass surveys as per MNR Wildlife Scientific Collector's Authorization Protocol.	5/10/2012	09:00-18:00 (9hr 0min)	Temperature of 18°C, with a wind of 1, 20% cloud cover, no precipitation, no precipitation with previous 24hrs.	D. Charlton, K. Walpole, J. Leslie, M. Ellah, C. Payette, D. Graham

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<b>Purpose</b>	<b>Methods</b>	<b>Survey Date (m/dd/year)</b>	<b>Time, duration and effort</b>	<b>Weather Conditions*</b>	<b>Completed By</b>
Amphibian call count surveys, salamander egg mass surveys	Point counts using Marsh Monitoring Protocol. Egg mass surveys as per MNR Wildlife Scientific Collector's Authorization Protocol.	5/11/2012	09:00-15:00 (6hr 0min)	Temperature of 18°, with a wind of 1, 10% cloud cover, no precipitation, no precipitation within previous 24hrs.	D. Charlton, K. Walpole, J. Leslie, M. Ellah, C. Payette, D. Graham
Amphibian call count surveys	Point counts using Marsh Monitoring Protocol.	6/15/2012	23:20-	Temperature of 17°.	R. Tymstra
Amphibian call count surveys	Point counts using Marsh Monitoring Protocol.	6/16/2012	22:30-22:33 23:02-23:05 22:18-22:21 (9min)	Temperature of 24°, with a wind of 2, 100% cloud cover, trace of precipitation, no precipitation within previous 24hrs.	R. Tymstra
Amphibian call count surveys	Point counts using Marsh Monitoring Protocol.	6/17/2012	23:20-23:21-23:24 22:08-22:11 23:02-23:05 22:30-22:33 (12min)	Temperature of 17°, with a wind of 0, 10% cloud cover, no precipitation, no precipitation within previous 24hrs.	N. Burnett, R. Tymstra
Amphibian call count surveys	Point counts using Marsh Monitoring Protocol.	6/18/2012	22:10-22:13 22:00-22:03 (6min)	Temperature of 17°, with a wind of 0.	R. Tymstra
Amphibian call count surveys	Point counts using Marsh Monitoring Protocol.	6/19/2012	22:00-22:03 (3min)	Temperature of 24°, with a wind of 0, 0% cloud cover, no precipitation, heavy precipitation within previous 24hrs.	N. Burnett, R. Tymstra, M.J. McCormick, C. Davis
Amphibian call count surveys	Point counts using Marsh Monitoring Protocol.	6/20/2012	22:16-22:19 (3min)	n/a	n/a
Amphibian call count surveys	Point counts using Marsh Monitoring Protocol.	6/21/2012	22:02-22:03 (3min)	Temperature of 19°, with a wind of 0, 10% cloud cover, no precipitation, precipitation within previous 24hrs.	N. Burnett, R. Tymstra
Amphibian call count surveys	Point counts using Marsh Monitoring Protocol.	6/24/2012	22:00-22:03 (3min)	n/a	D. Charlton
Amphibian call count surveys	Point counts using Marsh Monitoring Protocol.	6/25/2012	22:08-22:11 (3min)	n/a	D. Charlton

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Amphibian call count surveys	Point counts using Marsh Monitoring Protocol.	6/27/2012	22:05-22:08 (3min)	n/a	D. Charlton
Bat maternity roost habitat assessment	Identification of candidate maternity roosts as described in "Bats and Bat Habitats: Guidelines for Wind Power Projects" (MNR, July 2011)	6/15/2012	n/a	Temperature of 17°C, with a wind of 1, some cloud cover, no precipitation, 2mm precipitation within previous 24hrs.	N. Burnett, D. Charlton, R. Tymstra, M.J. McCormick
Bat maternity roost habitat assessment	Identification of candidate maternity roosts as described in "Bats and Bat Habitats: Guidelines for Wind Power Projects" (MNR, July 2011)	6/16/2012	n/a	Temperature of 24°C, with a wind of 2, some cloud cover, no precipitation, no precipitation within previous 24hrs.	N. Burnett, D. Charlton, R. Tymstra, M.J. McCormick
Bat maternity roost habitat assessment	Identification of candidate maternity roosts as described in "Bats and Bat Habitats: Guidelines for Wind Power Projects" (MNR, July 2011)	6/17/2012	n/a	Temperature of 19-23°C, with a wind of 0-1, 10-50% cloud cover, no precipitation, heavy precipitation within previous 24hrs.	N. Burnett, D. Charlton, R. Tymstra, M.J. McCormick, J. Leslie, N. Charlton
Bat maternity roost habitat assessment	Identification of candidate maternity roosts as described in "Bats and Bat Habitats: Guidelines for Wind Power Projects" (MNR, July 2011)	6/18/2012	n/a	Temperature of 17-18°C, with a wind of 0-3, 0-90% cloud cover, trace precipitation, heavy precipitation within previous 24hrs.	N. Burnett, R. Tymstra, M.J. McCormick, C. Davis
Bat maternity roost habitat assessment	Identification of candidate maternity roosts as described in "Bats and Bat Habitats: Guidelines for Wind Power Projects" (MNR, July 2011)	6/19/2012	n/a	Temperature of 21°C, with a wind of 0-1, 70% cloud cover, no precipitation, heavy precipitation within previous 24hrs.	N. Burnett, R. Tymstra, M.J. McCormick, C. Davis
Bat maternity roost habitat assessment	Identification of candidate maternity roosts as described in "Bats and Bat Habitats: Guidelines for Wind Power Projects" (MNR, July 2011)	6/20/2012	n/a	Temperature of 20-26°C, with a wind of 1-5, 80-100% cloud cover, no precipitation, no precipitation within previous 24hrs.	N. Burnett, R. Tymstra, M.J. McCormick, C. Davis
Bat maternity roost habitat assessment	Identification of candidate maternity roosts as described in "Bats and Bat Habitats: Guidelines for Wind Power Projects" (MNR, July 2011)	6/22/2012	n/a	Temperature of 15-17°C, with a wind of 0, 0-40% cloud cover, no precipitation, some precipitation within previous 24hrs.	N. Burnett, R. Tymstra, M.J. McCormick, C. Davis

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<b>Purpose</b>	<b>Methods</b>	<b>Survey Date (m/dd/year)</b>	<b>Time, duration and effort</b>	<b>Weather Conditions*</b>	<b>Completed By</b>
Bat maternity roost habitat assessment	Identification of candidate maternity roosts as described in "Bats and Bat Habitats: Guidelines for Wind Power Projects" (MNR, July 2011)	6/23/2012	n/a	Temperature of 15-16°C, with a wind of 0-2, 50-70% cloud cover, no precipitation, no precipitation within previous 24hrs.	M.J. McCormick, C. Davis
Bat maternity roost habitat assessment	Identification of candidate maternity roosts as described in "Bats and Bat Habitats: Guidelines for Wind Power Projects" (MNR, July 2011)	6/25/2012	n/a	Temperature of 16-18°C, with a wind of 1-3, 0-10% cloud cover, no precipitation, some precipitation within previous 24hrs.	N. Burnett, K. Walpole, C. Davis, M.J. McCormick, D. Charlton
Bat maternity roost habitat assessment	Identification of candidate maternity roosts as described in "Bats and Bat Habitats: Guidelines for Wind Power Projects" (MNR, July 2011)	6/26/2012	n/a	Temperature of 20°, with a wind of 0, 40% cloud cover, no precipitation, no precipitation within previous 24hrs.	N. Burnett, K. Walpole, C. Davis
Bat maternity roost habitat assessment	Identification of candidate maternity roosts as described in "Bats and Bat Habitats: Guidelines for Wind Power Projects" (MNR, July 2011)	6/27/2012	n/a	Temperature of 24°C, with a wind of 0, 0% cloud cover, no precipitation, no precipitation within previous 24hrs.	N. Burnett, K. Walpole
Bat maternity roost exit surveys	Exit Surveys as described in "Bats and Bat Habitats: Guidelines for Wind Power Projects" (MNR, July 2011)	6/15/2012	21:58-22:40 (42 min)	Temperature of 17°C, with a wind of 1, some cloud cover, no precipitation, and 2mm precipitation within previous 24hrs.	N. Burnett, D. Charlton, R. Tymstra, M.J. McCormick
Bat maternity roost exit surveys	Exit Surveys as described in "Bats and Bat Habitats: Guidelines for Wind Power Projects" (MNR, July 2011)	6/16/2012	21:05-22:50 (1hr 45min)	Temperature of 24°C, with a wind of 1, some cloud cover, no precipitation, and no precipitation within previous 24hrs.	N. Burnett, D. Charlton, R. Tymstra, M.J. McCormick
Bat maternity roost exit surveys	Exit Surveys as described in "Bats and Bat Habitats: Guidelines for Wind Power Projects" (MNR, July 2011)	6/17/2012	21:15-22:50 (1hr 35min)	Temperature of 19-23°C, with a wind of 1-2, 10-90% cloud cover, no precipitation, and heavy precipitation within previous 24hrs.	N. Burnett, D. Charlton, R. Tymstra, M.J. McCormick, J. Leslie, N. Charlton
Bat maternity roost exit surveys	Exit Surveys as described in "Bats and Bat Habitats: Guidelines for Wind Power Projects" (MNR, July 2011)	6/18/2012	21:20-23:10 (1hr 50min)	Temperature of 17-18°C, with a wind of 0-3, 0-90% cloud cover, no precipitation, and heavy precipitation within previous 24hrs.	N. Burnett, R. Tymstra, M.J. McCormick, C. Davis
Bat maternity roost exit surveys	Exit Surveys as described in "Bats and Bat Habitats: Guidelines for Wind Power Projects" (MNR, July 2011)	6/19/2012	21:00-23:05 (2hr 05min)	Temperature of 21°C, with a wind of 0-1, 70% cloud cover, no precipitation, and heavy precipitation within previous 24hrs.	N. Burnett, R. Tymstra, M.J. McCormick, C. Davis

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Bat maternity roost exit surveys	Exit Surveys as described in "Bats and Bat Habitats: Guidelines for Wind Power Projects" (MNR, July 2011)	6/20/2012	21:05-23:05 (2hr 0min)	Temperature of 20-26°C, with a wind of 1-3, 80-100% cloud cover, heavy precipitation, and no precipitation within previous 24hrs.	N. Burnett, R. Tymstra, M.J. McCormick, C. Davis
Bat maternity roost exit surveys	Exit Surveys as described in "Bats and Bat Habitats: Guidelines for Wind Power Projects" (MNR, July 2011)	6/21/2012	21:00-23:00 (2hr 0min)	Temperature of 15°C, with a wind of 0, 0% cloud cover, no precipitation, and heavy precipitation within previous 24hrs.	N. Burnett, R. Tymstra, M.J. McCormick, C. Davis
Bat maternity roost exit surveys	Exit Surveys as described in "Bats and Bat Habitats: Guidelines for Wind Power Projects" (MNR, July 2011)	6/22/2012	21:00-23:05 (2hr 5min)	Temperature of 15-20°C, with a wind of 0-1, 0-40% cloud cover, no precipitation, and 2mm precipitation within previous 24hrs.	D. Charlton, N. Burnett, R. Tymstra, M.J. McCormick, C. Davis
Bat maternity roost exit surveys	Exit Surveys as described in "Bats and Bat Habitats: Guidelines for Wind Power Projects" (MNR, July 2011)	6/23/2012	21:00-23:05 (2hr 5min)	Temperature of 15-18°C, with a wind of 0-2, 30-70% cloud cover, no precipitation, and heavy precipitation within previous 24hrs.	D. Charlton, N. Burnett, M.J. McCormick, C. Davis
Bat maternity roost exit surveys	Exit Surveys as described in "Bats and Bat Habitats: Guidelines for Wind Power Projects" (MNR, July 2011)	6/24/2012	21:00-23:15 (2hr 15min)	Temperature of 15-20°C, with a wind of 0-4, 0-80% cloud cover, no precipitation, and no precipitation within previous 24hrs.	D. Charlton, N. Burnett, M.J. McCormick, C. Davis
Bat maternity roost exit surveys	Exit Surveys as described in "Bats and Bat Habitats: Guidelines for Wind Power Projects" (MNR, July 2011)	6/25/2012	21:00-23:00 (2hr 0min)	Temperature of 16-19°C, with a wind of 1-2, 0-10% cloud cover, no precipitation, and some precipitation within previous 24hrs.	D. Charlton, N. Burnett, M.J. McCormick, K. Walpole, C. Davis
Bat maternity roost exit surveys	Exit Surveys as described in "Bats and Bat Habitats: Guidelines for Wind Power Projects" (MNR, July 2011)	6/26/2012	21:00-23:00 (2hr 0min)	Temperature of 18-20°C, with a wind of 0-1, 20-80% cloud cover, no precipitation, and no precipitation within previous 24hrs.	D. Charlton, N. Burnett, M.J. McCormick, K. Walpole, C. Davis
Bat maternity roost exit surveys	Exit Surveys as described in "Bats and Bat Habitats: Guidelines for Wind Power Projects" (MNR, July 2011)	6/27/2012	21:15-23:05 (1hr 50min)	Temperature of 20-24°C, with a wind of 0-1, 0-95% cloud cover, no precipitation, and no precipitation within previous 24hrs.	D. Charlton, N. Burnett, M.J. McCormick, K. Walpole, C. Davis

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<b>Table 4: Survey Dates, Methods, Weather Conditions and Personnel</b>					
<b>Purpose</b>	<b>Methods</b>	<b>Survey Date (m/dd/year)</b>	<b>Time, duration and effort</b>	<b>Weather Conditions*</b>	<b>Completed By</b>
Bat maternity roost exit surveys	Exit Surveys as described in "Bats and Bat Habitats: Guidelines for Wind Power Projects" (MNR, July 2011)	6/28/2012	21:20-23:10 (1hr 50min)	Temperature of 15-20°C, with a wind of 0-1, 0-80% cloud cover, no precipitation, and no precipitation within previous 24hrs.	D. Charlton, N. Burnett, M.J. McCormick, K. Walpole, C. Davis
Breeding bird surveys	Point counts and transect surveys using methods as described in the Ontario Breeding Bird Protocol	6/5/2012	6:25-10:35 (4hr 10min)	Temperature of 8°C, with a wind of 2, 100% cloud cover with fog, no precipitation, rain within previous 24hrs.	M. Ross, B. Holden
Breeding bird surveys	Point counts and transect surveys using methods as described in the Ontario Breeding Bird Protocol	6/6/2012	6:50-10:35 (3hr 45min)	Temperature of 10°C, with a wind of 3, 60% cloud cover, no precipitation and no precipitation within previous 24hrs.	M. Ross, B. Holden
Breeding bird surveys	Point counts and transect surveys using methods as described in the Ontario Breeding Bird Protocol	6/7/2012	6:30-10:05 (3hr 35min)	Temperature of 10°C, with a wind of 2, 15% cloud cover, no precipitation, rain within previous 24hrs.	M. Ross, B. Holden
Breeding bird surveys	Point counts and transect surveys using methods as described in the Ontario Breeding Bird Protocol	6/8/2012	6:50-10:00 (3hr 10min)	Temperature of 13°C, with a wind of 2, 40-100% cloud cover, no precipitation and no precipitation within previous 24hrs.	M. Ross, B. Holden
Breeding bird surveys	Point counts and transect surveys using methods as described in the Ontario Breeding Bird Protocol	6/9/2012	7:30-10:15 (2hr 45min)	Temperature of 16°C, with a wind of 1-2, 100% cloud cover, no precipitation, rain within previous 24hrs.	M. Ross, B. Holden
Breeding bird surveys	Point counts and transect surveys using methods as described in the Ontario Breeding Bird Protocol	6/10/2012	6:50-10:10 (3hr 20min)	Temperature of 18°C, with a wind of 3, 10-20% cloud cover, no precipitation, no precipitation within previous 24hrs.	M. Ross, B. Holden
Breeding bird surveys	Point counts and transect surveys using methods as described in the Ontario Breeding Bird Protocol	6/11/2012	7:30-10:20 (2hr 50min)	Temperature of 22-24°C, with a wind of 3-4, 10% cloud cover, no precipitation and no precipitation within previous 24hrs.	M. Ross, B. Holden
Breeding bird surveys	Point counts and transect surveys using methods as described in the Ontario Breeding Bird Protocol	6/26/2012	7:10-10:15 (3hr, 5min)	Temperature of 10-19°C, with a wind of 2, 30-70% cloud cover, no precipitation, no precipitation within previous 24hrs.	M. Olivera, B. Holden
Breeding bird surveys	Point counts and transect surveys using methods as described in the Ontario Breeding Bird Protocol	6/27/2012	6:53-9:52 (2hr 59min)	Temperature of 17-24°C, with a wind of 0-1, 50-95% cloud cover, no precipitation, no precipitation within previous 24hrs.	M. Olivera, B. Holden

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<b>Purpose</b>	<b>Methods</b>	<b>Survey Date (m/dd/year)</b>	<b>Time, duration and effort</b>	<b>Weather Conditions*</b>	<b>Completed By</b>
Breeding bird surveys	Point counts and transect surveys using methods as described in the Ontario Breeding Bird Protocol	6/28/2012	07:00-10:22 (3hr 22min)	Temperature of 15-20°C with a wind of 2, 30% cloud cover, no precipitation, no precipitation within previous 24hrs.	M. Olivera, B. Holden
Breeding bird surveys	Point counts and transect surveys using methods as described in the Ontario Breeding Bird Protocol	6/29/2012	6:30-8:30 (2hr 0min)	Temperature of 12-16°C with a wind of 3-4, 0% cloud cover, no precipitation, no precipitation with previous 24hrs.	M. Olivera, B. Holden
Breeding bird surveys	Point counts and transect surveys using methods as described in the Ontario Breeding Bird Protocol	7/10/2012	6:20-10:25 (4hr 5min)	Temperature of 11-20° with a wind of 1, 10% cloud cover, no precipitation, no previous precipitation within previous 24hrs.	M. Olivera, B. Holden
Breeding bird surveys	Point counts and transect surveys using methods as described in the Ontario Breeding Bird Protocol	7/11/2012	6:20-9:09 (2hr 49min)	Temperature of 11-19°C with a wind of 3, 20% cloud cover, no precipitation, no previous precipitation within 24hrs.	M. Olivera, B. Holden
Breeding bird surveys	Point counts and transect surveys using methods as described in the Ontario Breeding Bird Protocol	7/12/2012	6:50-10:22 (3hr 22min)	Temperature of 14-21°C with a wind of 3-5, 0% cloud cover, no precipitation, no previous precipitation within 24hrs.	M. Olivera, B. Holden
Breeding bird surveys	Point counts and transect surveys using methods as described in the Ontario Breeding Bird Protocol	7/13/2012	6:00-10:32 (4hr 32min)	Temperature of 16-25°C, with a wind of 2-5, 0% cloud cover, no precipitation, no previous precipitation with 24hrs.	M. Olivera, B. Holden
Moose aquatic feeding area assessments	Surveys of all candidate habitats using protocols as described in the Selected Wildlife and Habitat Features: Inventory Manual	6/7/2012	n/a	Temperature of 23°C, with a wind of 2, 15% cloud cover, no precipitation, rain within previous 24hrs.	M. Ross, B. Holden
Moose aquatic feeding area assessments	Surveys of all candidate habitats using protocols as described in the Selected Wildlife and Habitat Features: Inventory Manual	8/8/2012	n/a	Temperature of 16°C, with a wind of 1-3, 100% cloud cover, no precipitation, no precipitation within 24hrs.	N. Burnett, D. Charlton
Moose aquatic feeding area assessments	Surveys of all candidate habitats using protocols as described in the Selected Wildlife and Habitat Features: Inventory Manual	8/9/2012	9:05-n/a	Temperature of 16°C, with a wind of 2-3, 70% cloud cover, no precipitation, no precipitation within 24hrs.	N. Burnett, D. Charlton



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<b>Purpose</b>	<b>Methods</b>	<b>Survey Date (m/dd/year)</b>	<b>Time, duration and effort</b>	<b>Weather Conditions*</b>	<b>Completed By</b>
Moose aquatic feeding area assessments	Surveys of all candidate habitats using protocols as described in the Selected Wildlife and Habitat Features: Inventory Manual	8/10/2012	12:30-n/a	Temperature of 16°C, with a wind of 1-3, 100% cloud cover, no precipitation, no precipitation within 24hrs.	N. Burnett, D. Charlton
Rare plant species and habitats	Late spring/early summer vegetation inventories and habitat assessments	6/18/2012	9:00-19:00 (10hr 0min)	Temperature of 23°C, with a wind of 3, 100% cloud cover, no precipitation, and no precipitation within previous 24hrs.	N. Charlton, J. Leslie
Rare plant species and habitats	Late spring/early summer vegetation inventories and habitat assessments	6/19/2012	9:00-19:00 (10hr 0min)	Temperature of 22°C, with a wind of 1, 100% cloud cover, no precipitation and no precipitation within previous 24hrs.	N. Charlton, J. Leslie
Rare plant species and habitats	Late spring/early summer vegetation inventories and habitat assessments	6/20/2012	9:00-19:00 (10hr 0min)	Temperature of 22°C with a wind of 2, 100% cloud cover, no precipitation, no precipitation within previous 24hrs.	N. Charlton, J. Leslie
Rare plant species and habitats	Late spring/early summer vegetation inventories and habitat assessments	6/21/2012	9:00-19:00 (10hr 0min)	Temperature of 21°C with a wind of 3, 100% cloud cover, no precipitation, no previous precipitation within 24hrs.	N. Charlton, J. Leslie
Rare plant species and habitats	Late spring/early summer vegetation inventories and habitat assessments	6/22/2012	9:00-19:00 (10hr 0min)	Temperature of 13°C, with a wind of 3, 100% cloud cover, rain and no previous precipitation.	N. Charlton, J. Leslie
Rare plant species and habitats	Mid-summer vegetation inventories and habitat assessments	7/29/2012	9:00-19:00 (10hr 0min)	Temperature of 28 °C with a wind of 1, no precipitation, no previous precipitation within 24hrs.	N. Charlton, J. Leslie
Rare plant species and habitats	Mid-summer vegetation inventories and habitat assessments	7/30/2012	9:00-19:00 (10hr 0min)	Temperature of 28 °C with a wind of 2, no precipitation, some rain within 24hrs.	N. Charlton, J. Leslie
Rare plant species and habitats	Mid-summer vegetation inventories and habitat assessments	7/31/2012	9:00-19:00 (10hr 0min)	Temperature of 31 °C with a wind of 3, no precipitation, some rain within 24hrs.	N. Charlton, J. Leslie
Rare plant species and habitats	Mid-summer vegetation inventories and habitat assessments	8/1/2012	9:00-19:00 (10hr 0min)	Temperature of 29 °C with a wind of 1, no precipitation, some rain within 24hrs.	N. Charlton, J. Leslie
Rare plant species and habitats	Mid-summer vegetation inventories and habitat assessments	8/2/2012	9:00-19:00 (10hr 0min)	Temperature of 26 °C with a wind of 2, no precipitation, some rain within 24hrs.	N. Charlton, J. Leslie
Rare plant species and habitats	Mid-summer vegetation inventories and habitat assessments	8/3/2012	9:00-19:00 (10hr 0min)	Temperature of 25 °C with a wind of 2, no precipitation, some rain within 24hrs.	N. Charlton, J. Leslie



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<b>Table 4: Survey Dates, Methods, Weather Conditions and Personnel</b>					
<b>Purpose</b>	<b>Methods</b>	<b>Survey Date (m/dd/year)</b>	<b>Time, duration and effort</b>	<b>Weather Conditions*</b>	<b>Completed By</b>
Salamander trapping surveys	Salamander trapping surveys as per MNR Wildlife Scientific Collector's Authorization Protocol.	4/26/2012	07:00-08:40 (1hr 40 min)	Temperature of 1°C with wind of 0, cloud cover 100%, rain-slight drizzle to snow, no previous precipitation within 24hrs.	MK Ince and Associates: R. Leshyk, D. Stuart, J. Jameson, R. Tymstra
Salamander trapping surveys	Salamander trapping surveys as per MNR Wildlife Scientific Collector's Authorization Protocol.	4/27/2012	07:00-10:55 (3hr 55min)	Temperature of -3°C with a wind of 0, 0% cloud cover, no precipitation, no previous precipitation with 24hrs.	MK Ince and Associates: R. Leshyk, D. Stuart, J. Jameson, R. Tymstra, K. Meyer-Beck
Salamander trapping surveys	Salamander trapping surveys as per MNR Wildlife Scientific Collector's Authorization Protocol.	4/28/2012	07:00-10:10 (3hr 10min)	Temperature of 1°C with wind of 0, cloud cover 0%, no precipitation, no previous precipitation within 24hrs.	MK Ince and Associates: R. Leshyk, D. Stuart, J. Jameson, R. Tymstra
Salamander trapping surveys	Salamander trapping surveys as per MNR Wildlife Scientific Collector's Authorization Protocol.	4/29/2012	06:45-10:50 (4hr 05min)	Temperature of 5 °C with wind of 0% cloud cover, no precipitation, no precipitation within previous 24hrs.	MK Ince and Associates: R. Leshyk, D. Stuart, J. Jameson, R. Tymstra
Salamander trapping surveys	Salamander trapping surveys as per MNR Wildlife Scientific Collector's Authorization Protocol.	4/30/2012	07:00-08:20, 19:35-20:30 (2hr 15min)	Temperature of 6 °C with a wind of 1-2, 10% cloud cover, no precipitation, no precipitation within previous 24hrs.	MK Ince and Associates: R. Leshyk, D. Stuart, J. Jameson, R. Tymstra
Waterfowl stopover and staging survey	Waterfowl stopover and staging survey following protocols as described in "Bird and Bird Habitats: Guidelines for Wind Power Projects"	3/30/2012	06:15-07:15, 15:00-16:00 (2hr 0min)	Temperature of -2.6°C with a wind of 2, snow, no precipitation within previous 24 hrs.	MK Ince and Associates: D. Stuart, R. Leshyk
Waterfowl stopover and staging survey	Waterfowl stopover and staging survey following protocols as described in "Bird and Bird Habitats: guidelines for Wind Power Projects"	3/31/2012	12:45-13:15 (30min)	Temperature of -1.3°C with a wind of 1-2, 40% cloud cover, no precipitation, light flurries within previous 24hrs.	MK Ince and Associates: D. Stuart, R. Leshyk
Waterfowl stopover and staging survey	Waterfowl stopover and staging survey following protocols as described in "Bird and Bird Habitats: Guidelines for Wind Power Projects"	4/1/2012	09:45-11:15 (1hr 30min)	Temperature of 1.5°C with a wind of 1, 100% cloud cover, light drizzle to rain, no precipitation within previous 24hrs.	MK Ince and Associates: D. Stuart, R. Leshyk

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Waterfowl stopover and staging survey	Waterfowl stopover and staging survey following protocols as described in "Bird and Bird Habitats: Guidelines for Wind Power Projects"	4/2/2012	10:00-11:00 (1hr 0 min)	Temperature of 2.3°C with a wind of 1, 0% cloud cover, no precipitation, light drizzle in previous 24hrs.	MK Ince and Associates: D. Stuart, R. Leshyk
Waterfowl stopover and staging survey	Waterfowl stopover and staging survey following protocols as described in "Bird and Bird Habitats: Guidelines for Wind Power Projects"	4/3/2012	10:00-11:00 (1hr 0min)	Temperature of 4.8°C, with a wind of 1, 25% cloud cover, no precipitation, no precipitation within previous 24hrs.	MK Ince and Associates: D. Stuart, R. Leshyk
Waterfowl stopover and staging survey	Waterfowl stopover and staging survey following protocols as described in "Bird and Bird Habitats: Guidelines for Wind Power Projects"	4/4/2012	09:45-10:20 (35min)	Temperature of 3.9°C, with a wind of 2, 75% cloud cover, no precipitation, no precipitation within previous 24hrs.	MK Ince and Associates: D. Stuart, R. Leshyk
Waterfowl stopover and staging survey	Waterfowl stopover and staging survey following protocols as described in "Bird and Bird Habitats: Guidelines for Wind Power Projects"	4/5/2012	9:45-10:50 (1hr 5min)	Temperature of -1.2°C, with a wind of 2, 0% cloud cover, no precipitation, no precipitation with previous 24 hrs.	MK Ince and Associates: D. Stuart, R. Leshyk
Woodland raptor nest survey	Observation of stick nests to determine species and whether nest is actively being used.	4/1/2012	n/a	Temperature of 1.5°C with a wind of 1, 100% cloud cover, light drizzle to rain, no precipitation within previous 24hrs.	MK Ince and Associates; D. Stuart
Woodland raptor nest survey	Observation of stick nests to determine species and whether nest is actively being used.	5/3/2012	n/a	n/a	MK Ince and Associates; D. Stuart. R. Leshyk

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<b>Table 5: Summary of Corrections to Records Review</b>			
<b>Features within 120m of the Project Location</b>	<b>Records Review Results</b>	<b>Correction made as a result of site investigation</b>	<b>Report Section Providing Criteria Used in Determination of Correction</b>
Wetlands	Presence of wetland communities associated with the Bullseye PSW wetland complex and 6 non-provincially significant wetland complexes (i.e., Moose Antler, Question Mark, Lonely, Isosceles, Bow Lake and Bear Paw Wetland Complexes).	44 previously unidentified wetlands as identified during site investigations within 120 m of the Project Location.	Section 3.2.2.3
Moose Aquatic Feeding Areas	MNR data indicated a number of Class 1-3 MAFAs located throughout the Project Study Area.	One of the features identified as a Class 2 MAFA (associated with SWET-4) was determined not to be an aquatic feeding area during site investigations, as it contained no open water component.	Section 3.2.3.2.
Woodland Raptor Nesting Habitat	A historic record of Red-tailed Hawk nest was identified by MNR in the southeast corner of the Study Area.	The nest was not present during site investigations (including the Apr. 17 helicopter survey) and no other stick nests or raptors were observed at this location.	Section 3.2.3.2

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<b>Table 6: Natural Heritage Features and Evaluation of Significance</b>							
<b>Feature ID</b>	<b>Size (ha)<sup>1</sup></b>	<b>Overlap with Project Components<sup>2</sup></b>	<b>Within 120m of Project Components</b>	<b>Composition and Attributes</b>	<b>Significant (Y / N / A)<sup>3</sup></b>	<b>Figure #</b>	<b>EOS Results</b>
<b>Amphibian Breeding Habitat - Woodlands</b>							
General Habitat Description: Woodland ponds may provide important habitat for local amphibian populations. Ponds that contain a variety of vegetation structures in and around the edge of the pond, are undisturbed, and are found adjacent to closed canopy woodlands with dense undergrowth that maintain a damp environment, typically provide the best ponds for breeding (MNR, 2000a).							
ABHW-1	72.9	BO, AR	BU	SWET-58, SWET-8; G135- Organic Thicket Swamp; G129- Organic Rich Conifer Swamp; G134- Mineral Thicket Swamp; G144- Organic Meadow Marsh	Y	6.9	Stations 1b/AS9 & 2B; highest call count overall: Spring Peeper-3, Chorus Frog 1-2, Green Frog-1-4, Mink Frog 1-1
ABHW-2	19.7	AR		SWET-9; G152-Open Water Marsh: Organic; G144-Organic Meadow Marsh	Y	6.9	Stations 4b, 3b; highest call count overall: Spring Peeper-3, Green Frog-1-1
ABHW-3	22.6	AR		SWET-37, SWET-10; G144-Organic Meadow Marsh; G149-Organic Shallow Marsh; G152-Open Water Marsh: Organic	Y	6.9	Station AS10; Highest call count: Spring Peeper-3, Green Frog1-2
ABHW-4	23.7	AR		SWET-12; G148-Mineral Shallow Marsh	A	6.3	Survey insufficient to determine significance
ABHW-5	19.8	WT, WTL, CL, AR		SWET-13; G129-Organic Rich Conifer Swamp	A	6.9	1 Mink Frog, 1 Spring Peeper heard on May 7/12, Survey insufficient to determine significance
ABHW-6	36.3	WT, WTL, AR		SWET-15, SWET-16, SWET-17, SWET-39; G129-Organic Rich Conifer Swamp	Y	6.9	2 spotted salamander egg masses (20eggs), 1 green frog, may 8/12 visit
ABHW-7	44.8	AR		SWET-41, SWET-42; G129-Organic Rich Conifer Swamp, G067-Moist, Coarse: Spruce-Fir conifer; G058- Dry to Fresh, Coarse: Maple Hardwood; G052- dry to Fresh, Coarse: Spruce-Fir Conifer; G045/G047/G142-Dry to Fresh, Coarse: Meadow/Dry to Fresh, Coarse: Shrub/Mineral Meadow Marsh	A	6.2	Survey insufficient to determine significance

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ABHW-8	72.1	WT, WTL, CL, AR		SWET-23, SWET-43, SWET-44; G144- Organic Meadow Marsh; G149- Organic Shallow Marsh; G129- Organic Rich Conifer Swamp	Y	6.5	Stations ABH206, ABH207 4; highest call count recorded: Spring Peeper-3, Wood Frog 1-3; Amphibian egg mass surveys: 15 Wood Frog, 77 Spotted Salamander; Salamander egg masses, 1 frog egg mass obs on May 9, 2012
ABHW-9	26.3	AR		SWET-60; G129- Organic Rich Conifer Swamp; G058- Dry to Fresh, Coarse: Maple Hardwood; G050- Dry to Fresh, Coarse: Pine-Black Spruce Conifer; G067- Moist, Coarse: Spruce-Fir conifer	A	6.1	Survey insufficient to determine significance
ABHW-10	29.3	CL	WT, WTL	SWET-1; G149- Organic Shallow Marsh; G135- Organic Thicket Swamp	Y	6.5	Stations ABH202, ABH104, ABH101, AS12, AS6, AS1; highest recorded call counts: Spring Peeper3, Wood Frog1-6, Green Frog1-4, Mink Frog1-1; Spring peeper(full choruses), Mink frog, american toad heard calling during May 8, 2012 visit.
ABHW-11	21.7	AR		SWET-11, SWET-40; G129-Organic Rich Conifer Swamp; G070- Moist, Coarse: Aspen-birch Hardwood; G033- Dry, Sandy: Red Pine-white Pine Conifer; G047- Dry to Fresh: Coarse Shrub; G045- Dry to Fresh, Coarse: Red Pine-White Pine Mixedwood; G067- Moist, Coarse: Spruce-Fir conifer; G058- Dry to Fresh, Coarse: Maple Hardwood; G135 Organic Thicket Swamp	A	6.1	Survey insufficient to determine significance

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<b>Feature ID</b>	<b>Size (ha)<sup>1</sup></b>	<b>Overlap with Project Components<sup>2</sup></b>	<b>Within 120m of Project Components</b>	<b>Composition and Attributes</b>	<b>Significant (Y / N / A)<sup>3</sup></b>	<b>Figure #</b>	<b>EOS Results</b>
ABHW-12	20.4	WT, WTL, CL, AR		SWET-46; G058- Dry to Fresh, Coarse: Maple Hardwood G129- Organic Rich Conifer Swamp	A	6.5	Station AS8; high call count: Green Frog1-1, Mink Frog1-1; Survey insufficient to determine significance
ABHW-13	20.8	CL	WT, WTL, AR	SWET-50; G058-Dry to Fresh, Coarse: Maple Hardwood ; G055- -Dry to Fresh, Coarse: Aspen-Birch Hardwood; G129- Organic Rich Conifer Swamp	A	6.6	Survey insufficient to determine significance
ABHW-14	42.1	WT, WTL, CL		SWET-51, SWET-52, SWET-53; G014-Very Shallow, Dry to Fresh: Conifer; G052- dry to Fresh, Coarse: Spruce-Fir Conifer; G058- Dry to Fresh, Coarse: Maple Hardwood ; G129- Organic Rich Conifer Swamp; G134- Mineral Thicket Swamp; G144- Organic Meadow Marsh	A	6.6	Survey insufficient to determine significance
ABHW-15	31.7	WT, WTL, CL, AR		SWET-56, SWET-63; G055- Dry to Fresh, Coarse: Aspen-Birch Hardwood, ; G129- Organic Rich Conifer Swamp; G058- Dry to Fresh, Coarse: Maple Hardwood	A	6.7	Survey insufficient to determine significance
ABHW-16	38.3	CL, BU		SWET-3; G045/G047/G142- G045/G047/G142-Dry to Fresh, Coarse: Meadow / Dry to Fresh, Coarse: Shrub / Mineral Meadow Marsh ; G058-Dry to Fresh, Coarse: Maple Hardwood; G134- Mineral Thicket Swamp; G224- -Mineral Rich Conifer Swamp	A	6.4	Survey insufficient to determine significance
ABHW-17	0.36	AR	WT, WTL, CL	SWET-14; G152-Open Water Marsh: Organic; G058Tt-Dry to Fresh, Coarse: Maple Hardwood; G-055Tt-Dry to Fresh, Coarse: Aspen-Birch Hardwood	A	6.9	Station AS-20: 13 Spring Peeper, 7 Green Frog heard calling; Survey insufficient to determine significance

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<b>Feature ID</b>	<b>Size (ha)<sup>1</sup></b>	<b>Overlap with Project Components<sup>2</sup></b>	<b>Within 120m of Project Components</b>	<b>Composition and Attributes</b>	<b>Significant (Y / N / A)<sup>3</sup></b>	<b>Figure #</b>	<b>EOS Results</b>
<b>Boreal Bedstraw Habitat</b>							
General Habitat Description: Boreal Bedstraw was most commonly associated with moist to wet soil, often organic, although loamy stream-side conditions were observed. This affinity to moist conditions generally restricted the species' range to bottomland habitat, intermittent stream corridors or small moist upland depressions where surface drainage was poor due to underlying bedrock. Specimens were most frequently observed in G058Tt communities (sugar maple – yellow birch forest), situated within small, poorly drained depressions that provided swamp microhabitat. This microhabitat was also closely associated with G129Tt communities (Organic Rich Conifer Swamp), although specimens were not always present in seemingly suitable conditions.							
BBH-1	2.3	AR		G067- Moist, Coarse: Spruce-Fir conifer. Suitable habitat is more likely to occur in small, moist inclusions or intermittent stream corridors within this community.	N	5.1	Species was not observed in candidate habitat
BBH-2	0.1		AR	G067- Moist, Coarse: Spruce-Fir conifer	N	5.3	Species was not observed in candidate habitat
BBH-3	0.4		AR	G067- Moist, Coarse: Spruce-Fir conifer	N	5.3	Species was not observed in candidate habitat
BBH-4	11.2	AR		G052-dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.3	Species was not observed in candidate habitat
BBH-5	0.6		WT, WTL, AR, CL	G067- Moist, Coarse: Spruce-Fir conifer	N	5.9	Species was not observed in candidate habitat
BBH-6	0.1		AR	G129- Organic Rich Conifer Swamp	N	5.9	Species was not observed in candidate habitat
BBH-7	0.5		WT, WTL, AR		N	5.9	Species was not observed in candidate habitat
BBH-8	5.8	WT, WTL, AR		G052- dry to Fresh, Coarse: Spruce-Fir Conifer G129- Organic Rich Conifer Swamp	N	5.9	Species was not observed in candidate habitat
BBH-9	1.4		AR	G070- Moist, Coarse: Aspen-birch Hardwood, G129- Organic Rich Conifer Swamp	N	5.1	Species was not observed in candidate habitat
BBH-11	0.2	CL	WT, WTL	Suitable habitat is more likely to occur in small, moist inclusions or intermittent stream corridors within this community.	N	5.5	Species was not observed in candidate habitat

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BBH-13	0.1		WT, WTL, AR, CL		N	5.4	Species was not observed in candidate habitat
BBH-14	8.6	AR		G052- dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.4	Species was not observed in candidate habitat
BBH-18	2.0	CL		G052-dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.4	Species was not observed in candidate habitat
BBH-22	1.0	CL		G067- Moist, Coarse: Spruce-Fir conifer. Suitable habitat is more likely to occur in small, moist inclusions or intermittent stream corridors within this community.	N	5.7	Species was not observed in candidate habitat
BBH-23	0.2		AR	G129- Organic Rich Conifer Swamp. Suitable habitat is more likely to occur in small, moist inclusions or intermittent stream corridors within this community.	N	5.9	Species was not observed in candidate habitat
BBH-24	0.4		AR	G129- Organic Rich Conifer Swamp. Suitable habitat is more likely to occur in small, moist inclusions or intermittent stream corridors within this community.	N	5.9	Species was not observed in candidate habitat
BBH-25	0.4	AR	WT, WTL	G067- Moist, Coarse: Spruce-Fir conifer. Suitable habitat is more likely to occur in small, moist inclusions or intermittent stream corridors within this community.	N	5.9	Species was not observed in candidate habitat
BBH-26	1.3	AR		G052-dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.9	Species was not observed in candidate habitat
BBH-27	0.2		AR, BU		N	5.9	Species was not observed in candidate habitat
BBH-28	0.3		WT, WTL, AR		N	5.9	Species was not observed in candidate habitat



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BBH-29	2.3	AR		G052-dry to Fresh, Coarse: Spruce-Fir Conifer. Suitable habitat is more likely to occur in small, moist inclusions or intermittent stream corridors within this community.	N	5.9	Species was not observed in candidate habitat
BBH-32	4.4	AR		G129- Organic Rich Conifer Swamp ,G067- Moist, Coarse: Spruce-Fir conifer	N	5.2	Species was not observed in candidate habitat
BBH-33	0.8		AR	G052-dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.2	Species was not observed in candidate habitat
BBH-34	1.1	AR		G067- Moist, Coarse: Spruce-Fir conifer	N	5.3	Species was not observed in candidate habitat
BBH-38	0.2		WT, WTL, AR		N		Species was not observed in candidate habitat
BBH-40	0.6		CL, AR		N		Species was not observed in candidate habitat
BBH-41	0.5	CL		G067- Moist, Coarse: Spruce-Fir conifer	N	5.4	Species was not observed in candidate habitat
BBH-42	3.4	CL		G067- Moist, Coarse: Spruce-Fir conifer	N	5.6	Species was not observed in candidate habitat
BBH-43	0.5	CL	WT, WTL, AR	G067- Moist, Coarse: Spruce-Fir conifer	N	5.6	Species was not observed in candidate habitat
BBH-47	3.0	CL		G067- Moist, Coarse: Spruce-Fir conifer	N	5.6	Species was not observed in candidate habitat
BBH-51	5.9	AR		G129- Organic Rich Conifer Swamp ,G067- Moist, Coarse: Spruce-Fir conifer	N	5.1	Species was not observed in candidate habitat
BBH-52	4.1		AR	G052-dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.1	Species was not observed in candidate habitat
BBH-54	6.8	CL, BU		G067- Moist, Coarse: Spruce-Fir conifer	N	5.4	Species was not observed in candidate habitat
BBH-55	6.5	CL		G052- dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.6	Species was not observed in candidate habitat

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BBH-56	0.4	CL		G067- Moist, Coarse: Spruce-Fir conifer	N	5.6	Species was not observed in candidate habitat
BBH-59	0.9		AR, BO		N	5.9	Species was not observed in candidate habitat
BBH-60	3.4	CL		G067- Moist, Coarse: Spruce-Fir conifer	N	5.7	Species was not observed in candidate habitat
BBH-61	9.5	CL		G052- dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.7	Species was not observed in candidate habitat
BBH-63	0.0		WT, WTL, AR, CL	G058-Dry to Fresh, Coarse: Maple Hardwood	Y	6.7	Species was observed in candidate habitat
BBH-64	0.1		WT, WTL, AR, CL	G055- Dry to Fresh, Coarse: Aspen-Birch Hardwood	Y	6.6	Species was observed in candidate habitat
BBH-66	0.1	WT, WTL, AR	CL	G058-Dry to Fresh, Coarse: Maple Hardwood	Y	6.6	Species was observed in candidate habitat
BBH-67	0.2	CL		G058-Dry to Fresh, Coarse: Maple Hardwood	Y	6.6	Species was observed in candidate habitat
BBH-68	0.1	CL		G067- Moist, Coarse: Spruce-Fir conifer	Y	6.6	Species was observed in candidate habitat
BBH-69	0.1	CL		G067- Moist, Coarse: Spruce-Fir conifer	Y	6.6	Species was observed in candidate habitat
BBH-70	0.1		CL	G067- Moist, Coarse: Spruce-Fir conifer	Y	6.6	Species was observed in candidate habitat
BBH-71	0.0	CL		G058-Dry to Fresh, Coarse: Maple Hardwood	Y	6.6	Species was observed in candidate habitat
BBH-73	0.2		CL	G067- Moist, Coarse: Spruce-Fir conifer	Y	6.6	Species was observed in candidate habitat
BBH-74	0.1	CL			Y	5.6	Species was observed in candidate habitat
BBH-75	0.4	CL		G058-Dry to Fresh, Coarse: Maple Hardwood	Y	6.6	Species was observed in candidate habitat
BBH-76	0.1	CL		G058-Dry to Fresh, Coarse: Maple Hardwood	Y	6.6	Species was observed in candidate habitat
BBH-78	0.1	CL		G058-Dry to Fresh, Coarse: Maple Hardwood	Y	6.6	Species was observed in candidate habitat
BBH-79	0.2	CL		G058-Dry to Fresh, Coarse: Maple Hardwood	Y	6.6	Species was observed in candidate habitat

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BBH-80	0.1		AR	G058-Dry to Fresh, Coarse: Maple Hardwood	Y	6.5	Species was observed in candidate habitat
BBH-81	0.1	WT, WTL, CL		G058-Dry to Fresh, Coarse: Maple Hardwood	Y	6.6	Species was observed in candidate habitat
BBH-84	0.1	CL		G058-Dry to Fresh, Coarse: Maple Hardwood	Y	6.4	Species was observed in candidate habitat
BBH-86	0.5		AR, CL	G129- Organic Rich Conifer Swamp	Y	6.7	Species was observed in candidate habitat
BBH-87	0.7		CL	G129- Organic Rich Conifer Swamp	Y	6.7	Species was observed in candidate habitat
BBH-88	0.4	AR, CL	WT, WTL	G058- Dry to Fresh, Coarse: Maple Hardwood	Y	6.6	Species was observed in candidate habitat
BBH-89	0.2	CL		G058- Dry to Fresh, Coarse: Maple Hardwood	Y	6.6	Species was observed in candidate habitat
BBH-90	0.4	CL		G058- Dry to Fresh, Coarse: Maple Hardwood	Y	6.6	Species was observed in candidate habitat
BBH-91	0.2	CL		G058- Dry to Fresh, Coarse: Maple Hardwood	Y	6.6	Species was observed in candidate habitat
BBH-92	0.5	CL	WT, WTL	G058- Dry to Fresh, Coarse: Maple Hardwood	Y	6.6	Species was observed in candidate habitat
BBH-94	0.1	CL	WT, WTL	G058- Dry to Fresh, Coarse: Maple Hardwood	Y	6.6	Species was observed in candidate habitat
BBH-96	0.3		WT, WTL, AR, CL	G058- Dry to Fresh, Coarse: Maple Hardwood	Y	6.6	Species was observed in candidate habitat
BBH-97	0.3	CL	WT, WTL, AR	G058- Dry to Fresh, Coarse: Maple Hardwood	Y	6.6	Species was observed in candidate habitat
BBH-98	0.8		CL		Y	6.6	Species was observed in candidate habitat
BBH-99	0.5	CL		G058- Dry to Fresh, Coarse: Maple Hardwood	Y	6.6	Species was observed in candidate habitat

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<b>Braun's Holly Fern Habitat</b>							
General Habitat Description: Braun's Holly Fern was consistently associated with rocky ravines with intermittent streams, or steep slopes with rocky, vegetated conditions. Within the Study Area, it appeared to prefer fresh to moist soils and, when observed along slopes, it was often situated at mid to toe slope positions. The most consistent habitat requirement appeared to be moist forests with exposed rock and topographic protection. Soil texture was typically loam, often with a sand component. Within the Study Area, Braun's holly fern was only documented to occur in G058Tt communities (sugar maple – yellow birch forest). Associated ground cover often included a high diversity of ferns including evergreen wood fern, northern lady fern, and interrupted fern.							
BHFH-1	2.3	AR		G067- Moist, Coarse: Spruce-Fir conifer	N	5.1	Species was not observed in candidate habitat
BHFH-2	0.1		AR	G067- Moist, Coarse: Spruce-Fir conifer	N	5.3	Species was not observed in candidate habitat
BHFH-3	0.4		AR	G067- Moist, Coarse: Spruce-Fir conifer	N	5.3	Species was not observed in candidate habitat
BHFH-4	11.2	AR		G052-dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.3	Species was not observed in candidate habitat
BHFH-5	4.8	WT, WTL, AR		G052-dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.9	Species was not observed in candidate habitat
BHFH-7	8.6	AR		G052-dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.4	Species was not observed in candidate habitat
BHFH-9	9.6	CL	WTL, AR	G067- Moist, Coarse: Spruce-Fir conifer	N	5.6	Species was not observed in candidate habitat
BHFH-10	2.0	CL		G052-dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.4	Species was not observed in candidate habitat
BHFH-13	1.0	CL		G067- Moist, Coarse: Spruce-Fir conifer	N	5.7	Species was not observed in candidate habitat
BHFH-14	0.4	AR	WT, WTL		N	5.4	Species was not observed in candidate habitat
BHFH-15	1.3	AR		G052- dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.9	Species was not observed in candidate habitat
BHFH-16	2.3	AR	BO	G052-dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.9	Species was not observed in candidate habitat
BHFH-17	0.6		AR	G052- dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.9	Species was not observed in candidate habitat

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BHFH-18	0.5		AR	G052- dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.9	Species was not observed in candidate habitat
BHFH-19	3.6	AR		G067- Moist, Coarse: Spruce-Fir conifer	N	5.2	Species was not observed in candidate habitat
BHFH-20	0.8		AR	G052- dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.2	Species was not observed in candidate habitat
BHFH-21	1.1	AR		G067- Moist, Coarse: Spruce-Fir conifer	N	5.3	Species was not observed in candidate habitat
BHFH-25	0.5	CL			N	5.4	Species was not observed in candidate habitat
BHFH-26	0.5	CL	WT, WTL, AR	G067- Moist, Coarse: Spruce-Fir conifer	N	5.6	Species was not observed in candidate habitat
BHFH-27	3.0	CL		G067- Moist, Coarse: Spruce-Fir conifer	N	5.6	Species was not observed in candidate habitat
BHFH-28	4.1	CL		G067- Moist, Coarse: Spruce-Fir conifer	N	5.6	Species was not observed in candidate habitat
BHFH-29	4.8	AR		G067- Moist, Coarse: Spruce-Fir conifer	N	5.1	Species was not observed in candidate habitat
BHFH-30	4.1		AR	G052- dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.1	Species was not observed in candidate habitat
BHFH-32	6.8	CL, BU		G067- Moist, Coarse: Spruce-Fir conifer	N	5.4	Species was not observed in candidate habitat
BHFH-33	3.1	CL		G067- Moist, Coarse: Spruce-Fir conifer	N	5.6	Species was not observed in candidate habitat
BHFH-34	6.5	CL		G052- dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.6	Species was not observed in candidate habitat
BHFH-35	0.4	CL			N	5.6	Species was not observed in candidate habitat
BHFH-36	9.5	CL		G052- dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.7	Species was not observed in candidate habitat
BHFH-38	0.2	CL		G067- Moist, Coarse: Spruce-Fir conifer	N	5.6	Species was not observed in candidate habitat

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BHFH-39	3.4	CL		G067- Moist, Coarse: Spruce-Fir conifer	N	5.7	Species was not observed in candidate habitat
BHFH-40	5.4	CL	BU	G058-Dry to Fresh, Coarse: Maple Hardwood	Y	6.4	Species was observed in candidate habitat
BHFH-42	2.8	CL		G058- Dry to Fresh, Coarse: Maple Hardwood, G014-	Y	6.4	Species was observed in candidate habitat
BHFH-43	0.0	BU	AR	G058-Dry to Fresh, Coarse: Maple Hardwood	Y	6.9	Species was observed in candidate habitat
BHFH-44	2.2	CL	WT, WTL, AR	G058-Dry to Fresh, Coarse: Maple Hardwood	Y	6.4	Species was observed in candidate habitat
<b>Blue Wild Rye Habitat</b>							
General Habitat Description: Blue wild rye may occur on sites with moist to dry soil in meadows, thickets, and open woods (Reznicek <i>et al.</i> , 2011, Flora of N.A. Editorial committee, 1993).							
BWRH-1	0.5	AR		G045-Dry to Fresh, Coarse: Red Pine-White Pine Mixedwood	N	5.1	Species was not observed in candidate habitat
BWRH-2	1.6		AR	G059-Dry to Fresh, Coarse: Mixedwood	N	5.1	Species was not observed in candidate habitat
BWRH-3	4.4		AR, BO	G047-Dry to Fresh: Coarse Shrub	N	5.3	Species was not observed in candidate habitat
BWRH-5	9.5	BU		G059-Dry to Fresh, Coarse, Jack Pine-Black Spruce Dominated	N	5.8	Species was not observed in candidate habitat
BWRH-6	3.4		BO		N	5.3	Species was not observed in candidate habitat
BWRH-7	0.1	CL		G045-Dry to Fresh, Coarse: Red Pine-White Pine Mixedwood	N	5.4	Species was not observed in candidate habitat
BWRH-8	1.1	WT, WTL, CL		G047-Dry to Fresh: Coarse Shrub	N	5.5	Species was not observed in candidate habitat
BWRH-9	1.1	WT, WTL, CL		G047-Dry to Fresh: Coarse Shrub	N	5.6	Species was not observed in candidate habitat
<b>Canada Warbler Habitat</b>							
General Habitat Description: The Canada Warbler is an interior forest species occupying dense, mixed coniferous or deciduous forests with closed canopy, especially wet bottomlands of cedar or alder; and shrubby undergrowth in cool moist mature woodlands with riparian habitats. The Canada Warbler usually requires at least 30 ha of interior forest habitat (MNR, 2000a).							

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CWH-1	2.3	AR		G067- Moist, Coarse: Spruce-Fir conifer	A	6.1	Survey insufficient to determine significance
CWH-3	3.4	AR		SWET-60; G129- Organic Rich Conifer Swamp; G067- Moist, Coarse: Spruce-Fir conifer	A	6.1	Survey insufficient to determine significance
CWH-6	0.6		WT, WTL, AR, CL	SWET-13; G129- Organic Rich Conifer Swamp	A	6.9	
CWH-8	0.5		WT, WTL, AR	SWET-16; G129- Organic Rich Conifer Swamp	A	6.9	
CWH-9	1		WT, WTL, AR	SWET-17; G129- Organic Rich Conifer Swamp	A	6.9	
CWH-10	0.2		WT, WTL, CL	SWET-21; G129- Organic Rich Conifer Swamp	A	6.5	
CWH-11	0.4	CL	WT, WTL	SWET-22; G129- Organic Rich Conifer Swamp	Y	6.5	PC5, Transect3: Canada Warbler-observed singing
CWH-12	0.1		WT, WTL, AR, CL	SWET-25;	A		
CWH-15	1	CL		G067- Moist, Coarse: Spruce-Fir conifer	A	6.7	Survey insufficient to determine significance
CWH-18	0.4	AR	WT, WTL	G067- Moist, Coarse: Spruce-Fir conifer	Y	6.9	2PC4, 2T2-Canada Warbler singing, 2T3-Canada Warbler singing
CWH-20	0.2		WT, WTL, AR	SWET-39;	A		
CWH-21	2.6	AR		SWET-41; G129- Organic Rich Conifer Swamp; G067- Moist, Coarse: Spruce-Fir conifer	A	6.2	Survey insufficient to determine significance
CWH-22	1.1	AR		G067- Moist, Coarse: Spruce-Fir conifer	A	6.3	Survey insufficient to determine significance
CWH-23	0.4		WT, WTL, CL	G067- Moist, Coarse: Spruce-Fir conifer	A	5.4	Survey insufficient to determine significance
CWH-24	0.6	CL	WT, WTL	SWET-44; G129- Organic Rich Conifer Swamp	N	6.5	Trans8, Trans7, PC15: none observed
CWH-25	0.2		WT, WTL, AR	SWET-45;	A		
CWH-28	0.5	CL		G067- Moist, Coarse: Spruce-Fir conifer	N	6.4	2Trans11, 2PC16: none observed

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CWH-29	3	CL		SWET-48; G129-Organic Rich Conifer Swamp; G067- Moist, Coarse: Spruce-Fir conifer	A	6.6	Survey insufficient to determine significance
CWH-30	7.6	CL		SWET-4; G129-Organic Rich Conifer Swamp; G067- Moist, Coarse: Spruce-Fir conifer	Y	6.6	2PC20: Canada warbler observed singing
CWH-31	0.5	CL	WT, WTL, AR	G067- Moist, Coarse: Spruce-Fir conifer	N	6.6	2PC11, 2Trans9: none observed
CWH-35	1.5	CL		G067- Moist, Coarse: Spruce-Fir conifer	A	6.6	Survey insufficient to determine significance
CWH-36	3.5	CL		G067- Moist, Coarse: Spruce-Fir conifer	A	6.6	Survey insufficient to determine significance
CWH-39	8.2	CL, BU		SWET-3; G067- Moist, Coarse: Spruce-Fir conifer	A	6.4	Survey insufficient to determine significance
CWH-40	0.4	CL		G067- Moist, Coarse: Spruce-Fir conifer	A	6.6	Survey insufficient to determine significance
<b>Moose Aquatic Feeding Area</b>							
General Habitat Description: Aquatic feeding habitats are an extremely important habitat component for Moose and other wildlife as they supply important nutrients. Habitat may be found in all forested ecosites adjacent to water.							
MAFA-1	28.5	CL	WT, WTL	SWET-2; G052-dry to Fresh, Coarse: Spruce-Fir Conifer, G055-Dry to Fresh, Coarse: Aspen-Birch Hardwood, G135 Organic Thicket Swamp -, G149--Organic Shallow Marsh. This open aquatic area includes a number of communities and features which may indicate suitable moose aquatic feeding area habitat. It is bordered by a treed conifer community and includes shallow marsh communities.	A	6.5	Identified outside of appropriate habitat survey window. Commit to habitat use study in EIS.
<b>Marsh Bird Breeding Habitat</b>							
General Habitat Description: Wetlands for marsh bird species are very productive and rare in Central Ontario landscapes. Nesting occurs in wetlands and all wetland habitats are to be considered as long as there is shallow water with emergent aquatic vegetation.							
MBBH-8	0.2		WT, WTL, CL	SWET-24; G149-Organic Shallow Marsh	A	6.4	Survey insufficient to confirm significance



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MBBH-9	0.4		WT, WTL, CL, AR	SWET-27; G144-Organic Meadow Marsh	A	6.6	Survey insufficient to confirm significance
<b>Mountain Fir-moss Habitat</b>							
General Habitat Description: Mountain fir-moss may occur on damp, acidic, igneous rocks in alpine zone or exposed cliffs and talus slopes elsewhere, and along coast of Lake Superior. (Reznicek <i>et al.</i> , 2011, Flora of N.A. Editorial committee, 1993).							
MFH-1	19.9	BU		G058-Dry to Fresh, Coarse: Maple Hardwood	N	5.3	Species was not observed in candidate habitat
MFH-2	1.9	CL		G058-Dry to Fresh, Coarse: Maple Hardwood	N	5.7	Species was not observed in candidate habitat
MFH-3	0.8		AR	G058-Dry to Fresh, Coarse: Maple Hardwood	N	5.2	Species was not observed in candidate habitat
MFH-4	0.2	AR		G052-dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.3	Species was not observed in candidate habitat
MFH-5	0.8		AR	G058-Dry to Fresh, Coarse: Maple Hardwood	N	5.3	Species was not observed in candidate habitat
MFH-6	7.9	AR		G058-Dry to Fresh, Coarse: Maple Hardwood	N	5.3	Species was not observed in candidate habitat
MFH-11	0.5	CL		G058-Dry to Fresh, Coarse: Maple Hardwood	N	5.7	Species was not observed in candidate habitat
<b>Oval-leaved Bilberry Habitat</b>							
General Habitat Description: Oval-leaved bilberry may be present in moist coniferous woods, transitional habitats adjacent to coniferous stands, cut-over coniferous woods, verges of road cuts, or mixed woods (Reznicek <i>et al.</i> , 2011, Flora of N.A. Editorial committee, 1993). Suitable habitat is located in ELC communities G070, G067, G224, and G129.							
OBH-1	2.3	AR		G067- Moist, Coarse: Spruce-Fir conifer	N	5.1	Species was not observed in candidate habitat
OBH-2	0.1		AR	G067- Moist, Coarse: Spruce-Fir conifer	N	5.3	Species was not observed in candidate habitat
OBH-3	0.4		AR	G067- Moist, Coarse: Spruce-Fir conifer	N	5.3	Species was not observed in candidate habitat
OBH-11	1.1		AR	SWET-23	N	5.5	Species was not observed in candidate habitat
OBH-13	0.4		WT, WTL, AR, CL	SWET-27	N	5.6	Species was not observed in candidate habitat

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OBH-16	1.0	CL		G067- Moist, Coarse: Spruce-Fir conifer	N	5.7	Species was not observed in candidate habitat
OBH-19	0.4	AR	WT, WTL	G067- Moist, Coarse: Spruce-Fir conifer	N	5.9	Species was not observed in candidate habitat
OBH-20	0.5		AR	SWET-10; G144- Organic Meadow Marsh	N	5.9	Species was not observed in candidate habitat
OBH-23	0.2		AR	SWET-9	N	5.9	Species was not observed in candidate habitat
OBH-25	1.1	AR		G067- Moist, Coarse: Spruce-Fir conifer	N	5.3	Species was not observed in candidate habitat
OBH-31	0.5	CL		G067- Moist, Coarse: Spruce-Fir conifer	N	5.4	Species was not observed in candidate habitat
OBH-34	0.5	CL	WT, WTL, AR	G067- Moist, Coarse: Spruce-Fir conifer	N	5.6	Species was not observed in candidate habitat
OBH-39	3.0	CL		G067- Moist, Coarse: Spruce-Fir conifer	N	5.6	Species was not observed in candidate habitat
OBH-40	4.1	CL		G067- Moist, Coarse: Spruce-Fir conifer	N	5.6	Species was not observed in candidate habitat
OBH-45	0.4	CL		G067- Moist, Coarse: Spruce-Fir conifer	N	5.6	Species was not observed in candidate habitat
OBH-49	3.4	CL		G067- Moist, Coarse: Spruce-Fir conifer	N	5.7	Species was not observed in candidate habitat
OBH-50	0.6	CL		G067- Moist, Coarse: Spruce-Fir conifer	N	5.7	Species was not observed in candidate habitat
OBH-51	1.9	WT, WTL, AR		G058- Dry to Fresh, Coarse: Maple Hardwood	Y	6.9	Species was observed in candidate habitat
OBH-52	0.1	BU, AR		G058- Dry to Fresh, Coarse: Maple Hardwood	Y	5.9	Species was observed in candidate habitat
OBH-53	0.2	AR		G058- Dry to Fresh, Coarse: Maple Hardwood	Y	6.9	Species was observed in candidate habitat
OBH-54	0.6	AR		G058- Dry to Fresh, Coarse: Maple Hardwood	Y	6.9	Species was observed in candidate habitat

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OBH-55	0.2	AR	WTL	G058- Dry to Fresh, Coarse: Maple Hardwood	Y	6.9	Species was observed in candidate habitat
OBH-56	0.3	WT, WTL, AR		G058- Dry to Fresh, Coarse: Maple Hardwood	Y	6.9	Species was observed in candidate habitat
OBH-57	0.3		WT, WTL, AR	G058- Dry to Fresh, Coarse: Maple Hardwood	Y	6.9	Species was observed in candidate habitat
OBH-59	0.2	CL			Y	5.9	Species was observed in candidate habitat
OBH-61	0.2	CL		G058- Dry to Fresh, Coarse: Maple Hardwood	Y	6.6	Species was observed in candidate habitat
OBH-63	0.1	CL		G058- Dry to Fresh, Coarse: Maple Hardwood	Y	6.5	Species was observed in candidate habitat
OBH-65	0.0	CL			Y	6.4	Species was observed in candidate habitat
OBH-66	0.2	CL		G058- Dry to Fresh, Coarse: Maple Hardwood	Y	6.4	Species was observed in candidate habitat
OBH-67	0.1	CL			Y	6.4	Species was observed in candidate habitat
OBH-68	0.5	AR		G058- Dry to Fresh, Coarse: Maple Hardwood	Y	6.4	Species was observed in candidate habitat
OBH-69	0.6		WT, WTL, AR, CL	SWET-13; G129- Organic Rich Conifer Swamp	Y	6.9	Species was observed in candidate habitat
OBH-70	0.1		AR	SWET-15	Y		Species was observed in candidate habitat
OBH-71	0.5		WT, WTL, AR	SWET-16	Y	6.9	Species was observed in candidate habitat
OBH-72	1.0		WT, WTL, AR	SWET-17; G129- Organic Rich Conifer Swamp	Y	6.9	Species was observed in candidate habitat
OBH-73	0.2	CL	WT, WTL	SWET-21	Y	6.5	Species was observed in candidate habitat
OBH-75	0.1		WT, WTL, AR, CL	SWET-25	Y	6.4	Species was observed in candidate habitat
OBH-78	0.2		AR	SWET-35	Y	6.9	Species was observed in candidate habitat
OBH-79	0.4		AR	SWET-36	Y	6.9	Species was observed in candidate habitat
OBH-80	0.2		AR, BU	SWET-38	Y	6.9	Species was observed in candidate habitat

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OBH-81	0.3		WT, WTL, AR	SWET-39	Y	6.9	Species was observed in candidate habitat
OBH-82	1.0		AR	SWET-40	Y	6.1	Species was observed in candidate habitat
OBH-83	0.8		AR	SWET-41; G129-Organic Rich Conifer Swamp	Y	6.2	Species was observed in candidate habitat
OBH-85	0.2		WT, WTL, AR	SWET-45; G129-Organic Rich Conifer Swamp	Y		Species was observed in candidate habitat
OBH-86	0.6		CL, AR	SWET-46; G129-Organic Rich Conifer Swamp	Y		Species was observed in candidate habitat
OBH-87	0.3	CL		SWET-48; G129-Organic Rich Conifer Swamp	Y	6.6	Species was observed in candidate habitat
OBH-88	0.3	CL		SWET-4; G129- Organic Rich Conifer Swamp	Y	6.6	Species was observed in candidate habitat
OBH-94	1.1	AR		SWET-60; G129-Organic Rich Conifer Swamp	Y	6.1	Species was observed in candidate habitat
OBH-95	4.9		BU, CL	SWET-3; G067- Moist, Coarse: Spruce-Fir conifer	Y	6.4	Species was observed in candidate habitat
OBH-96	0.5		AR, CL	SWET-63	Y	6.6	Species was observed in candidate habitat
OBH-98	0.9		AR, BO	SWET-8; G129- Organic Rich Conifer Swamp	Y	6.9	Species was observed in candidate habitat
<b>Olive-sided Flycatcher Habitat</b>							
General Habitat Description: The Olive-sided Flycatcher prefers semi-open, conifer forest, particularly spruce forests near ponds, lakes or rivers. Burns with dead trees for perching are also important components of their habitat (MNR, 2000a). Typically the Olive-sided Flycatcher breeds in the boreal forest, where it uses coniferous trees to support its cup-shaped nest (Cadman <i>et al.</i> , 2007).							
OFH-1	2	CL		G052-dry to Fresh, Coarse: Spruce-Fir Conifer	A	6.4	Survey insufficient to confirm significance
OFH-4	6.5	CL		G052-dry to Fresh, Coarse: Spruce-Fir Conifer	A	6.6	Survey insufficient to confirm significance
OFH-5	11.2	AR		G052-dry to Fresh, Coarse: Spruce-Fir Conifer	A	6.3	Survey insufficient to confirm significance
OFH-6	8.6	AR		G052-dry to Fresh, Coarse: Spruce-Fir Conifer	A	6.4	Survey insufficient to confirm significance
OFH-12	2.3	AR	BO	G052-dry to Fresh, Coarse: Spruce-Fir Conifer	N	6.9	2T6: No Olive-sided flycatcher observed

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OFH-13	8.9	CL		G052-dry to Fresh, Coarse: Spruce-Fir Conifer	A	6.7	Survey insufficient to confirm significance
<b>Quill Spike-rush Habitat</b>							
General Habitat Description: Quill spike-rush habitat includes moist, sandy bare depressions in Jack pine stands. (Voss <i>et al.</i> , 2012).							
QSH-1	0.9		AR	G148-mineral Shallow Marsh	N	5.3	Species was not observed in candidate habitat
QSH-2	0.4		AR	G152- Open Water Marsh: Organic	N	5.9	Species was not observed in candidate habitat
QSH-9	0.4		AR, WT, WTL, CL		N	5.6	Species was not observed in candidate habitat
QSH-10	0.2		AR	G149-Organic Shallow Marsh	N	5.9	Species was not observed in candidate habitat
QSH-11	0.5		AR	G149-Organic Shallow Marsh	N	5.9	Species was not observed in candidate habitat
QSH-12	0.5		AR	G144-Organic Meadow Marsh	N	5.9	Species was not observed in candidate habitat
QSH-13	1		BO, AR	G144-Organic Meadow Marsh	N	5.9	Species was not observed in candidate habitat
QSH-14	0.4		AR	G144-Organic Meadow Marsh	N	5.9	Species was not observed in candidate habitat
QSH-15	0.2		AR	G149-Organic Shallow Marsh	N	5.9	Species was not observed in candidate habitat
QSH-22	0.9		AR, BO	G129Tt-Organic Rich Conifer Swamp	N	5.9	Species was not observed in candidate habitat
<b>Seeps and Springs</b>							
General Habitat Description: Seeps/Springs are areas of emergence of groundwater where the water table is present at the ground surface. Often they are found within headwater areas within forested habitats. Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system could have seeps or springs. Seeps provide important feeding drinking areas for wildlife, especially during winter, and may provide habitat rare plant species, such as Boreal Bedstraw.							
SEEP-1	n/a		WT, WTL, CL	G058-Dry to Fresh, Coarse: Maple Hardwood; Seep associated with intermittent watercourse. Reach 10-1		6.5	

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SEEP-2	n/a		CL	G058-Dry to Fresh, Coarse: Maple Hardwood; One from three seeps (with SEEP-3 and SEEP-31) originating from a steep slope and contributing to a permanent watercourse. Reach 10-5		6.5	
SEEP-3	n/a			G058-Dry to Fresh, Coarse: Maple Hardwood; One from three seeps (with SEEP-2 and SEEP-31) originating from a steep slope and contributing to a permanent watercourse. Reach 10-5,6,7		6.5	Stantec confirmed seep of groundwater origin.
SEEP-4	n/a		WT, WTL, AR	G058-Dry to Fresh, Coarse: Maple Hardwood; One of two seeps (with SEEP-5) contributing to a permanent watercourse. Reach 10-10		6.4	Stantec confirmed seep of groundwater origin.
SEEP-5	n/a		AR	G058-Dry to Fresh, Coarse: Maple Hardwood; One of two seeps (with SEEP-4) contributing to a permanent watercourse. Reach 10-10		6.4	Stantec confirmed seep of groundwater origin.
SEEP-6	n/a		CL	G058-Dry to Fresh, Coarse: Maple Hardwood; Seep contributing to a permanent watercourse. Reach 10-17		6.4	Stantec confirmed seep of groundwater origin.
SEEP-7	n/a		CL	G058-Dry to Fresh, Coarse: Maple Hardwood; Seep originates from a steep slope, and contributes to a permanent watercourse. Reach 10-19		6.4	Stantec confirmed seep of groundwater origin.
SEEP-8	n/a			G058- Dry to Fresh, Coarse: Maple Hardwood; Reach 10-30		6.4	Stantec confirmed seep of groundwater origin.

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SEEP-9	n/a		CL	G142-Mineral Meadow Marsh; Seep contributes to permanent watercourse. Reach 11-4		6.5	Stantec confirmed seep of groundwater origin.
SEEP-10	n/a			G058-Dry to Fresh, Coarse: Maple Hardwood		6.5	Stantec confirmed seep of groundwater origin.
SEEP-11	n/a		AR	G067-Moist, Coarse: Spruce-Fir Conifer; Seep contributes to intermittent watercourse. Reach 9B-2		6.3	Stantec confirmed seep of groundwater origin.
SEEP-13	n/a			G058-Dry to Fresh, Coarse: Maple Hardwood; Seep contributes to intermittent watercourse. Reach 1-3		6.5	Stantec confirmed seep of groundwater origin.
SEEP-14	n/a			G058-Dry to Fresh, Coarse: Maple Hardwood		6.5	Stantec confirmed seep of groundwater origin.
SEEP-16	n/a			G129-Organic Rich Conifer Swamp; SWET-47; Seep contributes to intermittent watercourse. Outside ZOI, but within 150m of Project Location. Reach 7-10		6.5	Stantec confirmed seep of groundwater origin.
SEEP-17	n/a			G058-Dry to Fresh, Coarse: Maple Hardwood; Outside ZOI, but within 150m of Project Location.		6.4	Stantec confirmed seep of groundwater origin.
SEEP-18	n/a			G058-Dry to Fresh, Coarse: Maple Hardwood; Outside ZOI, but within 150m of Project Location.		6.4	Stantec confirmed seep of groundwater origin.
SEEP-19	n/a		CL, BU	G058-Dry to Fresh, Coarse: Maple Hardwood; Seep contributes to intermittent watercourse. Reach 7-10		6.4	Stantec confirmed seep of groundwater origin.

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SEEP-20	n/a		CL, BU	G058-Dry to Fresh, Coarse: Maple Hardwood; Seep contributes to intermittent watercourse. Reach 7-10		6.4	Stantec confirmed seep of groundwater origin.
SEEP-21	n/a		CL	G058-Dry to Fresh, Coarse: Maple Hardwood; Seep contributes to intermittent watercourse. Reach 7-11		6.4	Stantec confirmed seep of groundwater origin.
SEEP-22	n/a		CL, BU	G058-Dry to Fresh, Coarse: Maple Hardwood; Seep originates from end of a rocky ridge, and contributes to a permanent watercourse. Reach 7-12		6.4	Stantec confirmed seep of groundwater origin.
SEEP-23	n/a			G058-Dry to Fresh, Coarse: Maple Hardwood; Seep originates from end of a rocky ridge, and contributes to a permanent watercourse. Reach 7-13		6.4	Stantec confirmed seep of groundwater origin.
SEEP-24	n/a		BU	G058-Dry to Fresh, Coarse: Maple Hardwood; Seep contributes to an intermittent watercourse. Reach 7-14		6.4	Stantec confirmed seep of groundwater origin.
SEEP-25	n/a		BU	G058-Dry to Fresh, Coarse: Maple Hardwood; Seep contributes to a permanent watercourse. Reach 7-15		6.4	Stantec confirmed seep of groundwater origin.
SEEP-26	n/a		BU	G058-Dry to Fresh, Coarse: Maple Hardwood; Seep contributes to a permanent watercourse. Reach 7-15		6.4	Stantec confirmed seep of groundwater origin.



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SEEP-27	n/a		CL	G058-Dry to Fresh, Coarse: Maple Hardwood; Seep contributes to a permanent watercourse. Reach 7-16		6.4	Stantec confirmed seep of groundwater origin.
SEEP-28	n/a		CL, BU	G058-Dry to Fresh, Coarse: Maple Hardwood; Seep contributes to an intermittent watercourse. Reach 7-18		6.4	Stantec confirmed seep of groundwater origin.
SEEP-29	0.01 ha		CL	G058-Dry to Fresh, Coarse: Maple Hardwood; Isolated seep, 10m x 10m.		6.4	Stantec confirmed seep of groundwater origin.
SEEP-30	0.005 ha		CL	G058-Dry to Fresh, Coarse: Maple Hardwood; Isolated seep, 10m x 5m.		6.4	Stantec confirmed seep of groundwater origin.
SEEP-31	n/a		CL	G058-Dry to Fresh, Coarse: Maple Hardwood; One from three seeps (with SEEP-2 and SEEP-3) originating from a steep slope and contributing to a permanent watercourse. Reach 10-5		6.5	Stantec confirmed seep of groundwater origin.
SEEP-33	n/a		AR	G058-Dry to Fresh, Coarse: Maple Hardwood; Possible groundwater discharge at edge of permanent pond, identified due to iron staining. Reach 10-14		6.4	Stantec confirmed seep of groundwater origin.
SEEP-34	n/a		CL	G058-Dry to Fresh, Coarse: Maple Hardwood; Seep originating from side of steep slope, contributing to permanent watercourse. Unchannelized flow disappears underground before crossing McKay Road. Reach 10-28		6.4	Stantec confirmed seep of groundwater origin.

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SEEP-35	n/a			G058-Dry to Fresh, Coarse: Maple Hardwood; Seep contributes to a permanent watercourse. Reach 10-12		6.4	Stantec confirmed seep of groundwater origin.
SEEP-36	n/a		AR, WT, WTL	G058-Dry to Fresh, Coarse: Maple Hardwood; Seep contributes to a permanent watercourse. Reach 10-11		6.4	Stantec confirmed seep of groundwater origin.
SEEP-37	n/a		CL	G058-Dry to Fresh, Coarse: Maple Hardwood; Seep contributes to a permanent watercourse. Reach 10-3		6.5	Stantec confirmed seep of groundwater origin.
SEEP-38	n/a		CL	G058-Dry to Fresh, Coarse: Maple Hardwood; Candidate seep identified by MNR.		6.4	Unconfirmed groundwater origin.
SEEP-39	n/a			G058-Dry to Fresh, Coarse: Maple Hardwood; Candidate seep identified by MNR.		6.4	Unconfirmed groundwater origin.
SEEP-40	n/a		CL, WTL	G058-Dry to Fresh, Coarse: Maple Hardwood; Candidate seep identified by MNR.		6.4	Unconfirmed groundwater origin.
SEEP-41	n/a		CL, WT, WTL	G058-Dry to Fresh, Coarse: Maple Hardwood; Candidate seep identified by MNR.		6.5	Unconfirmed groundwater origin.
SEEP-42	n/a		WT, WTL, CL	G058-Dry to Fresh, Coarse: Maple Hardwood; Candidate seep identified by MNR.		6.5	Unconfirmed groundwater origin.
SEEP-43	n/a		CL, BU	G058-Dry to Fresh, Coarse: Maple Hardwood; Candidate seep identified by MNR.		6.4	Unconfirmed groundwater origin.
SEEP-44	n/a		CL	G058-Dry to Fresh, Coarse: Maple Hardwood; Candidate seep identified by MNR.		6.5	Unconfirmed groundwater origin.
SEEP-45	n/a			G058-Dry to Fresh, Coarse: Maple Hardwood; Candidate seep identified by MNR.		6.4	Unconfirmed groundwater origin.

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<b>Table 6: Natural Heritage Features and Evaluation of Significance</b>							
<b>Feature ID</b>	<b>Size (ha)<sup>1</sup></b>	<b>Overlap with Project Components<sup>2</sup></b>	<b>Within 120m of Project Components</b>	<b>Composition and Attributes</b>	<b>Significant (Y / N / A)<sup>3</sup></b>	<b>Figure #</b>	<b>EOS Results</b>
SEEP-46	n/a		CL	G058-Dry to Fresh, Coarse: Maple Hardwood; Candidate seep identified by MNR.		6.4	Unconfirmed groundwater origin.
SEEP-47	n/a			G058-Dry to Fresh, Coarse: Maple Hardwood; Confirmed seep identified by MNR.		6.5	Unconfirmed groundwater origin.
SEEP-48			WT, WTL, CL	G058-Dry to Fresh, Coarse: Maple Hardwood; Confirmed seep identified by MNR. Confirmed Boreal Bedstraw habitat.			Stantec confirmed seep of groundwater origin.
<b>Reptile Hibernacula (Snakes)</b>							
General Habitat Description: For all snakes, habitat may be found in any forested ecosite in Central Ontario other than very wet ones. The following Community Types may be directly related to snake hibernacula: Talus, Rock Barren, Crevice, Cave, and Alvar. Hibernation occurs in sites located below frost lines in burrows, rock crevices, broken and fissured rock and other natural features.							
SH-2	0.3		WT, WTL, CL	G058-Dry to Fresh, Coarse: Maple Hardwood, rock face, 5m tall by 20m wide	A	6.5	Identified outside of appropriate habitat survey window. Commit to habitat use study in EIS.
SH-4	0.3		WT, WTL, CL	G058-Dry to Fresh, Coarse: Maple Hardwood, rock face, approximately 10m tall	A	6.5	Identified outside of appropriate habitat survey window. Commit to habitat use study in EIS.
SH-8	0.3	WT, WTL	CL	G058-Dry to Fresh, Coarse: Maple Hardwood, south-facing rock face.	A	6.6	Identified outside of appropriate habitat survey window. Commit to habitat use study in EIS.
SH-9	0.3		WT, WTL, AR, CL	G058-Dry to Fresh, Coarse: Maple Hardwood, south facing exposed bedrock with cracks	A	6.6	Identified outside of appropriate habitat survey window. Commit to habitat use study in EIS.
SH-11	0.3	CL		G058-Dry to Fresh, Coarse: Maple Hardwood, rotting stump with holes leading underground	A	6.5	Identified outside of appropriate habitat survey window. Commit to habitat use study in EIS.

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<b>Wetland</b>							
SWET-1	1.6		CL	G149-Organic Shallow Marsh, G135- Organic Thicket Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.5	
SWET-2	0.8		CL	G135-Organic Thicket Swamp, G149-Organic Shallow Marsh. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.4	
SWET-3	6.4		BU, CL	G224-Mineral Rich Conifer Swamp, G134-Mineral Thicket Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.4	
SWET-4	2.4		CL	G139-Poor Fen, G136-Sparse Treed Fen, G129-Organic Rich Conifer Swamp. Wetland evaluated by NRSI – part of Bullseye Wetland Complex	Y	4.6	
SWET-5	3.8		CL	G135-Organic Thicket Swamp. Wetland evaluated by NRSI – part of Bow Lake Wetland Complex	N	4.7	
SWET-6	1.3		CL	G135-Organic Thicket Swamp. Wetland evaluated by NRSI – part of Bow Lake Wetland Complex	N	4.7	
SWET-7	3.3		CL	G135-Organic Thicket Swamp. Wetland evaluated by NRSI – part of Bow Lake Wetland Complex	N	4.7	
SWET-8	7.9		AR	G135-Organic Thicket Swamp, G144- Organic Meadow Marsh, G129-Organic Rich Conifer Swamp. Wetland evaluated by NRSI – part of Moose Antler Wetland Complex.	N	4.9	

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SWET-9	0.6		AR	G149-Organic Shallow Marsh, G144- Organic Meadow Marsh. Identified by Stantec. See Table 7 for wetland function.	Y	4.9	
SWET-10	1		AR	G149-Organic Shallow Marsh, G144- Organic Meadow Marsh. Wetland evaluated by NRSI – part of Question Mark Wetland Complex.	N	4.9	
SWET-11	0.1		AR	G135-Organic Thicket Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.1	
SWET-12	0.9		AR	G148-Mineral Shallow Marsh. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.3	
SWET-13	0.6		WT, WTL, CL, AR	G129-Organic Rich Conifer Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.9	
SWET-14	0.4		AR	G149-Organic Shallow Marsh. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.9	
SWET-15	0.1		AR	G129-Organic Rich Conifer Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.9	
SWET-16	0.5		WT, WTL, AR	G129-Organic Rich Conifer Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.9	
SWET-17	1		WT, WTL, AR	G129-Organic Rich Conifer Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.9	
SWET-19	0.7		CL	G142-Mineral Meadow Marsh. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.5	

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SWET-20	0.1		CL	G134-Mineral Thicket Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.5	
SWET-21	0.2		WT, WTL, CL	G129-Organic Rich Conifer Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.5	
SWET-22	0.4		WT, WTL, CL	G129-Organic Rich Conifer Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.5	
SWET-23	1.1		AR	G144-Organic Meadow Marsh. Wetland evaluated by NRSI – part of Bear Paw Wetland Complex.	N	4.5	
SWET-24	0.2		WT, WTL, CL	G149-Organic Shallow Marsh. Wetland evaluated by NRSI – part of Bear Paw Wetland Complex.	N	4.4	
SWET-25	0.1		WT, WTL, CL, AR	G129-Organic Rich Conifer Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.4	
SWET-26	0.4		BU	G134-Mineral Thicket Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.4	
SWET-27	0.4		WT, WTL, CL, AR	G144-Organic Meadow Marsh. Wetland evaluated by NRSI – part of Bullseye Wetland Complex (PSW).	Y	4.6	
SWET-28	0.1		CL	G134-Mineral Thicket Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.6	Recommended for inclusion in Bullseye PSW complex.
SWET-29	0.1		CL	G129-Organic Rich Conifer Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.6	

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SWET-30	0.1		CL	G135-Organic Thicket Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.4	
SWET-31	0.5		CL	G129-Organic Rich Conifer Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.5	
SWET-32	0.4		CL	G146-Open Shore Fen. Wetland evaluated by NRSI – part of Bow Lake Wetland Complex.	N	4.7	
SWET-33	0.2		CL	G134-Mineral Thicket Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.7	
SWET-34	2		CL	G142-Mineral Meadow Marsh. Wetland evaluated by NRSI – part of Bow Lake Wetland Complex.	N	4.7	
SWET-35	0.2		AR	G129-Organic Rich Conifer Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.9	
SWET-36	0.4		AR	G129-Organic Rich Conifer Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.9	
SWET-37	0.2		AR	G149-Organic Shallow Marsh. Wetland evaluated by NRSI – part of Question Mark Wetland Complex.	N	4.9	
SWET-38	0.2		AR, BU	G129-Organic Rich Conifer Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.9	
SWET-39	0.3		WT, WTL, AR	G129-Organic Rich Conifer Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.9	

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SWET-40	1		AR	G129-Organic Rich Conifer Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.1	
SWET-41	0.8		AR	G129-Organic Rich Conifer Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.2	
SWET-43	2.3			G144-Organic Meadow Marsh. Wetland evaluated by NRSI – part of Bear Paw Wetland Complex.	N	4.4	
SWET-44	0.6		WT, WTL, CL	G129-Organic Rich Conifer Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.4	
SWET-45	0.2		WT, WTL, CL	G129-Organic Rich Conifer Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.5	
SWET-46	0.6		CL, AR	G129-Organic Rich Conifer Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.5	
SWET-48	0.3		CL	G129-Organic Rich Conifer Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.6	
SWET-50	0.8		CL	G129-Organic Rich Conifer Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.6	Recommended for inclusion in Bullseye PSW complex.
SWET-51	0.9		CL	G129-Organic Rich Conifer Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.6	
SWET-52	0.5		CL	G144-Organic Meadow Marsh. Wetland evaluated by NRSI – part of Bullseye Wetland Complex (PSW).	Y	4.6	



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SWET-53	0.2		CL	G134-Mineral Thicket Swamp. Wetland evaluated by NRSI – part of Bullseye Wetland Complex (PSW).	Y	4.6	
SWET-54	0.7		CL	G129-Organic Rich Conifer Swamp. Wetland evaluated by NRSI – part of Bow Lake Wetland Complex.	N	4.7	
SWET-55	1.9		CL	G134-Mineral Thicket Swamp. Wetland evaluated by NRSI – part of Bow Lake Wetland Complex.	N	4.6	
SWET-56	0.8		CL	G129-Organic Rich Conifer Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.7	
SWET-57	1.1		CL	G134-Mineral Thicket Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.7	
SWET-58	0.9		AR	G134-Mineral Thicket Swamp. Wetland evaluated by NRSI – part of Moose Antler Wetland Complex.	N	4.9	
SWET-59	0.3		CL	G135-Organic Thicket Swamp. Wetland evaluated by NRSI – part of Bow Lake Wetland Complex.	N	4.7	
SWET-60	1.1		AR	G129 G129-Organic Rich Conifer Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.1	
SWET-62	0.4		CL	G144-Organic Meadow Marsh. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.6	
SWET-63	0.5		CL	G129-Organic Rich Conifer Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.7	

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SWET-64	3.6		CL	G129-Organic Rich Conifer Swamp. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.7	
SWET-65	0.1		CL	ELC completed by Tulloch. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.6	
SWET-66	0.2		CL	ELC completed by Tulloch. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.6	
SWET-67	0.1		CL	ELC completed by Tulloch. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.6	
SWET-68	0.4		AR	G142-Mineral Meadow Marsh. Identified by Stantec. See Table 7 for wetland assessment.	Y	4.9	
<b>Turtle Overwintering Area</b>							
Suitable habitat for overwintering turtles includes open aquatic features with a muck bottom which do not freeze solid during the winter. This feature meets these conditions and may be suitable habitat for overwintering turtles.							
TWA-1	0.03		AR	OA >1m in depth, with muck bottom	A	6.4	Identified outside of appropriate habitat survey window. Commit to habitat use study in EIS.
TWA-4	2.1		AR, BO	OA >1m in depth, with muck bottom	A	6.9	Identified outside of appropriate habitat survey window. Commit to habitat use study in EIS.
TWA-7	5		AR	OA >1m in depth, with muck bottom	A	6.9	Identified outside of appropriate habitat survey window. Commit to habitat use study in EIS.
<b>Woolly Beach Heath Habitat</b>							
General Habitat Description: Woolly beach heath may occur on sandy or silty beaches, on sand plains, or in sandy jack pine woods and clearings (Reznicek <i>et al.</i> 2011, Flora of N.A. Editorial committee, 1993).							
WBHH-1	33.6	BU		G049-Dry to Fresh, Coarse, Jack Pine-Black Spruce Dominated	N	5.8	Species was not observed in candidate habitat
WBHH-3	16.7	BU		G049-Dry to Fresh, Coarse, Jack Pine-Black Spruce Dominated	N	5.8	Species was not observed in candidate habitat

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<b>Waterfowl Nesting Area</b>							
General Habitat Description: All upland habitats located adjacent to these wetland ELC Ecosites (G129-G135, G142-G152) may provide suitable waterfowl nesting habitat.							
WNA-2	22.5	CL	WT, WTL	SWET-1, SWET-19; G058-Dry to Fresh, Coarse: Maple Hardwood	A	6.5	No nesting waterfowl observed during aerial surveys. No waterfowl nesting noted during amphibian breeding surveys ABH-101 (May 1), ABH-201 (May 1), ABH-104 (May 2), AS-12 (May 9), AS-1 (June 16), AS-6 (June 17), breeding bird point count PC-20 (June 11), or during general ground surveys May 8 and June 7. Survey insufficient to confirm significance.
WNA-3	9	AR		SWET-9; G058-Dry to Fresh, Coarse: Maple Hardwood	A	6.9	No nesting waterfowl observed during aerial surveys. No waterfowl nesting noted during amphibian breeding survey 4b (May 9). Survey insufficient to confirm significance.
WNA-4	17.7	WT, WTL, CL		SWET-24, SWET-43; G144-Organic Meadow Marsh, G149-Organic Shallow Marsh	A	6.4	No nesting waterfowl observed during aerial surveys. Two aerial passes April 17. No observations noted during MKI amphibian breeding survey 206 on May 1. Survey insufficient to confirm significance.
WNA-5	11.4	AR		SWET-12; G148-mineral Shallow Marsh	A	6.3	No nesting waterfowl observed during aerial or ground surveys. Two aerial passes April 17, four ground passes April 18. Survey insufficient to confirm significance.
WNA-7	36.4	AR	BO	SWET-8; G058-Dry to Fresh, Coarse: Maple Hardwood, G052-dry to Fresh, Coarse: Spruce-Fir Conifer	A	6.9	PC4-wetland: 1 Mallard Survey insufficient to confirm significance.

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WNA-8	13.7	AR		SWET-10, SWET-37; G058-Dry to Fresh, Coarse: Maple Hardwood	A	6.9	PC3-wetland: 1 Hooded Merganser Survey insufficient to confirm significance.
WNA-9	10.7	AR	WT, WTL, CL	SWET-23; G058-Dry to Fresh, Coarse: Maple Hardwood	A	6.5	No nesting waterfowl observed during aerial surveys. No waterfowl nesting noted during MKI amphibian breeding survey ABH-207 (May 1) or ground survey (May 9). Assume significance.
WNA-10	9.2	CL		SWET-2; G058-Dry to Fresh, Coarse: Maple Hardwood	A	6.4	No nesting waterfowl observed during aerial survey April 17. No waterfowl nesting noted during amphibian call survey AS-16 (June 21) or breeding bird transect 2T12 (June 11). Survey insufficient to confirm significance.
WNA-11	9.1	CL		SWET-55; G067 Moist, Coarse: Spruce-Fir conifer, G058-Dry to Fresh, Coarse: Maple Hardwood	A	6.6	Survey insufficient to confirm significance.
WNA-13	6.3	CL	WT, WTL	SWET-30; G052-dry to Fresh, Coarse: Spruce-Fir Conifer	A	6.4	No waterfowl nesting noted during breeding bird transect 2T11 (June 11) or amphibian call survey 1a (May 9). Survey insufficient to confirm significance.
WNA-16	10.2	CL, BU		SWET-3; G067-Moist, Coarse: Spruce-Fir conifer	A	6.4	No nesting waterfowl observed during aerial survey April 17. Survey insufficient to confirm significance.

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WNA-18	15	CL	WT, WTL	SWET-52; G052, G058-Dry to Fresh, Coarse: Maple Hardwood	A	6.6	No nesting waterfowl observed during aerial survey April 17. Incidental observation of Hooded merganser and Common goldeneye pairs during ground survey (May 10, 12). No waterfowl nesting noted during breeding bird transect 2T9 (June 10). Survey insufficient to confirm significance.
<b>Woodland Pine Drops Habitat</b>							
General Habitat Description: Woodland pine drops are nearly always in habitats with conifers (especially pines but also hemlock, spruce, fir, white-cedar), in dry-mesic (usually sandy or rocky) soil, often with common juniper and sometimes aspen or birch (Reznicek <i>et al.</i> , 2011, Flora of N.A. Editorial committee, 1993).							
WPH-1	1	AR		G050-Dry to Fresh, Coarse: Pine-Black Spruce Conifer	N	5.1	Species was not observed in candidate habitat
WPH-2	11.2	AR		G052-dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.3	Species was not observed in candidate habitat
WPH-3	0.6		AR	G053-Dry to Fresh, Coarse: Conifer	N	5.4	Species was not observed in candidate habitat
WPH-4	0.7	CL	WT, WTL	G055-Dry to Fresh, Coarse: Aspen-Birch Hardwood	N	5.6	Species was not observed in candidate habitat
WPH-5	0.6	CL		G055-Dry to Fresh, Coarse: Aspen-Birch Hardwood	N	5.6	Species was not observed in candidate habitat
WPH-6	1.8	CL		G055-Dry to Fresh, Coarse: Aspen-Birch Hardwood	N	5.7	Species was not observed in candidate habitat
WPH-7	0.1		AR, CL	G055-Dry to Fresh, Coarse: Aspen-Birch Hardwood	N		Species was not observed in candidate habitat
WPH-8	4.8	WT, WTL, AR		G052-dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.9	Species was not observed in candidate habitat
WPH-9	1.8		AR	G050-Dry to Fresh, Coarse: Pine-Black Spruce Conifer	N	5.1	Species was not observed in candidate habitat
WPH-10	8.6	AR		G052-dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.4	Species was not observed in candidate habitat

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<b>Table 6: Natural Heritage Features and Evaluation of Significance</b>							
<b>Feature ID</b>	<b>Size (ha)<sup>1</sup></b>	<b>Overlap with Project Components<sup>2</sup></b>	<b>Within 120m of Project Components</b>	<b>Composition and Attributes</b>	<b>Significant (Y / N / A)<sup>3</sup></b>	<b>Figure #</b>	<b>EOS Results</b>
WPH-13	0.2		AR, WT, WTL, CL		N	missing	Species was not observed in candidate habitat
WPH-14	1.8		AR, WTL, CL		N	missing	Species was not observed in candidate habitat
WPH-16	2	CL		G052-dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.4	Species was not observed in candidate habitat
WPH-19	3.3		AR, WT, WTL, CL		N	missing	Species was not observed in candidate habitat
WPH-20	1.3	AR		G052-dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.9	Species was not observed in candidate habitat
WPH-21	2.3	AR		G052-dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.9	Species was not observed in candidate habitat
WPH-22	0.6		AR	G052-dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.9	Species was not observed in candidate habitat
WPH-23	0.5		AR	G052-dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.9	Species was not observed in candidate habitat
WPH-24	2.4		AR	G033-Dry, Sandy: Red Pine-white Pine Conifer	N	5.1	Species was not observed in candidate habitat
WPH-25	0.8		AR	G052-dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.2	Species was not observed in candidate habitat
WPH-28	2.5	CL	WT, WTL, AR	G055-Dry to Fresh, Coarse: Aspen-Birch Hardwood	N	5.7	Species was not observed in candidate habitat
WPH-30	4.1		AR	G052-dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.1	Species was not observed in candidate habitat
WPH-31	0.4		AR		N	missing	Species was not observed in candidate habitat
WPH-32	2.7	CL, BU		G052-dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.4	Species was not observed in candidate habitat
WPH-33	6.5	CL		G052-dry to Fresh, Coarse: Spruce-Fir Conifer	N	5.6	Species was not observed in candidate habitat

**BOW LAKE WIND FARM****NATURAL HERITAGE ASSESSMENT AND ENVIRONMENTAL IMPACT STUDY****APPENDIX B: Tables**

January 2013

<b>Table 6: Natural Heritage Features and Evaluation of Significance</b>							
<b>Feature ID</b>	<b>Size (ha)<sup>1</sup></b>	<b>Overlap with Project Components<sup>2</sup></b>	<b>Within 120m of Project Components</b>	<b>Composition and Attributes</b>	<b>Significant (Y / N / A)<sup>3</sup></b>	<b>Figure #</b>	<b>EOS Results</b>
<b>Woodland Raptor Nesting Habitat</b>							
General Habitat Description: Woodland raptors may be found in all forested ELC community types including natural forests or conifer plantations, woodlands or forest stands. Stick nests may be found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests in the tops or crotches of trees.							
WRNH-1	50.2	WT, WTL, CL		G058-Dry to Fresh, Coarse: Maple Hardwood; ~20m high in yellow birch DBH approximately 40cm, hillside in deciduous woods, nest diameter approximately 60cm, outside depth of nest approximately 30cm, stick thickness medium-large (pencil-thumb thickness). No evidence of green material, nest condition fair. May provide suitable woodland raptor nesting habitat.	N	5.5	No raptors were observed at the nest site, and no evidence of nesting activity or recently-placed nest materials was noted by MK Ince & Associates during the nest survey.
WRNH-2	50.2	WT, WTL, CL	BU	G058-Dry to Fresh, Coarse: Maple Hardwood; Nest located in yellow birch, approximately 50cm nest diameter approximately 30cm outside depth of nest, located at stream edge, thickness of sticks pencil or medium, some fresh conifer boughs.	N	5.4	Confirmed use by Red-tailed hawk(adult on nest, alarm call). With 100m radius for Red-tailed hawk, feature is located outside the ZOI.
<b>Bat Maternity Roost Colony</b>							
General Habitat Description: Bat maternity roosts may be found in mixed wood or deciduous forests that contain a high density (ten per hectare or more) of large diameter (25 cm diameter at breast height (dbh) or more) snags or cavity trees (MNR 2011b). The best candidate trees or snags for bat maternity roosts within these habitats are considered according to the following criteria (in order of importance): those that are the tallest; have cavities or crevices; have a large dbh; are within the highest density of snags/cavity trees; have a large amount of loose, peeling bark; have a cavity or crevice high in the tree (more than 10 m); are tree species that provide good cavity habitat (i.e. aspen, maple, ash, oak or white pine), are within an open canopy; and exhibit early stages of decay.							
BMRC	n/a		Found throughout ZOI.	All woodland communities contain candidate bat maternity colony habitat.	N	H-2	No bats observed exiting candidate maternity roosts. See Appendix H-2 for details.

**BOW LAKE WIND FARM****NATURAL HERITAGE ASSESSMENT AND ENVIRONMENTAL IMPACT STUDY****APPENDIX B: Tables**

January 2013

<b>Table 6: Natural Heritage Features and Evaluation of Significance</b>							
<b>Feature ID</b>	<b>Size (ha)<sup>1</sup></b>	<b>Overlap with Project Components<sup>2</sup></b>	<b>Within 120m of Project Components</b>	<b>Composition and Attributes</b>	<b>Significant (Y / N / A)<sup>3</sup></b>	<b>Figure #</b>	<b>EOS Results</b>
<b>Furbearer Denning Habitat</b>							
General Habitat Description: Mink, Otter, Marten, Fisher and Eastern Wolf are important fur-bearing mammals and denning sites may be found in all forested ecosites. Mink prefer shorelines dominated by coniferous or mixed forests with dens usually underground and will sometimes use old muskrat lodges. Otters prefer undisturbed shorelines along water bodies that support productive fish populations with abundant shrubby vegetation and downed woody debris for denning. They often use old beaver lodges or log jams and crevices in rock piles. Marten and Fisher share the same general habitat, requiring large tracts of coniferous or mixed forests of mature or older age classes, with denning sites often located in cavities in large trees or under large downed woody debris.							
FDH	n/a		Found throughout ZOI.	All woodland communities contain suitable candidate furbearer denning habitat.	N		

<sup>1</sup> Area includes ecosite and radius.<sup>2</sup> WT: Wind Turbine; WTL: Turbine Laydown Area; CL: Collector Line Corridor ; AR: Access Road corridor; BO: Balance of Operations (Proposed Water Extraction); BU: Building/Substation (Proposed Construction Laydown & Transformer Station, construction compound and welfare building).<sup>3</sup> Y = Yes, N = No, A = Assumed, treat as significant.



Tile #	Wetland #	Size (ha)	Site Type	Wetland Type	Vegetation Forms	Proximity to other wetlands (approx.)	Interspersion (estimate)	Flood Attenuation	Open Water Types	Ground Water Recharge (Site Type)	Ground Water Recharge (Soils)	Downstream Water Quality Improvement (Watershed Improvement Factor)	Downstream Water Quality Improvement (Adjacent and Watershed Land Use)	Groundwater Discharge	Shoreline Erosion	Rare Species	Significant Features	Fish Habitat
1	11	0.1	Isolated	Swamp	ts, gc, m, ne	100m	30	Isolated wetland	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Isolated	None	No evidence of discharge observed	Not applicable	None known to be present	None	Absent
	40	1	Isolated	Swamp	c, h, ts, gc, m	100m	55	Isolated wetland	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Isolated	Major road corridor	No evidence of discharge observed	Not applicable	None known to be present	None	Absent
	60	1.1	Isolated	Swamp	c, h, ts, gc, m	500m	60	Isolated wetland	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Isolated	None	No evidence of discharge observed	Not applicable	None known to be present	None	Absent
2	41	0.8	Palustrine	Swamp	c, h, ts, gc, m	70m	60	Mid-reach wetland; 64 ha catchment	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Palustrine with permanent inflow	None	No evidence of discharge observed	Not applicable	None known to be present	None	Absent
	61	1.1	Lacustrine	Swamp	c, h, ts, ne, gc, m	75m	95	Lacustrine wetland at inflow; 370 ha catchment	Type 1	Wetland >50% lacustrine	Permeable; substrate not clay or bedrock	Lacustrine at lake inflow	Tertiary road corridor	No evidence of discharge observed	Trees and shrubs present	None known to be present	OBH-3	Present in lake
3	12	0.9	Riverine	Marsh	ne, re, gc	400m	60	Riverine wetland; 60 ha catchment	Type 1	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Riverine	Tertiary road corridor	No evidence of discharge observed	Emergent vegetation present	None known to be present	WNA-5	Present in river
4	2	0.8	Lacustrine	Marsh, Swamp	ts, ne, re	400m	85	Lacustrine on lake shoreline	Type 1	Wetland >50% lacustrine	Permeable; substrate not clay or bedrock	Lacustrine on lake shoreline	None	Possible seep present (MNR data)	Emergent vegetation present	Vaccinium ovalifolium, Rusty Blackbird	MAFA-1	Present in lake
	3	5.4	Palustrine	Swamp	c, h, ts, gc, m	200m	70	Headwater wetland; 25 ha catchment	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Palustrine with permanent inflow	None	No evidence of discharge observed	Not applicable	Vaccinium ovalifolium	WNA-16, OBH-4	Absent
	25	0.1	Isolated	Swamp	c, h, ts, gc, m	400m	30	Isolated wetland	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Isolated	None	No evidence of discharge observed	Not applicable	Vaccinium ovalifolium	None	Absent
	26	0.4	Palustrine	Swamp	ts, gc, ne	300m	35	Mid-reach wetland; 144 ha catchment	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Palustrine with permanent inflow	None	Wetland influenced by seeps	Not applicable	None known to be present	None	Present in drain
	30	0.1	Lacustrine	Swamp	ls	200m	50	Lacustrine wetland at outflow	Type 1	Wetland >50% lacustrine	Permeable; substrate not clay or bedrock	Lacustrine at lake outflow	None	No evidence of discharge observed	Trees and shrubs present	None known to be present	None	Present in lake
5	1	1.6	Palustrine	Marsh, Swamp	ne, ro, su, ts, gc	30m	100	Headwater wetland; 63 ha catchment	Type 5	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Palustrine with intermittent inflow	None	No evidence of discharge observed	Not applicable	None known to be present	WNA-2	Assumed presence
	19	0.7	Palustrine	Marsh	gc, m, ne	30m	50	Headwater wetland; 89 ha catchment	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Palustrine with permanent inflow	None	Seep present	Not applicable	None known to be present	Seep-9, WNA-2	Absent
	20	0.1	Palustrine	Swamp	ts, ne, gc	30m	40	Headwater wetland; 71 ha catchment	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Palustrine with permanent inflow	None	No evidence of discharge observed	Not applicable	None known to be present	None	Absent
	21	0.2	Isolated	Swamp	c, h, ts, gc, m	300m	40	Isolated wetland	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Isolated	None	No evidence of discharge observed	Not applicable	None known to be present	None	Absent

Table 7: Results of NHA Wetland Assessment																		
Tile #	Wetland #	Size (ha)	Site Type	Wetland Type	Vegetation Forms	Proximity to other wetlands (approx.)	Interspersion (estimate)	Flood Attenuation	Open Water Types	Ground Water Recharge (Site Type)	Ground Water Recharge (Soils)	Downstream Water Quality Improvement (Watershed Improvement Factor)	Downstream Water Quality Improvement (Adjacent and Watershed Land Use)	Groundwater Discharge	Shoreline Erosion	Rare Species	Significant Features	Fish Habitat
	22	0.4	Palustrine	Swamp	c, h, ts, gc, m	400m	35	Headwater wetland; 2 ha catchment	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Palustrine with no inflow	None	Seep present	Not applicable	Vaccinium ovalifolium	None	Absent
	31	0.5	Isolated	Swamp	c, h, ts, gc, m	200m	45	Isolated wetland	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Isolated	None	No evidence of discharge observed	Not applicable	Vaccinium ovalifolium	None	Absent
	44	0.6	Isolated	Swamp	c, h, ts, gc, m	200m	50	Isolated wetland	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Isolated	None	No evidence of discharge observed	Not applicable	None known to be present	None	Absent
	45	0.2	Isolated	Swamp	c, h, ts, gc, m	300m	45	Isolated wetland	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Isolated	None	No evidence of discharge observed	Not applicable	None known to be present	None	Absent
	46	0.6	Palustrine	Swamp	c, h, ts, gc, m	300m	50	Headwater wetland; 14 ha catchment	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Palustrine with intermittent inflow	None	No evidence of discharge observed	Not applicable	None known to be present	None	Absent
6	28		Lacustrine	Swamp	ts, ls, ne		60											
	29	0.1	Isolated	Swamp	c, h, ts, gc, m	150m	45	Isolated wetland	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Isolated	None	No evidence of discharge observed	Not applicable	None known to be present	None	Absent
	48	0.3	Isolated	Swamp	c, h, ts, gc, m	150m	60	Isolated wetland	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Isolated	None	No evidence of discharge observed	Not applicable	None known to be present	None	Absent
	50	0.8	Isolated	Swamp	c, h, ts, gc, m	200m	60	Isolated wetland	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Isolated	None	No evidence of discharge observed	Not applicable	Vaccinium ovalifolium, Galium kamtschaticum	None	Absent
	51	0.9	Palustrine	Swamp	c, h, ts, gc, m	350m	60	Headwater wetland; 21 ha catchment	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Palustrine with intermittent inflow	None	No evidence of discharge observed	Not applicable	None known to be present	None	Absent
	62	0.4	Palustrine	Marsh	su, ne, gc	300m	50	Mid-reach wetland; 100 ha catchment	Type 2	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Palustrine with permanent inflow	None	No evidence of discharge observed	Not applicable	None known to be present	WNA-12	Present
	65	0.1	Palustrine	Marsh	gc, m	350m	40	Headwater wetland; 3 ha catchment	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Palustrine with no inflow	None	No evidence of discharge observed	Not applicable	Vaccinium ovalifolium	None	Absent
	66	0.2	Isolated	Marsh	gc, ne, m	40m	60	Isolated wetland	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Isolated	None	No evidence of discharge observed	Not applicable	None known to be present	None	Absent
	67	0.1	Isolated	Marsh	gc, ne, m	40m	50	Isolated wetland	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Isolated	None	No evidence of discharge observed	Not applicable	None known to be present	None	Absent
7	33	0.2	Palustrine	Swamp	ts, gc, ne	80m	45	Mid-reach wetland; 23 ha catchment	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Palustrine with intermittent inflow	None	No evidence of discharge observed	Not applicable	None known to be present	None	Absent
	56	0.8	Isolated	Swamp	c, h, ts, gc, m	60m	60	Isolated wetland	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Isolated	None	No evidence of discharge observed	Not applicable	Vaccinium ovalifolium	None	Absent

Table 7: Results of NHA Wetland Assessment																		
Tile #	Wetland #	Size (ha)	Site Type	Wetland Type	Vegetation Forms	Proximity to other wetlands (approx.)	Interspersion (estimate)	Flood Attenuation	Open Water Types	Ground Water Recharge (Site Type)	Ground Water Recharge (Soils)	Downstream Water Quality Improvement (Watershed Improvement Factor)	Downstream Water Quality Improvement (Adjacent and Watershed Land Use)	Groundwater Discharge	Shoreline Erosion	Rare Species	Significant Features	Fish Habitat
9	57	1.1	Palustrine	Swamp	c, h, ts, gc, m	300m	50	Headwater wetland; 13 ha catchment	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Palustrine with no inflow	None	No evidence of discharge observed	Not applicable	None known to be present	None	Absent
	63	0.5	Palustrine	Swamp	c, h, ts, gc, m	60m	65	Headwater wetland; 5 ha catchment	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Palustrine with no inflow	None	No evidence of discharge observed	Not applicable	Vaccinium ovalifolium, Galium kamtschaticum	None	Absent
	9	0.6	Palustrine	Marsh	su, ne, gc	150m	50	Mid-reach wetland; 189 ha catchment	Type 3	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Palustrine with intermittent inflow	None	No evidence of discharge observed	Not applicable	None known to be present	WNA-3	Present
	13	0.6	Isolated	Swamp	c, h, ts, gc, m	330m	50	Isolated wetland	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Isolated	None	No evidence of discharge observed	Not applicable	None known to be present	None	Absent
	14	0.4	Palustrine	Marsh	su	380m	45	Headwater wetland; 18 ha catchment	Type 7	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Palustrine with no inflow	None	No evidence of discharge observed	Not applicable	None known to be present	WNA-6	Assumed presence
	15	0.1	Isolated	Swamp	c, h, ts, gc, m	70m	35	Isolated wetland	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Isolated	None	No evidence of discharge observed	Not applicable	None known to be present	None	Absent
	16	0.5	Isolated	Swamp	c, h, ts, gc, m	70m	50	Isolated wetland	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Isolated	None	No evidence of discharge observed	Not applicable	None known to be present	None	Absent
	17	1	Isolated	Swamp	c, h, ts, gc, m	160m	70	Isolated wetland	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Isolated	None	No evidence of discharge observed	Not applicable	Vaccinium ovalifolium	None	Absent
	35	0.2	Isolated	Swamp	c, h, ts, gc, m	40m	45	Isolated wetland	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Isolated	None	No evidence of discharge observed	Not applicable	None known to be present	None	Absent
	36	0.4	Isolated	Swamp	c, h, ts, gc, m	40m	45	Isolated wetland	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Isolated	None	No evidence of discharge observed	Not applicable	None known to be present	None	Absent
	38	0.2	Isolated	Swamp	c, h, ts, gc, m	300m	45	Isolated wetland	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Isolated	None	No evidence of discharge observed	Not applicable	None known to be present	None	Absent
	39	0.3	Isolated	Swamp	c, h, ts, gc, m	80m	40	Isolated wetland	No open water	Wetland not lacustrine	Permeable; substrate not clay or bedrock	Isolated	None	No evidence of discharge observed	Not applicable	None known to be present	None	Absent
	68	0.4	Lacustrine	Marsh	gc, ne, m	150m	40	Lacustrine wetland at inflow; 303 ha catchment	Type 2	Wetland >50% lacustrine	Permeable; substrate not clay or bedrock	Lacustrine at lake inflow	None	No evidence of discharge observed	Emergent vegetation present	Assumed presence in lake	None	Present

Table 8: Summary of potential environmental effects and mitigation related to construction and decommissioning for Bow Lake Wind Farm							
Feature ID	Overlap with Project Components	Distance (m) to Project Components (within 120m)	Project Phase and Activity	Potential Negative Environmental Effects	Mitigation Strategy	Effectiveness Monitoring of Mitigation	
						Monitoring Locations	Frequency of Monitoring
Wetlands							
(Grey highlighted wetlands are considered significant according to page 36 of the NHA Guide. SWET-4 is a component of the Bull's-Eye PSW complex. SWET-28 and 50 have been recommended for inclusion as part of the Bull's-Eye PSW complex)							
SWET-1		CL-40m	- Construction phase – installation of fencing, construction of road, installation of wind turbine, installation of collector lines	- Degradation of wetland through changes in water flow or surface water contamination.	- All maintenance activities, vehicle refueling or washing and chemical storage will be located more than 30m from wetlands. - Maintain surface flow patterns to wetlands by installing properly designed and sited culverts under access roads or in other areas, as required.	- Culvert installations - flow conveyance, with no restrictions or ponding.	- Construction Supervisor to monitor twice weekly and after significant rainfall events.
SWET-2		CL-40m					
SWET-3		BU-4m, CL-3m					
SWET-4		CL-1m					
SWET-9		AR-2m					
SWET-11		AR-1m					
SWET-12		AR-39m	- Wetland desiccation or drying resulting from removal of riparian or buffering vegetation.	- Wetland desiccation or drying resulting from removal of riparian or buffering vegetation.	- Prior to construction the limits of vegetation clearing will be staked in the field. The Construction Supervisor will ensure that no construction disturbance occurs beyond the staked limits. - Access roads (AR) and collector lines (CL) distances are measured from the edge of planning corridors, not from actual construction; during construction wetland boundaries will be staked and the maximum buffer possible will be provided to the wetland See Figures 7, 8 and 11 for site specific details. - Should monitoring reveal that clearing occurred beyond defined limits, mitigation action will be taken that could include rehabilitation of the disturbed area at the direction of a qualified ecologist. - Prior to the start of construction activity, the topsoil/seedbank (where present) will be stripped and preserved; material will be reapplied in suitable rehabilitation areas post construction. - Excavated soil will be re-used on site. Soil conditions at temporary laydown areas and other disturbed sites will be restored, and depending on surrounding habitat, natural regeneration and/or seeding will be relied on to restore native vegetation cover. Once the laydown areas are no longer required, vegetation will be surveyed to assess disturbance and the potential for natural regeneration. If required, areas will be reseeded with species native to EcoDistrict 5E-13 or the local area, and in consultation with MNR. - Re-vegetate disturbed areas with fast growing native species as soon as practical after construction activity within the disturbed areas is complete.	- Construction limit staking and fencing – visible and effective - Rehabilitation areas	- Weekly - Once after seeding area. - Once in late spring the year following seeding. - Ensure that seed establishes in areas of disturbance within one growing season.
SWET-13		WT-50m, WTL-40m, AR-61m, CL-7m					
SWET-14		AR-37m					
SWET-15		AR-8m					
SWET-16		WT-82m, WTL-72m, AR-10m					
SWET-17		WT-22m, WTL-12m, AR-5m					
SWET-19		CL-1m					
SWET-20		CL-1m					
SWET-21		WT-114m, WTL-104m, CL-1m					
SWET-22		WT-68m, WTL-58m, CL-1m					
SWET-25		WT-11m, WTL-1, AR-29, CL-19					
SWET-26		BU-10					
SWET-27		WT-80, WTL-70, AR-50, CL-46					
SWET-28		CL-93					
SWET-29		CL-75					
SWET-30		CL-1					
SWET-31		CL-1					
SWET-33		CL-12					
SWET-35		AR-6					
SWET-36		AR-3					
SWET-38		AR-8	- Degradation of wetland through sedimentation.	- Sediment control materials, which may include erosion control blankets, silt curtains, mud mats (access roads), check dams (rock or strawbales), wooden stakes, and sediment bags (dewatering) will be kept on-site in sufficient quantities during construction to allow timely installation if required; - Silt barriers (e.g., fencing) will be erected along wetland community edges as appropriate to minimize potential sediment transport to the natural	- All E&S control points.	- All E&S control measures to be monitored twice weekly and after significant rainfall events by Construction Supervisor to ensure they are functioning as intended.	
SWET-39		WT-101, WTL-91, AR-106					
SWET-40		AR-54					
SWET-41		AR-31					
SWET-44		WT-91, WTL-81, CL-1					

Table 8: Summary of potential environmental effects and mitigation related to construction and decommissioning for Bow Lake Wind Farm							
Feature ID	Overlap with Project Components	Distance (m) to Project Components (within 120m)	Project Phase and Activity	Potential Negative Environmental Effects	Mitigation Strategy	Effectiveness Monitoring of Mitigation	
						Monitoring Locations	Frequency of Monitoring
SWET-45		WT-68, WTL-58, CL-46			features. These barriers will be regularly monitored by the Construction Supervisor and properly maintained during and following construction until soils in the construction area are re-stabilized with vegetation; - Where the installation of an equalizing culvert is proposed, appropriate erosion control measures (i.e., rip rap, strawbales, seeding) will be installed at the ends of each culvert to prevent erosion; and - Where culverts are proposed within 30 m of a wetland, enhanced sediment and erosion control measures (i.e., straw bales, double rows of sediment fencing, check dams) will be installed as added protection to filter runoff and further minimize potential sedimentation within the down-gradient features (wetlands, woodlands and water bodies). This added protection is proposed to reduce environmental risk.		
SWET-46		CL-59, AR-112					
SWET-48		CL-1					
SWET-50		CL-1					
SWET-51		CL-1					
SWET-52		CL-26					
SWET-53		CL-94					
SWET-56		CL-1					
SWET-57		CL-1					
SWET-60		AR-1					
SWET-62		CL-1					
SWET-63		CL-1, AR-109					
SWET-64		CL-110					
SWET-65		CL-15					
SWET-66		CL-1					
SWET-67		CL-1					
SWET-68		AR-1			- Stockpile materials >30m from wetland edge. Where this is not possible stockpiles will be covered when not in use, especially during rain events or high wind events.	- All stockpiles within 30m of wetlands (if applicable).	- All covers on stockpiles to be put in place and checked when inclement weather events anticipated (i.e., high winds, rain events). - Stockpiles to be regularly monitored by Construction Supervisor and any deficiencies will be rectified as soon as practicable.
Wildlife Habitat – Seasonal Concentration Areas							
Turtle Overwintering Area							
TWA-1*		AR-103	- Construction phase – installation of fencing, construction of road, installation of wind turbine, installation of collector lines - Operational phase	- Habitat avoidance/ disturbance from construction activities.	- Construction within 120 m of turtle wintering areas will avoid sensitive periods during emergence in spring (March/April) and entrance in fall (September/October) to the extent reasonably possible - When construction activity is unavoidable during these periods silt fencing will be used to exclude turtles from construction areas , the silt fencing will be located to ensure turtles can access the overwintering areas without traversing the construction zone - If turtles are found inside the construction zone they will be relocated to the outside of the exclusion fencing.	- Not required.	- Not required.
TWA-4*		AR-26					
TWA-7*		AR-21					
				- Degradation of wintering areas through changes in water flow or surface water drainage patterns.	- Maintain surface flow patterns to wintering areas by installing properly designed and sited culverts under access roads.	- Culvert locations.	- Construction Supervisor to regularly visually monitor culvert installations to ensure flow conveyance, with no restrictions or ponding.



Table 8: Summary of potential environmental effects and mitigation related to construction and decommissioning for Bow Lake Wind Farm							
Feature ID	Overlap with Project Components	Distance (m) to Project Components (within 120m)	Project Phase and Activity	Potential Negative Environmental Effects	Mitigation Strategy	Effectiveness Monitoring of Mitigation	
						Monitoring Locations	Frequency of Monitoring
				- Degradation of wintering ponds through surface flow contamination.	- Implement Sediment and Erosion control measures (see Section 5.2.1.2). - Implement Dewatering measures if applicable (see Section 5.2.1.3). - All maintenance activities, vehicle refueling or washing and chemical storage will be located more than 30m from habitat. - Dust-suppression along roads in the vicinity of turtle wintering areas.	- All E&S control points.	- All E&S control measures to be monitored by Construction Supervisor, twice weekly or after significant rainfall events -
Reptile Hibernacula (Snakes)							
SH-2*		WT-68, WTL-58, CL-13	- Construction phase – installation of fencing, construction of road, installation of wind turbine, installation of collector lines - Operational phase	- Habitat avoidance, disturbance and mortality from construction activities.	- Construction in the vicinity of snake hibernacula will avoid sensitive periods during emergence in spring (April/May) and entrance in fall (September/October) to the extent reasonably possible. - When construction activity is unavoidable during these periods silt fencing will be used to exclude snakes from construction areas , the silt fencing will be located to ensure snakes can access the hibernacula without traversing the construction zone See Figures 9 and 10 for site specific examples. - If snakes are found inside the construction zone they will be relocated to the outside of the exclusion fencing. - Restrict vehicle traffic to daytime hours, and limit speeds to 30 km or less on roads near snake hibernacula (including signage) during sensitive periods.	- Not required.	- Not required.
SH-4*		WT-39, WTL-29, CL-51					
SH-8*	WT, WTL	CL-4					
SH-9*	CL	WT-18, WTL-8, CL-1, AR-62					
SH-11*	CL			- Degradation of hibernacula through changes in water flow or surface water drainage patterns.	- Maintain surface flow patterns in vicinity of hibernacula by installing properly designed and sited culverts under access roads or in other areas, as required.	- Culvert locations.	- Construction Supervisor to regularly visually monitor culvert installations to ensure flow conveyance, with no restrictions or ponding.
				- Degradation of hibernacula through surface flow contamination.	- Implement Sediment and Erosion control measures (see Section 5.2.1.2). - Implement Dewatering measures if applicable (see Section 5.2.1.3). - All maintenance activities, vehicle refueling or washing and chemical storage will be located more than 30m from habitat.	- All E&S control points.	- All E&S control measures to be regularly monitored by Construction Supervisor, particularly when inclement weather events anticipated (i.e., high winds, rain events) to ensure they are functioning as intended.
Wildlife Habitat – Rare Vegetation Communities or Specialized Habitat for Wildlife							
Waterfowl Nesting Area							
WNA-2*	CL	WT-116, WTL-106	- Construction phase – installation of fencing, construction of road, installation of wind turbine, installation of collector lines	- Loss and degradation of the upland areas surrounding core wetlands.	- Prior to construction the limits of vegetation clearing will be staked in the field. The Construction Supervisor will ensure that no construction disturbance occurs beyond the staked limits and that edges of habitat adjacent to the work areas are not disturbed. Regular monitoring of the limits of clearing will be undertaken to ensure that disturbance is minimized. Should monitoring reveal that clearing occurred beyond defined limits, mitigation action will be taken that could include rehabilitation of the disturbed area at the direction of a qualified ecologist. - To the extent practical, tree and/or brush clearing will be completed prior to or after the core nesting season for migratory birds (May 9 to August 8). - Should clearing be required during the breeding bird season, prior to any clearing, surveys will be undertaken to identify the presence/absence of nesting birds. If a nest is located, a designated buffer will be marked off within which no construction activity will be allowed while the nest is active. The radius of the buffer width will range from 5 - 60 m depending on the species. Buffer widths are based on the species sensitivity and on buffer width recommendations that have been reviewed and approved by	- All areas of disturbance will be monitored to ensure that seed establishes within one growing season.	- Once after seeding area. - Once in late spring the year following seeding.
WNA-3*	AR						
WNA-4*	WT, WTL, CL						
WNA-5*	AR						
WNA-7*	AR	BO-1					
WNA-8*	AR						
WNA-9*		WT-64, WTL-54, CL-19					
WNA-10*	CL						
WNA-11*	CL						
WNA-13*	CL	WT-119, WTL-109					
WNA-16*	CL, BU						
WNA-18*	CL	WT-80, WTL-70					

Table 8: Summary of potential environmental effects and mitigation related to construction and decommissioning for Bow Lake Wind Farm							
Feature ID	Overlap with Project Components	Distance (m) to Project Components (within 120m)	Project Phase and Activity	Potential Negative Environmental Effects	Mitigation Strategy	Effectiveness Monitoring of Mitigation	
						Monitoring Locations	Frequency of Monitoring
					Environment Canada. - Prior to the start of construction activity, the topsoil/seedbank (where present) will be stripped and preserved; material will be reapplied in suitable rehabilitation areas post construction. - All disturbed areas of the construction site will be re-vegetated with native species as soon as conditions allow. - Excavated soil will be re-used on site as feasible. If not feasible, the soil will be disposed of at an approved off-site facility. Soil conditions at temporary laydown areas and other disturbed sites will be restored, and depending on surrounding habitat, natural regeneration and/or seeding will be relied on to restore native vegetation cover. Once the laydown areas are no longer required, vegetation will be surveyed to assess disturbance and the potential for natural regeneration. If required, areas will be reseeded with species native to EcoDistrict 5E-13 or the local area, and in consultation with MNR. - Re-vegetate disturbed areas with fast growing native species as soon as practical after construction activity within the disturbed areas is complete within the same growing season).		
				- Degradation of core wetland habitat through surface flow contamination.	- All maintenance activities, vehicle refueling or washing and chemical storage will be located more than 30m from habitat.	- Not required.	- Not required.
				- Degradation of upland and wetland vegetation through changes in water flow or surface water drainage patterns.	- Maintain surface flow patterns to uplands and wetlands by installing properly designed and sited culverts under access roads or in other areas, as required.	- Culvert locations.	- Construction Supervisor to regularly visually monitor culvert installations to ensure flow conveyance, with no restrictions or ponding.
				- Degradation of core wetland through sedimentation.	- Implement Sediment and Erosion control measures (see Section 5.2.1.2).	- All E&S control points.	- All E&S control measures checked when inclement weather events anticipated (i.e., high winds, rain events). - All E&S control measures to be regularly monitored by Construction Supervisor to ensure they are functioning as intended.
				- Habitat avoidance/loss of nesting habitat.	- Conduct tree/brush clearing outside the core nesting season (May 9-August 8). - If unavoidable, conduct nest surveys in areas where vegetation will be removed to identify presence/absence of nesting birds. - If a nest is located, a designated buffer will be clearly marked in the field within which no clearing will be allowed while the nest is active. The radius of the buffer will be 5 to 60 m depending on the species.	- All WFN areas where vegetation removal is required.	- Once prior to vegetation removal if it is unavoidable during the nesting season.

Table 8: Summary of potential environmental effects and mitigation related to construction and decommissioning for Bow Lake Wind Farm							
Feature ID	Overlap with Project Components	Distance (m) to Project Components (within 120m)	Project Phase and Activity	Potential Negative Environmental Effects	Mitigation Strategy	Effectiveness Monitoring of Mitigation	
						Monitoring Locations	Frequency of Monitoring
Seeps and Springs							
Entire forested ecosite (G058Tt + G067Tt)  Attributes supporting habitat:			<div>- Construction phase – installation of fencing, construction of road, installation of wind turbine, installation of collector lines</div> <div>- Operational Phase</div>	<div>- Degradation of seep or reduction in infiltration through changes in water flow or surface water contamination.</div>	<div>- Prior to construction the limits of vegetation clearing will be staked in the field. The Construction Supervisor will ensure that no construction disturbance occurs beyond the staked limits.</div> <div>- Vegetation clearing and construction will avoid seepage areas. See Figure 12 for site specific details.</div> <div>- All maintenance activities, vehicle refueling or washing and chemical storage will be located more than 30m from seeps.</div> <div>- Maintain surface flow patterns to seeps by installing properly designed and sited culverts under access roads or in other areas, as required.</div> <div>- Imported fill, if any, will be restricted to coarse and free draining material to allow for continued infiltration and support of seeps.</div>	<div>- Culvert installations - flow conveyance, with no restrictions or ponding.</div>	<div>- Construction Supervisor to monitor twice weekly and after significant rainfall events.</div>
SEEP-1		WT-40, WTL-30, CL-52		<div>- Degradation of seepage area through sedimentation.</div>	<div>- Sediment control materials, which may include erosion control blankets, silt curtains, mud mats (access roads), check dams (rock or strawbales), wooden stakes, and sediment bags (dewatering) will be kept on-site in sufficient quantities during construction to allow timely installation if required;</div> <div>- Silt barriers (e.g., fencing) will be erected along seep boundaries as appropriate to minimize potential sediment transport to the natural features. These barriers will be regularly monitored by the Construction Supervisor and properly maintained during and following construction until soils in the construction area are re-stabilized with vegetation;</div> <div>- Where the installation of an equalizing culvert is proposed, appropriate erosion control measures (i.e., rip rap, strawbales, seeding) will be installed at the ends of each culvert to prevent erosion; and</div> <div>- Where culverts are proposed within 30 m of a seep, enhanced sediment and erosion control measures (i.e., straw bales, double rows of sediment fencing, check dams) will be installed as added protection to filter runoff and further minimize potential sedimentation within the down-gradient features (ex. seeps and other water bodies, wetlands, woodlands). This added protection is proposed to reduce environmental risk.</div> <div>-</div> <div>-</div> <div>- Stockpile materials &gt;30m from wetland edge. Where this is not possible stockpiles will be covered when not in use, especially during rain events or high wind events.</div>	<div>- All E&amp;S control points.</div> <div>- All stockpiles within 30m of wetlands (if applicable).</div>	<div>- All E&amp;S control measures to be monitored twice weekly and after significant rainfall events by Construction Supervisor to ensure they are functioning as intended.</div> <div>- All covers on stockpiles to be put in place and checked when inclement weather events anticipated (i.e., high winds, rain events).</div> <div>- Stockpiles to be regularly monitored by Construction Supervisor and any deficiencies will be rectified as soon as practicable.</div>
SEEP-2		CL-120					
SEEP-4		WT-110, WTL-100, AR-77					
SEEP-5		AR-119					
SEEP-6		CL-3					
SEEP-7		CL-3					
SEEP-9		CL-2					
SEEP-11		AR-33					
SEEP-19		CL-34, BU-44					
SEEP-20		CL-32, BU-53					
SEEP-21		CL-5, BU-58					
SEEP-22		CL-5, BU-55					
SEEP-24		BU-65					
SEEP-25		BU-37					
SEEP-26		BU-71					
SEEP-27		CL-50					
SEEP-28		CL-95, BU-90					
SEEP-29		CL-20					
SEEP-30		CL-13					
SEEP-31		CL-21					
SEEP-33		AR-104					
SEEP-34		CL-14					
SEEP-36		AR-12, WT-79, WTL-69					
SEEP-37		CL-67					
SEEP-38		CL-90					
SEEP-40		CL-39, WTL-120					
SEEP-41		CL-6, WT-65, WTL-55					
SEEP-42		CL-7, WT-30, WTL-					



Table 8: Summary of potential environmental effects and mitigation related to construction and decommissioning for Bow Lake Wind Farm							
Feature ID	Overlap with Project Components	Distance (m) to Project Components (within 120m)	Project Phase and Activity	Potential Negative Environmental Effects	Mitigation Strategy	Effectiveness Monitoring of Mitigation	
						Monitoring Locations	Frequency of Monitoring
		20					
SEEP-43		CL-91, BU-22					
SEEP-44		CL-5					
SEEP-46		CL-13					
SEEP-48		CL-9, WT-90, WTL-80					
<b>Moose Aquatic Feeding Area</b>							
MAFA-1*	CL	WT-99, WTL-89	<ul style="list-style-type: none"><li>- Construction phase – installation of fencing, construction of road, installation of wind turbine, installation of collector lines</li><li>- Operational phase</li></ul>	<ul style="list-style-type: none"><li>- Loss and degradation of the lowland conifer and mixed forests surrounding core wetlands.</li></ul>	<ul style="list-style-type: none"><li>- Prior to construction the limits of vegetation clearing will be staked in the field. The Construction Supervisor will ensure that no construction disturbance occurs beyond the staked limits and that edges of habitat adjacent to the work areas are not disturbed. Regular monitoring of the limits of clearing will be undertaken to ensure that disturbance is minimized. Should monitoring reveal that clearing occurred beyond defined limits, mitigation action will be taken that could include rehabilitation of the disturbed area at the direction of a qualified ecologist.</li><li>- Prior to the start of construction activity, the topsoil/seedbank (where present) will be stripped and preserved; material will be reapplied in suitable rehabilitation areas post construction.</li><li>- All disturbed areas of the construction site will be re-vegetated with native species as soon as conditions allow.</li><li>- Excavated soil will be re-used on site as feasible. If not feasible, the soil will be disposed of at an approved off-site facility. Soil conditions at temporary laydown areas and other disturbed sites will be restored, and depending on surrounding habitat, natural regeneration and/or seeding will be relied on to restore native vegetation cover. Once the laydown areas are no longer required, vegetation will be surveyed to assess disturbance and the potential for natural regeneration. If required, areas will be reseeded with species native to EcoDistrict 5E-13 or the local area, and in consultation with MNR.</li><li>- Re-vegetate disturbed areas with fast growing native species as soon as practical after construction activity within the disturbed areas is complete.</li></ul>	<ul style="list-style-type: none"><li>- All areas of disturbance will be monitored to ensure that seed establishes within one growing season.</li></ul>	<ul style="list-style-type: none"><li>- Once after seeding area.</li><li>- Once in late spring the year following seeding.</li></ul>
				<ul style="list-style-type: none"><li>- Degradation of core wetland habitat through surface flow contamination.</li></ul>	<ul style="list-style-type: none"><li>- All maintenance activities, vehicle refueling or washing and chemical storage will be located more than 30m from habitat.</li></ul>	<ul style="list-style-type: none"><li>- Not required.</li></ul>	<ul style="list-style-type: none"><li>- Not required.</li></ul>
				<ul style="list-style-type: none"><li>- Degradation of upland and wetland vegetation through changes in water flow or surface water drainage patterns.</li></ul>	<ul style="list-style-type: none"><li>- Maintain surface flow patterns to uplands and wetlands by installing properly designed and sited culverts under access roads or other locations, as required.</li></ul>	<ul style="list-style-type: none"><li>- Culvert locations.</li></ul>	<ul style="list-style-type: none"><li>- Construction Supervisor to regularly visually monitor culvert installations to ensure flow conveyance, with no restrictions or ponding.</li></ul>
				<ul style="list-style-type: none"><li>- Reduced water quality and species composition of submerged aquatic vegetation through sedimentation.</li></ul>	<ul style="list-style-type: none"><li>- Implement Sediment and Erosion control measures (see Section 5.2.1.2).</li></ul>	<ul style="list-style-type: none"><li>- All E&amp;S control points.</li></ul>	<ul style="list-style-type: none"><li>- All E&amp;S control measures checked when inclement weather events anticipated (i.e., high winds, rain events).</li><li>- All E&amp;S control measures to be regularly monitored by Construction Supervisor to ensure they are functioning as intended.</li></ul>

Table 8: Summary of potential environmental effects and mitigation related to construction and decommissioning for Bow Lake Wind Farm							
Feature ID	Overlap with Project Components	Distance (m) to Project Components (within 120m)	Project Phase and Activity	Potential Negative Environmental Effects	Mitigation Strategy	Effectiveness Monitoring of Mitigation	
						Monitoring Locations	Frequency of Monitoring
				- Disturbance of moose by construction activity	- Restrict construction, where feasible, within 120m of the core wetlands, during the Aril to August period when moose are intensively using the MAFA. - When construction activity is unavoidable during this period the construction will be completed as quickly as possible (generally within several days) to minimize the time that moose may be disturbed in their feeding habits		
<b>Amphibian Breeding Habitat – Woodlands</b>							
ABHW-1	AR, BO		- Construction phase – installation of fencing, construction of road, installation of wind turbine, installation of collector lines	- Loss of, or disturbance to, breeding ponds and adjacent woodland habitat.	- Prior to construction the limits of vegetation clearing will be staked in the field. The Construction Supervisor will ensure that no construction disturbance occurs beyond the staked limits the limits of construction are well outside breeding ponds - Site disturbance and alterations to surface drainage patterns within 200 m of breeding ponds will be minimized. - Tree clearing in areas within 200 m of woodland amphibian breeding ponds will be completed outside the amphibian breeding season (April – June). - When construction activity is unavoidable during the breeding period, the MNR will be consulted and silt fencing will be used to exclude amphibians from construction areas. The silt fencing will be located to allow amphibians to enter and exit the breeding ponds without traversing the construction zone. - Prior to the start of construction activity, the topsoil/seedbank (where present) will be stripped and preserved; material will be reapplied in suitable rehabilitation areas post construction. - All disturbed areas of the construction site will be re-vegetated with native species as soon as conditions allow. - Excavated soil will be re-used on site as feasible. If not feasible, the soil will be disposed of at an approved off-site facility. Soil conditions at temporary laydown areas and other disturbed sites will be restored, and depending on surrounding habitat, natural regeneration and/or seeding will be relied on to restore native vegetation cover. Once the laydown areas are no longer required, vegetation will be surveyed to assess disturbance and the potential for natural regeneration. If required, areas will be reseeded with species native to EcoDistrict 5E-13 or the local area, and in consultation with MNR. - Re-vegetate disturbed areas with fast growing native species as soon as practical after construction activity within the disturbed areas is complete.	- All areas of disturbance will be monitored to ensure that seed establishes within one growing season.	- Once after seeding area. - Once in late spring the year following seeding.
ABHW-2	AR						
ABHW-3	AR						
ABHW-4*	AR						
ABHW-5*	WT, WTL, AR, CL						
ABHW-6	WT, WTL, AR						
ABHW-7*	AR						
ABHW-8	WT, WTL, CL, AR						
ABHW-9*	AR						
ABHW-10	CL	WT-36, WTL-26					
ABHW-11*	AR						
ABHW-12*	WT, WTL, CL, AR						
ABHW-13*	CL	WT-48, WTL-38, AR-25					
ABHW-14*	WT, WTL, CL						
ABHW-15*	WT, WTL, AR, CL						
ABHW-16*	CL, BU						
ABHW-17*	AR	WT-21, WTL-11, CL-63					
				- Degradation of breeding ponds through surface flow contamination.	- Implement Dewatering measures (see Section 5.2.1.3). - All maintenance activities, vehicle refueling or washing and chemical storage will be located more than 30m from habitat.	- Not required.	- Not required.
				- Degradation of breeding ponds through sedimentation.	- Implement Sediment and Erosion control measures (see Section 5.2.1.2).	- All E&S control points.	- All E&S control measures checked when inclement weather events anticipated (i.e., high winds, rain events). - All E&S control measures to be regularly monitored by Construction Supervisor to ensure they are functioning as intended.

Table 8: Summary of potential environmental effects and mitigation related to construction and decommissioning for Bow Lake Wind Farm							
Feature ID	Overlap with Project Components	Distance (m) to Project Components (within 120m)	Project Phase and Activity	Potential Negative Environmental Effects	Mitigation Strategy	Effectiveness Monitoring of Mitigation	
						Monitoring Locations	Frequency of Monitoring
				- Degradation of breeding ponds through changes in water flow or surface water drainage patterns.	- Maintain surface flow patterns to breeding ponds by installing properly designed and sited culverts under access roads or other locations, as required.	- Culvert locations.	- Construction Supervisor to regularly visually monitor culvert installations to ensure flow conveyance, with no restrictions or ponding.
				- Road mortality.	- Restrict vehicle traffic to daytime hours, and limit speeds to 30 km or less on roads near woodland amphibian breeding ponds (including signage).	- Not required.	- Not required.
Habitat for Species of Special Concern							
Marsh Bird Breeding Habitat							
MBBH-8*		WT-110, WTL-100, CL-115	- Construction phase – installation of fencing, construction of road, installation of wind turbine, installation of collector lines	- Loss and degradation of the upland areas surrounding core wetlands.	- Prior to construction the limits of vegetation clearing will be staked in the field. The Construction Supervisor will ensure that no construction disturbance occurs beyond the staked limits and that edges of habitat adjacent to the work areas are not disturbed. Regular monitoring of the limits of clearing will be undertaken to ensure that disturbance is minimized. Should monitoring reveal that clearing occurred beyond defined limits, mitigation action will be taken that could include rehabilitation of the disturbed area at the direction of a qualified ecologist. - To the extent practical, tree and/or brush clearing will be completed prior to or after the core nesting season for migratory birds (May 9 to August 8). - Should clearing be required during the breeding bird season, prior to any clearing, surveys will be undertaken to identify the presence/absence of nesting birds. If a nest is located, a designated buffer will be marked off within which no construction activity will be allowed while the nest is active. The radius of the buffer width will range from 5 - 60 m depending on the species. Buffer widths are based on the species sensitivity and on buffer width recommendations that have been reviewed and approved by Environment Canada. - Prior to the start of construction activity, the topsoil/seedbank (where present) will be stripped and preserved; material will be reapplied in suitable rehabilitation areas post construction. - All disturbed areas of the construction site will be re-vegetated with native species as soon as conditions allow. - Excavated soil will be re-used on site as feasible. If not feasible, the soil will be disposed of at an approved off-site facility. Soil conditions at temporary laydown areas and other disturbed sites will be restored, and depending on surrounding habitat, natural regeneration and/or seeding will be relied on to restore native vegetation cover. Once the laydown areas are no longer required, vegetation will be surveyed to assess disturbance and the potential for natural regeneration. If required, areas will be reseeded with species native to EcoDistrict 5E-13 or the local area, and in consultation with MNR. - Re-vegetate disturbed areas with fast growing native species as soon as practical after construction activity within the disturbed areas is complete.	- Ensure that seed becomes established in areas of disturbance within one growing season.	- Once after seeding area. - Once in late spring the year following seeding.
MBBH-9*		WT-80, WTL-79, AR-50, CL-46					
				- Degradation of core wetland habitat through surface flow contamination.	- All maintenance activities, vehicle refueling or washing and chemical storage will be located more than 30m from habitat.	- Not required.	- Not required.

Table 8: Summary of potential environmental effects and mitigation related to construction and decommissioning for Bow Lake Wind Farm							
Feature ID	Overlap with Project Components	Distance (m) to Project Components (within 120m)	Project Phase and Activity	Potential Negative Environmental Effects	Mitigation Strategy	Effectiveness Monitoring of Mitigation	
						Monitoring Locations	Frequency of Monitoring
				- Degradation of upland and wetland vegetation through changes in water flow or surface water drainage patterns.	- Maintain surface flow patterns to uplands and wetlands by installing properly designed and sited culverts under access roads or in other areas, as required.	- Culvert locations.	- Construction Supervisor to regularly visually monitor culvert installations to ensure flow conveyance, with no restrictions or ponding.
				- Degradation of core wetland through sedimentation.	- Implement Sediment and Erosion control measures (see Section 5.2.1.2).	- All E&S control points.	- All E&S control measures checked when inclement weather events anticipated (i.e., high winds, rain events). - All E&S control measures to be regularly monitored by Construction Supervisor to ensure they are functioning as intended.
				- Habitat avoidance/loss of nesting habitat.	- Conduct tree/brush clearing outside the core nesting season (May 9-August 8). - If unavoidable, conduct nest surveys in areas where vegetation will be removed to identify presence/absence of nesting birds. - If a nest is located, a designated buffer will be clearly marked in the field within which no clearing will be allowed while the nest is active. The radius of the buffer will be 5 to 60 m depending on the species.	- All MBBH areas where vegetation removal is required.	- Once prior to vegetation removal if it is unavoidable during the nesting season.
<b>Canada Warbler and Olive-sided Flycatcher</b>							
CWH-1*	AR		- Construction phase – installation of fencing, construction of road, installation of wind turbine, installation of collector lines	- Loss of breeding habitat.	- Prior to construction the limits of vegetation clearing will be staked in the field. The Construction Supervisor will ensure that no construction disturbance occurs beyond the staked limits and that edges of sensitive areas adjacent to the work areas are not disturbed. Regular monitoring of the limits of clearing will be undertaken to ensure that disturbance is minimized. Should monitoring reveal that clearing occurred beyond defined limits, mitigation action will be taken that could include rehabilitation of the disturbed area at the direction of a qualified ecologist. - To the extent practical, tree and/or brush clearing will be completed prior to or after the core nesting season for migratory birds (May 9 to August 8). Should clearing be required during the breeding bird season, prior to any clearing, surveys will be undertaken to identify the presence/absence of nesting birds. If a nest is located, a designated buffer will be marked off within which no construction activity will be allowed while the nest is active. The radius of the buffer width will range from 5 - 60 m depending on the species. Buffer widths are based on the species sensitivity and on buffer width recommendations that have been reviewed and approved by Environment Canada. - Tree clearing in areas adjacent to woodland amphibian breeding ponds will also avoid the amphibian breeding season (April – June). - Prior to the start of construction activity, the topsoil/seedbank (where present) will be stripped and preserved; material will be reapplied in suitable rehabilitation areas post construction. - All disturbed areas of the construction site will be re-vegetated with native species as soon as conditions allow. - Excavated soil will be re-used on site as feasible. If not feasible, the soil will be disposed of at an approved off-site facility. Soil conditions at temporary laydown areas and other disturbed sites will be restored, and depending on	- Ensure that seed becomes established in areas of disturbance within one growing season.	- Once after seeding area. - Once in late spring the year following seeding.
CWH-3*	AR						
CWH-6*		WT-50, WTL-40					
CWH-8*		WT-82, WTL-72					
CWH-9*		WT-22, WTL-12					
CWH-10*		WT-114, WTL-107					
CWH-11	CL	WT-68, WTL-58					
CWH-12*		WT-11, WTL-1					
CWH-15*	CL						
CWH-18	AR	WT-106, WTL-96					
CWH-20*		WT-101, WTL-91					
CWH-21*	AR						
CWH-22*	AR						
CWH-23*		WT-102, WTL-92					
CWH-25*		WT-68, WTL-58					
CWH-29*	CL						
CWH-30	CL						
CWH-35*	CL						

Table 8: Summary of potential environmental effects and mitigation related to construction and decommissioning for Bow Lake Wind Farm							
Feature ID	Overlap with Project Components	Distance (m) to Project Components (within 120m)	Project Phase and Activity	Potential Negative Environmental Effects	Mitigation Strategy	Effectiveness Monitoring of Mitigation	
						Monitoring Locations	Frequency of Monitoring
					surrounding habitat, natural regeneration and/or seeding will be relied on to restore native vegetation cover. Once the laydown areas are no longer required, vegetation will be surveyed to assess disturbance and the potential for natural regeneration. If required, areas will be reseeded with species native to EcoDistrict 5E-13 or the local area, and in consultation with MNR. - Re-vegetate disturbed areas with fast growing native species as soon as practical after construction activity within the disturbed areas is complete.		
CWH-36*	CL		- Operational phase	- Habitat avoidance/loss of nesting habitat.	- Conduct tree/brush clearing outside the core nesting season (May 9-August 8). - If unavoidable, conduct nest surveys in areas where vegetation will be removed to identify presence/absence of nesting birds. - If a nest is located, a designated buffer will be clearly marked in the field within which no clearing will be allowed while the nest is active. The radius of the buffer will be 5 to 60 m depending on the species.	- Canada Warbler and Olive-sided Flycatcher breeding habitat where vegetation removal is required.	- Once prior to vegetation removal if it is unavoidable during the nesting season.
CWH-39*	CL, BU						
CWH-40*	CL						
OFH-1*	CL						
OFH-4*	CL						
OFH-5*	AR						
OFH-6*	AR						
OFH-13*	CL						
Rare Plants							
BBH-63		AR-76	- Construction phase – installation of fencing, construction of road, installation of wind turbine, installation of collector lines	- Disturbance to microhabitat, potentially causing increased sunlight exposure, changes to soil moisture content, compaction of soil, and introduction of invasive species.	- The most effective strategy to prevent disturbance is avoidance of the population. This strategy has already been implemented through mapping of specimens and determination of microhabitat; this avoidance was incorporated into the project layout. Where a population occurred within the active project layout, the proposed constructible area was reduced in size to avoid or minimize impacts to the habitat. Where removal of habitat could not be avoided, the constructible area was reduced in size to avoid areas where population density was known to be higher. See Figure 13 for site specific examples. - In areas where construction will abut or dissect habitat, mitigation will consist of staking the boundary of areas to be protected. Within these protected areas, access will be restricted to prevent disturbance of plants and habitat. - To minimize the effects of canopy removal, overhanging perimeter shrubs, trees and saplings will be left intact. - Surface flow patterns and saturated soils will be maintained through installation of properly designed and silted culverts under access roads. - Silt fencing will be used around abutting protected areas to prevent surface runoff from construction areas.	- Boreal bedstraw habitat where a breach or dissection of microhabitat is required.	- Protected habitat will be staked before the removal of vegetation - Monitoring of protected areas will occur throughout the construction phase - Monitoring of silt fencing will occur throughout the construction phase - Construction Supervisor to regularly visually monitor culvert installations to ensure flow conveyance, with no restrictions or ponding.
BBH-64		AR-105					
BBH-66	WT, WTL, AR						
BBH-67	CL						
BBH-68	CL						
BBH-69	CL						
BBH-71	CL						
BBH-74	CL						
BBH-75	CL						
BBH-76	CL						
BBH-78	CL						
BBH-79	CL						
BBH-80		AR-98					
BBH-81	WT, WTL, CL						
BBH-84	CL						
BBH-86	CL	AR-111					
BBH-88	AR, CL						
BBH-89	CL						
BBH-90	CL						
BBH-91	CL						
BBH-92	CL						
BBH-94	CL						
BBH-96		AR-111					
BBH-97	CL	AR-30					
BBH-99	CL						
BHFH-40	CL		- Construction phase – installation of fencing,	- Disturbance to microhabitat, potentially influencing air	- The most effective strategy to prevent disturbance is avoidance of the population. This strategy has already been implemented through mapping of	- Braun's holly fern habitat where a breach or dissection	- Protected habitat will be staked before the removal of
BHFH-42	CL						



Table 8: Summary of potential environmental effects and mitigation related to construction and decommissioning for Bow Lake Wind Farm							
Feature ID	Overlap with Project Components	Distance (m) to Project Components (within 120m)	Project Phase and Activity	Potential Negative Environmental Effects	Mitigation Strategy	Effectiveness Monitoring of Mitigation	
						Monitoring Locations	Frequency of Monitoring
BHFH-43	BU	AR-8	construction of road, installation of wind turbine, installation of collector lines	temperature and humidity, trampling of specimens, and introduction of invasive species.	specimens and determination of microhabitat; this avoidance was incorporated into the project layout. Where a population occurred within the active project layout, the proposed constructible area was reduced in size to avoid or minimize impacts to the habitat. Where removal of habitat could not be avoided, the constructible area was reduced in size to avoid areas where population density was known to be higher. See Figure 14 for site specific examples. <ul style="list-style-type: none"><li>- In areas where construction will abut or dissect habitat, mitigation will consist of staking the boundary of areas to be protected. Within these protected areas, access will be restricted to prevent disturbance of plants and habitat.</li><li>- To minimize the effects of canopy removal, overhanging perimeter shrubs, trees and saplings will be left intact to improve shade cover, reduce wind velocity, and reduce dust.</li></ul>	of microhabitat is required.	vegetation <ul style="list-style-type: none"><li>- Monitoring of protected areas will occur throughout the construction phase</li></ul>
BHFH-44	CL	AR-95					
OBH-51	WT, WTL, AR		Construction phase – installation of fencing, construction of road, installation of wind turbine, installation of collector lines	Disturbance to microhabitat, potentially increasing the risk of invasive species, and trampling of specimens by use of construction equipment.	The most effective strategy to prevent disturbance is avoidance of the population. This strategy has already been implemented through mapping of specimens and determination of microhabitat; this avoidance was incorporated into the project layout. Where a population occurred within the active project layout, the proposed constructible area was reduced in size to avoid or minimize impacts to the habitat. Where removal of habitat could not be avoided, the constructible area was reduced in size to avoid areas where population density was known to be higher. See Figure 15 for site specific examples. <ul style="list-style-type: none"><li>- In areas where construction will abut or dissect habitat, mitigation will consist of staking the boundary of areas to be protected. Within these protected areas, access will be restricted to prevent disturbance of plants and habitat.</li><li>- Silt fencing will be used around abutting protected areas to prevent surface runoff from construction areas.</li></ul>	Oval-leaved bilberry habitat where a breach or dissection of microhabitat is required.	Protected habitat will be staked before the removal of vegetation <ul style="list-style-type: none"><li>- Monitoring of protected areas will occur throughout the construction phase</li></ul>
OBH-52	BU, AR						
OBH-53	AR						
OBH-54	AR						
OBH-55	AR						
OBH-56	WT, WTL, AR						
OBH-57		AR-70					
OBH-59	CL						
OBH-61	CL						
OBH-63	CL						
OBH-65	CL						
OBH-66	CL						
OBH-67	CL						
OBH-68	CL						
OBH-69		AR-40					
OBH-70		AR-8					
OBH-71		AR-10					
OBH-72		AR-5					
OBH-73	CL						
OBH-75		AR-29					
OBH-78		AR-6					
OBH-79		AR-3					
OBH-80		AR-8					
OBH-81		AR-106					
OBH-82		AR-54					
OBH-83		AR-31					
OBH-85		WT-68, WTL-58, AR-46					
OBH-86		CL-59, AR-112					
OBH-87	CL						
OBH-88	CL						

Table 8: Summary of potential environmental effects and mitigation related to construction and decommissioning for Bow Lake Wind Farm							
Feature ID	Overlap with Project Components	Distance (m) to Project Components (within 120m)	Project Phase and Activity	Potential Negative Environmental Effects	Mitigation Strategy	Effectiveness Monitoring of Mitigation	
						Monitoring Locations	Frequency of Monitoring
OBH-94	AR						
OBH-95	CL						
OBH-96	CL	AR-109					
OBH-98		AR-24					

Legend:  
\* Feature treated as significant. Significance to be determined by future habitat use survey as described in EIS.  
WT: Wind Turbine; WTL: Turbine Laydown Area; CL: Collector Line Corridor ; AR: Access Road corridor; BO: Balance of Operations (Proposed Water Extraction); BU: Building/Substation (Proposed Construction Laydown & Transformer Station, construction compound and welfare building).

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Wind Turbine Erection	Clearing, grubbing, grading, and topsoil removal.	<ul style="list-style-type: none"> <li>- Increased erosion and sedimentation into woodlands, wetlands, water bodies, and other natural features.</li> <li>- Soil compaction.</li> </ul>	<ul style="list-style-type: none"> <li>- Develop and implement an erosion and sediment control plan.</li> <li>- Utilize erosion blankets, silt fencing, straw bales, etc. for construction activities within 30m of a wetland, woodland, water body or seepage area.</li> <li>- Maintain erosion control measures for the duration of construction or decommissioning activities.</li> <li>- Minimize grading activities to maintain existing drainage patterns as much as possible.</li> <li>- Suspend work if high runoff volume is noted or excessive sediment discharge occurs.</li> <li>- Any stockpiled material will be stored more than 30m from a wetland, woodland, water body or seepage area.</li> <li>- Limit vehicle travel on exposed soils, and limit heavy equipment travel on steep slopes wherever possible to minimize potential for erosion and down-gradient transport of sediment.</li> </ul>	<ul style="list-style-type: none"> <li>- Minimize direct impacts on vegetation communities and protect rare/sensitive habitats.</li> <li>- Maintain vegetated buffers, particularly within riparian zones.</li> <li>- Minimize the impacts of sedimentation on nearby natural features.</li> <li>- Construction Supervisor to monitor silt fencing daily when work is taking place at the location and before and after storm events.</li> </ul>
	Noise/human activity.	<ul style="list-style-type: none"> <li>- Disturbance and/or mortality to local wildlife.</li> </ul>	<ul style="list-style-type: none"> <li>- Establish speed limits.</li> <li>- Clearly post construction speed limits.</li> <li>- All construction equipment to be equipped with proper working mufflers.</li> </ul>	<ul style="list-style-type: none"> <li>- Limit potential wildlife road mortalities.</li> </ul>
	Accidental damage to vegetation.	<ul style="list-style-type: none"> <li>- Damage or removal of vegetation adjacent to the project location.</li> </ul>	<ul style="list-style-type: none"> <li>- Where construction activity occurs within 30m of a naturally vegetated feature (i.e., a significant wildlife habitat or wetland), the construction area should be clearly delineated with protective fencing, such</li> </ul>	<ul style="list-style-type: none"> <li>- Minimize impacts to natural vegetation.</li> <li>- Construction Supervisor to monitor silt fencing daily when work is taking place at the</li> </ul>



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<b>Project Component</b>	<b>Project Activity</b>	<b>Potential Negative Effects</b>	<b>Mitigation Measures</b>	<b>Objectives, Monitoring, and Contingency Plans</b>
			<ul style="list-style-type: none"> <li>as silt fencing.</li> <li>- Damaged trees should be pruned or attended to through implementation of proper arboricultural techniques.</li> </ul>	location and before and after storm events.
	Chemical spills or accidental fluid release (i.e., oil, gasoline, grease, etc.).	<ul style="list-style-type: none"> <li>- Soil, surface water or groundwater contamination.</li> </ul>	<ul style="list-style-type: none"> <li>- Implement best management practices.</li> <li>- Develop a spill response plan and train staff on appropriate procedures.</li> <li>- Keep emergency spill kits on site.</li> <li>- Vehicle washing, refueling stations, and chemical storage will be located more than 30m from natural features or water bodies.</li> <li>- Dispose of waste material by authorized and approved offsite vendors.</li> <li>- All equipment will be kept free of leaks or excess grease. Any equipment with an identified leak will be repaired prior to continuing use on the site.</li> <li>- The contractor will make daily inspections of the hydraulic and fuel systems on machinery and leaks will be repaired immediately.</li> </ul>	<ul style="list-style-type: none"> <li>- Minimize impacts to natural features and wildlife habitats.</li> <li>- Avoid contamination of surficial soils, water or wetland features.</li> </ul>
	Dewatering activities (if necessary).	<ul style="list-style-type: none"> <li>- Reduced stream flow rate.</li> <li>- Increased water temperature.</li> <li>- Erosion and scouring from discharged water resulting in sediment transport to adjacent natural features</li> </ul>	<ul style="list-style-type: none"> <li>- Control rate and timing of water pumping.</li> <li>- Do not take water during periods of extreme low flow.</li> <li>- Discharge water to be directed to sediment control bags or spread across area in a diffuse manner to minimize erosion potential and encourage re-infiltration of extracted groundwater.</li> <li>- Install erosion and sediment control measures if required to ensure transport of sediments to adjacent natural areas</li> </ul>	<ul style="list-style-type: none"> <li>- Maintain surface water conditions near pre-construction conditions.</li> <li>- Construction Supervisor to regularly monitor dewatering works to ensure sedimentation does not occur in adjacent natural features.</li> </ul>

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<b>Project Component</b>	<b>Project Activity</b>	<b>Potential Negative Effects</b>	<b>Mitigation Measures</b>	<b>Objectives, Monitoring, and Contingency Plans</b>
			does not occur.	
Temporary Access Roads, Crane Pads, and Turnaround Areas	Clearing, grubbing, grading, and topsoil removal.	<ul style="list-style-type: none"> <li>- Increased erosion and sedimentation into woodlands, wetlands, water bodies, and other natural features.</li> <li>- Soil compaction.</li> <li>- Alteration to surface drainage patterns to adjacent natural features</li> </ul>	<ul style="list-style-type: none"> <li>- Develop and implement an erosion and sediment control plan.</li> <li>- Utilize erosion blankets, silt fencing, straw bales, etc. for construction activities within 30m of a significant wetland, wildlife habitat, or water body.</li> <li>- Maintain erosion control measures for the duration of construction or decommissioning activities.</li> <li>- Any stockpiled material will be stored more than 30m from a wetland, woodland, or water body.</li> <li>- Limit vehicle travel on exposed soils, and limit heavy equipment travel on steep slopes wherever possible to minimize potential for erosion and down-gradient transport of sediment.</li> <li>- Re-vegetate temporary roads to pre-construction conditions as soon as possible after construction activities are complete.</li> <li>- Install properly designed and located temporary culverts at appropriate locations to maintain flow characteristics.</li> <li>- Avoid construction or decommissioning activities during sensitive time periods (i.e., breeding bird season), wherever possible.</li> <li>- Conduct nest searches if vegetation removal will occur during the breeding bird season (May 9-August 8).</li> </ul>	<ul style="list-style-type: none"> <li>- Minimize direct impacts on vegetation communities and protect rare/sensitive habitats.</li> <li>- Maintain vegetated buffers, particularly within riparian zones.</li> <li>- Minimize the impacts of sedimentation on nearby natural features.</li> <li>- Construction Supervisor to monitor silt fencing daily when work is taking place at the location and before and after storm events.</li> <li>- Construction Supervisor to regularly monitor flow conveyance through culverts to ensure no restrictions/ponding.</li> </ul>

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<b>Project Component</b>	<b>Project Activity</b>	<b>Potential Negative Effects</b>	<b>Mitigation Measures</b>	<b>Objectives, Monitoring, and Contingency Plans</b>
	Noise/human activity.	<ul style="list-style-type: none"> <li>- Disturbance and/or mortality to local wildlife.</li> </ul>	<ul style="list-style-type: none"> <li>- Avoid construction or decommissioning activities during sensitive time periods (i.e., breeding bird season), wherever possible.</li> <li>- Conduct nest searches if vegetation removal will occur during the breeding bird season (May 9-August 8).</li> <li>- If a nest is located, a designated buffer will be clearly marked in the field within which no clearing will be allowed while the nest is active. The radius of the buffer will be 5 to 60 m depending on the species.</li> <li>- Construction and decommissioning activities within 30m of woodlands or wetlands should occur during daylight hours, wherever possible,</li> <li>- Establish and clearly post construction speed limits.</li> <li>- All construction equipment to be equipped with proper working mufflers</li> </ul>	<ul style="list-style-type: none"> <li>- Limit potential wildlife road mortalities.</li> </ul>
	Accidental damage to vegetation.	<ul style="list-style-type: none"> <li>- Damage or removal of vegetation adjacent to the project location.</li> </ul>	<ul style="list-style-type: none"> <li>- Where construction activity occurs within 30m of a naturally vegetated feature (i.e., significant wildlife habitat or wetland), the construction area should be clearly delineated with protective fencing, such as silt fencing.</li> <li>- Damaged trees should be pruned or attended to through implementation of proper arboricultural techniques.</li> </ul>	<ul style="list-style-type: none"> <li>- Minimize impacts to natural vegetation.</li> <li>- Construction Supervisor to monitor silt fencing daily when work is taking place at the location and before and after storm events.</li> </ul>
	Chemical spills or accidental fluid release (i.e., oil, gasoline, diesel fuel, grease, etc.).	<ul style="list-style-type: none"> <li>- Soil or water contamination.</li> </ul>	<ul style="list-style-type: none"> <li>- Implement best management practices.</li> <li>- Develop a spill response plan and train staff on appropriate procedures.</li> <li>- Keep emergency spill kits on site.</li> </ul>	<ul style="list-style-type: none"> <li>- Minimize impacts to natural features and wildlife habitats.</li> <li>- Avoid contamination of water or wetland features.</li> </ul>

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<b>Project Component</b>	<b>Project Activity</b>	<b>Potential Negative Effects</b>	<b>Mitigation Measures</b>	<b>Objectives, Monitoring, and Contingency Plans</b>
			<ul style="list-style-type: none"> <li>- All equipment will be kept free of leaks or excess grease. Any equipment with an identified leak will be repaired prior to continuing use on the site.</li> <li>- The contractor will make daily inspections of the hydraulic and fuel systems on machinery and leaks will be repaired immediately.</li> <li>- Vehicle washing, refueling stations, and chemical storage will all be located more than 30m from natural features or water bodies.</li> <li>- Dispose of waste material by authorized and approved offsite vendors.</li> </ul>	
Permanent Access Roads	Clearing, grubbing, grading, and topsoil removal.	<ul style="list-style-type: none"> <li>- Increased erosion and sedimentation into woodlands, wetlands, and other natural features.</li> <li>- Soil compaction.</li> <li>- Alteration to surface drainage patterns to adjacent natural features</li> </ul>	<ul style="list-style-type: none"> <li>- Develop and implement an erosion and sediment control plan.</li> <li>- Utilize erosion blankets, silt fencing, straw bales, etc. for construction activities within 30m of a wetland, woodland, or water body.</li> <li>- Maintain erosion control measures for the duration of construction or decommissioning activities.</li> <li>- Any stockpiled material will be stored more than 30m from a wetland, woodland, or water body.</li> <li>- Limit vehicle travel on exposed soils, and limit heavy equipment travel on steep slopes wherever possible to minimize potential for erosion and down-gradient transport of sediment.</li> <li>- Install properly designed and located temporary culverts at appropriate locations to maintain flow characteristics</li> </ul>	<ul style="list-style-type: none"> <li>- Minimize direct impacts on vegetation communities and protect rare/sensitive habitats.</li> <li>- Maintain vegetated buffers, particularly within riparian zones.</li> <li>- Minimize the impacts of sedimentation on nearby natural features.</li> <li>- Construction Supervisor to regularly monitor silt fencing daily when work is taking place at the location and before and after storm events.</li> <li>- Construction Supervisor to regularly monitor flow conveyance through culverts to ensure no restrictions/ponding.</li> </ul>

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<b>Project Component</b>	<b>Project Activity</b>	<b>Potential Negative Effects</b>	<b>Mitigation Measures</b>	<b>Objectives, Monitoring, and Contingency Plans</b>
	Noise/human activity.	<ul style="list-style-type: none"> <li>- Disturbance and/or mortality to local wildlife.</li> </ul>	<ul style="list-style-type: none"> <li>- Avoid construction or decommissioning activities during sensitive time periods (i.e., breeding bird season), wherever possible.</li> <li>- Conduct nest searches if vegetation removal will occur during the breeding bird season (May 9-August 8).</li> <li>- If a nest is located, a designated buffer will be clearly marked in the field within which no clearing will be allowed while the nest is active. The radius of the buffer will be 5 to 60 m depending on the species.</li> <li>- Construction and decommissioning activities within 30m of woodlands or wetlands should occur during daylight hours, wherever possible.</li> <li>- Establish and clearly post construction speed limits.</li> <li>- All construction equipment to be equipped with proper working mufflers</li> </ul>	<ul style="list-style-type: none"> <li>- Limit potential wildlife road mortalities.</li> </ul>
	Accidental damage to vegetation.	<ul style="list-style-type: none"> <li>- Damage or removal of vegetation adjacent to the project location.</li> </ul>	<ul style="list-style-type: none"> <li>- Where construction activity occurs within 30m of a naturally vegetated feature (i.e., significant wildlife habitat or wetland), the construction area should be clearly delineated with protective fencing, such as silt fencing,</li> <li>- Damaged trees should be pruned or attended to through implementation of proper arboricultural techniques.</li> </ul>	<ul style="list-style-type: none"> <li>- Minimize impacts to natural vegetation.</li> <li>- Construction Supervisor to monitor silt fencing daily when work is taking place at the location and before and after storm events.</li> </ul>
	Chemical spills or accidental fluid release (i.e., oil, gasoline, grease, etc.).	<ul style="list-style-type: none"> <li>- Soil or water contamination.</li> </ul>	<ul style="list-style-type: none"> <li>- Implement best management practices.</li> <li>- Develop a spill response plan and train staff on appropriate procedures.</li> <li>- Keep emergency spill kits on site.</li> </ul>	<ul style="list-style-type: none"> <li>- Minimize impacts to natural features and wildlife habitats.</li> <li>- Avoid contamination of water or wetland features.</li> </ul>

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<b>Project Component</b>	<b>Project Activity</b>	<b>Potential Negative Effects</b>	<b>Mitigation Measures</b>	<b>Objectives, Monitoring, and Contingency Plans</b>
			<ul style="list-style-type: none"> <li>- All equipment will be kept free of leaks or excess grease. Any equipment with an identified leak will be repaired prior to continuing use on the site.</li> <li>- The contractor will make daily inspections of the hydraulic and fuel systems on machinery and leaks will be repaired immediately.</li> <li>- Vehicle washing, refueling stations, and chemical storage will be located more than 30m from natural features or water bodies.</li> <li>- Dispose of waste material by authorized and approved offsite vendors.</li> </ul>	
Underground Collector Lines	Clearing, grubbing, grading, and topsoil removal.	<ul style="list-style-type: none"> <li>- Increased erosion and sedimentation into woodlands, wetlands, water bodies and other natural features.</li> </ul>	<ul style="list-style-type: none"> <li>- Develop and implement an erosion and sediment control plan.</li> <li>- It is anticipated that most, if not all, underground collector lines will be installed during construction by trenching, in which case:</li> <li>- Any stockpiled material will be stored more than 30m from a wetland, woodland, or water body.</li> <li>- Restore and re-vegetate exposed trenches to pre-construction conditions as soon as possible after construction.</li> <li>- In the event that horizontal or directional drilling is required:</li> <li>- Locate all entry and exit pits at least 30m from natural features (i.e., wildlife habitats, wetlands) or water bodies.</li> <li>- Any stockpiled material will be stored more than 30m from a wetland, woodland, or water body.</li> </ul>	<ul style="list-style-type: none"> <li>- Minimize direct impacts on vegetation communities and protect rare/sensitive habitats.</li> <li>- Maintain vegetated buffers, particularly within riparian zones.</li> <li>- Minimize the impacts of sedimentation on nearby natural features.</li> <li>- Minimize the presence of exposed soil to reduce the potential for erosion.</li> </ul>

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<b>Project Component</b>	<b>Project Activity</b>	<b>Potential Negative Effects</b>	<b>Mitigation Measures</b>	<b>Objectives, Monitoring, and Contingency Plans</b>
			<ul style="list-style-type: none"> <li>- Collect drill cuttings as they are generated and placed in a soil bin or bag for off-site disposal.</li> <li>- Dispose of waste material by authorized and approved offsite vendors.</li> <li>- Restore and re-vegetate entry/exit pits to pre-construction conditions as soon as possible after construction.</li> </ul>	
	Noise/human activity.	<ul style="list-style-type: none"> <li>- Disturbance and/or mortality to local wildlife.</li> </ul>	<ul style="list-style-type: none"> <li>- Avoid construction or decommissioning activities during sensitive time periods (i.e., breeding bird season), wherever possible.</li> <li>- Construction and decommissioning activities within 30m of woodlands or wetlands should occur during daylight hours, wherever possible.</li> <li>- Restore and re-vegetate entry and exit pits to pre-construction conditions as soon as possible after construction.</li> </ul>	<ul style="list-style-type: none"> <li>- Limit potential wildlife road mortalities.</li> </ul>
	Accidental damage to vegetation.	<ul style="list-style-type: none"> <li>- Damage or removal of vegetation adjacent to the project location.</li> </ul>	<ul style="list-style-type: none"> <li>- Where construction activity occurs within 30m of a naturally vegetated feature (i.e., significant wildlife habitat or wetland), the construction area should be clearly delineated with protective fencing, such as silt fencing.</li> <li>- Damaged trees should be pruned or attended to through implementation of proper arboricultural techniques.</li> </ul>	<ul style="list-style-type: none"> <li>- Minimize impacts to natural vegetation.</li> <li>- Monitor silt fencing daily when work is taking place at the location and before and after storm events.</li> </ul>
	Chemical spills or accidental fluid release (i.e., oil, gasoline, grease, etc.).	<ul style="list-style-type: none"> <li>- Soil or water contamination.</li> </ul>	<ul style="list-style-type: none"> <li>- Implement best management practices.</li> <li>- Develop a spill response plan and train staff on appropriate procedures.</li> <li>- Keep emergency spill kits on site.</li> <li>- All equipment will be kept free of leaks or excess grease. Any equipment with an</li> </ul>	<ul style="list-style-type: none"> <li>- Minimize impacts to natural features and wildlife habitats.</li> <li>- Avoid contamination of water or wetland features.</li> </ul>

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<b>Table 9: Summary of Potential Effects and Mitigation Measures for Generalized Wildlife Habitat - Construction and Decommissioning</b>				
<b>Project Component</b>	<b>Project Activity</b>	<b>Potential Negative Effects</b>	<b>Mitigation Measures</b>	<b>Objectives, Monitoring, and Contingency Plans</b>
			<p>identified leak will be repaired prior to continuing use on the site.</p> <ul style="list-style-type: none"> <li>- The contractor will make daily inspections of the hydraulic and fuel systems on machinery and leaks will be repaired immediately.</li> <li>- Vehicle washing, refueling stations, and chemical storage will all be located more than 30 m from natural features or water bodies.</li> <li>- It is anticipated that most, if not all, underground collector lines will be installed during construction by trenching, in which case:</li> <li>- Any stockpiled material will be stored more than 30m from a wetland, woodland, or water body.</li> <li>- Restore and re-vegetate exposed trenches to pre-construction conditions as soon as possible after construction.</li> <li>- In the event that horizontal or directional drilling is required:</li> <li>- Locate all entry and exit pits at least 30m from natural features (i.e., wildlife habitats, wetlands) or water bodies.</li> <li>- Ensure drill depth is at an appropriate level below the watercourse to prevent 'frac-out'.</li> <li>- Any stockpiled material will be stored more than 30m from a wetland, woodland, or water body.</li> <li>- Collect drill cuttings as they are generated and placed in a soil bin or bag for off-site disposal.</li> </ul>	



**BOW LAKE WIND FARM**

NATURAL HERITAGE ASSESSMENT AND ENVIRONMENTAL IMPACT STUDY

APPENDIX B: Tables

January 2013

<b>Table 9: Summary of Potential Effects and Mitigation Measures for Generalized Wildlife Habitat - Construction and Decommissioning</b>				
<b>Project Component</b>	<b>Project Activity</b>	<b>Potential Negative Effects</b>	<b>Mitigation Measures</b>	<b>Objectives, Monitoring, and Contingency Plans</b>
			<ul style="list-style-type: none"> <li>- Dispose of waste material by authorized and approved offsite vendors.</li> <li>- Restore and re-vegetate entry/exit pits to pre-construction conditions as soon as possible after construction.</li> </ul>	
Substation	Clearing, grubbing, grading, and topsoil removal.	<ul style="list-style-type: none"> <li>- Increased erosion and sedimentation into woodlands, wetlands, and other natural features.</li> <li>- Soil compaction.</li> <li>- Alteration to surface drainage patterns to adjacent natural features</li> </ul>	<ul style="list-style-type: none"> <li>- Develop and implement an erosion and sediment control plan.</li> <li>- Utilize erosion blankets, silt fencing, straw bales, etc. for construction activities within 30m of a wetland, woodland, or water body.</li> <li>- Maintain erosion control measures for the duration of construction or decommissioning activities.</li> <li>- Suspend work if high runoff volume is noted or excessive sediment discharge occurs.</li> <li>- Any stockpiled material will be stored more than 30m from a wetland, woodland, or water body,</li> <li>- Limit vehicle travel on exposed soils, and limit heavy equipment travel on steep slopes wherever possible to minimize potential for erosion and down-gradient transport of sediment.</li> <li>- Install properly designed and located temporary culverts at appropriate locations to maintain flow characteristics.</li> </ul>	<ul style="list-style-type: none"> <li>- Minimize direct impacts on vegetation communities and protect rare/sensitive habitats.</li> <li>- Maintain vegetated buffers, particularly within riparian zones.</li> <li>- Minimize the impacts of sedimentation on nearby natural features.</li> <li>- Construction Supervisor to monitor silt fencing daily when work is taking place at the location and before and after storm events.</li> <li>- Construction Supervisor to regularly monitor flow conveyance through culverts to ensure no restrictions/ponding.</li> </ul>
	Noise/human activity.	<ul style="list-style-type: none"> <li>- Disturbance and/or mortality to local wildlife.</li> </ul>	<ul style="list-style-type: none"> <li>- Avoid construction or decommissioning activities during sensitive time periods (i.e., breeding bird season), wherever possible.</li> <li>- Construction and decommissioning activities within 30m of woodlands or</li> </ul>	<ul style="list-style-type: none"> <li>- Limit potential wildlife road mortalities.</li> </ul>

**BOW LAKE WIND FARM**

NATURAL HERITAGE ASSESSMENT AND ENVIRONMENTAL IMPACT STUDY

APPENDIX B: Tables

January 2013

<b>Table 9: Summary of Potential Effects and Mitigation Measures for Generalized Wildlife Habitat - Construction and Decommissioning</b>				
<b>Project Component</b>	<b>Project Activity</b>	<b>Potential Negative Effects</b>	<b>Mitigation Measures</b>	<b>Objectives, Monitoring, and Contingency Plans</b>
			<ul style="list-style-type: none"> <li>wetlands should occur during daylight hours, wherever possible.</li> <li>- Clearly post construction speed limits.</li> </ul>	
	Accidental damage to vegetation.	<ul style="list-style-type: none"> <li>- Damage or removal of vegetation adjacent to the project location.</li> </ul>	<ul style="list-style-type: none"> <li>- Where construction activity occurs within 30m of a naturally vegetated feature (i.e., significant wildlife habitat or wetland), the construction area should be clearly delineated with protective fencing, such as silt fencing.</li> <li>- Damaged trees should be pruned through implementation of proper arboricultural techniques.</li> </ul>	<ul style="list-style-type: none"> <li>- Minimize impacts to natural vegetation.</li> <li>- Construction Supervisor to monitor silt fencing daily when work is taking place at the location and before and after storm events.</li> </ul>
	Chemical spills or accidental fluid release (i.e., oil, gasoline, grease, etc.).	<ul style="list-style-type: none"> <li>- Soil or water contamination.</li> </ul>	<ul style="list-style-type: none"> <li>- Implement best management practices.</li> <li>- Develop a spill response plan and train staff on appropriate procedures.</li> <li>- Keep emergency spill kits on site.</li> <li>- All equipment will be kept free of leaks or excess grease. Any equipment with an identified leak will be repaired prior to continuing use on the site.</li> <li>- The contractor will make daily inspections of the hydraulic and fuel systems on machinery and leaks will be repaired immediately.</li> <li>- Vehicle washing, refueling stations, and chemical storage will be located more than 30m from natural features or water bodies.</li> <li>- Dispose of waste material by authorized and approved offsite vendors.</li> </ul>	<ul style="list-style-type: none"> <li>- Minimize impacts to natural features and wildlife habitats.</li> <li>- Avoid contamination of water or wetland features.</li> </ul>

Table 10: Summary of Environmental Effects Monitoring Plan for Operation of the Bow Lake Wind Farm								
Potential Negative Effect	Mitigation Strategy	Performance Objective	Monitoring Plan					Contingency Measures
			Methods	Location	Frequency	Rationale	Reporting	
Disturbance Monitoring for Waterfowl Nesting Areas								
Disturbance to waterfowl nesting areas during operation	Post-construction Disturbance Monitoring Program	MNR, along with the proponent and other relevant agencies, will collectively review the results of the post-construction monitoring to determine if an ecologically significant disturbance/avoidance effect to nesting waterfowl is occurring, and whether such effect is attributed to the wind turbines and not external factors. These discussions will determine whether contingency measures will be undertaken.	Modified area searches using pre-construction methods.	In Features WNA-2, 4, 9, 13 and 18, if they are determined to be significant as a result of habitat use studies.*  Turbines are proposed in the adjacent upland areas within 120 m of the core wetlands of these features.	Three times during the spring breeding season (May 9-August 8), with at least 10 days between surveys, annually for three years.	Breeding pair density is a standard measure that can be compared among years or between control/impact sites.	Annual Report will be submitted to MNR with the following anticipated dates: February 2015 February 2016 February 2017	Should performance objectives not be met:
	The breeding density of nesting waterfowl (combined and individual), within the habitat, will be monitored and compared to pre-construction conditions.		Modified area searches extending from the base of wind turbine generators located within 120 m of waterfowl nesting areas with an equal number of search areas located more than 120 m from wind turbine generators in waterfowl nesting areas (i.e., control sites)					- Compare declines to population trends noted through regional, provincial or continent-wide breeding bird surveys - develop additional studies to determine extent of disturbance effect - investigate habitat management means to increase breeding density
	In addition to density, the waterfowl nesting activity observed should be recorded and compared to pre-construction conditions. Particular attention should be paid to those species identified as waterfowl nesting area indicator species as per the Draft SWH Ecoregion 5E Criterion Schedule (MNR, 2012), including: American Black Duck, Northern Pintail, Northern Shoveler, Gadwall, Blue-winged Teal, Wood Duck, Hooded Merganser, Common Merganser, Red-breasted Merganser, Mallard, Canada Goose, American Widgeon, Bufflehead, and Common Goldeneye.		Methods are outlined in detail in the Environmental Effects Monitoring Plan.					Additional monitoring and/or mitigation may be required where post-construction monitoring identifies ecologically significant disturbance/avoidance effects associated with waterfowl nesting areas. Results will be reviewed collectively by the proponent, MNR and other relevant agencies to determine if and when additional monitoring and/or mitigation is required. The best available science and information should be considered when determining appropriate mitigation.  MNR will be consulted on contingency measures to be implemented.
Amphibian Movement Passages During Operation								
Loss of travel corridors for salamanders within ABWH-6	Travel culverts under the access road to Turbine 39.	Maintain culverts and silt fencing as a passage for salamanders.	Annual visual inspection and cleaning/maintenance as necessary.	ABHW-6.	Twice annually, during spring and fall.	Presence of salamanders using ABWH-6 and access road bisecting the forested component of the habitat.	Not required.	Clean and repair the culverts as necessary. Maintain silt fencing used to funnel amphibians through culverts.
Disturbance Monitoring for Birds of Conservation Concern								
Disturbance to Marsh Breeding Birds (including Yellow Rail)	Post-construction Disturbance Monitoring Program.	MNR, along with the proponent and other relevant agencies, will collectively review the results of the post-construction monitoring to determine if an ecologically significant disturbance/avoidance effect to marsh breeding birds is occurring, and whether such effect is attributed to the wind turbines and not external factors. These discussions will determine whether contingency measures will be undertaken.	Point count survey and area searches using pre-construction methods.	MBBH-8 and 9, if they are determined to be significant as a result of habitat use studies*, as there are turbines proposed within 120 m of these features.	Three times during the spring breeding season (May-June), with at least 10 days between surveys, annually for three years.	Breeding pair density is a standard measure that can be compared among years or between control/impact sites	Annual Report will be submitted to MNR with the following anticipated dates: February 2015 February 2016 February 2017	Should performance objectives not be met:
	The breeding density of marsh species (combined and individual), within the habitat, will be monitored and compared to pre-construction conditions.		Paired point counts extending from the base of wind turbine generators located within 120 m of marsh habitat with an equal number of paired point counts located more than 120 m from wind turbine generators in marsh habitat (i.e., control sites). Methods are outlined in detail in					- Compare declines to population trends noted through province or continent-wide breeding bird surveys - Develop additional studies to determine extent of disturbance effect - Investigate habitat management means to increase breeding density
	In addition to density, the marsh breeding species observed should be monitored and							Additional monitoring and/or mitigation may be required where post-construction

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Potential Negative Effect	Mitigation Strategy	Performance Objective	Monitoring Plan					Contingency Measures
			Methods	Location	Frequency	Rationale	Reporting	
	compared to pre-construction conditions. Particular attention should be paid to those species identified as marsh breeding habitat indicator species as per the draft SWH Ecoregion 5E Criterion Schedule (MNR, 2012), including: American Bittern, Sora, Red-necked Grebe, Pie-billed Grebe, Redhead, Ring-necked Duck, Lesser Scaup, Ruddy Duck, Common Moorhen, American Coot, Wilson's Phalarope, Common Loon, Sandhill Crane, Green Heron, Sedge Wren, Marsh Wren, Trumpeter Swan, Black Tern and Yellow Rail.		the Environmental Effects Monitoring Plan.					monitoring identifies ecologically significant disturbance/avoidance effects associated with marsh breeding bird habitat. Mitigation techniques may include (but are not limited to) operational controls, such as periodic shut-down and/or blade feathering. Results will be reviewed collectively by the proponent, MNR and other relevant agencies to determine if and when additional monitoring and/or mitigation is required. The best available science and information should be considered when determining appropriate mitigation. MNR will be consulted on contingency measures to be implemented.
Disturbance to bird species of conservation concern (Canada Warbler) during operation	<p>Post-construction Disturbance Monitoring Program</p> <p>The breeding density of Canada Warbler, within the habitat, will be monitored and compared to pre-construction conditions.</p>	MNR, along with the proponent and other relevant agencies, will collectively review the results of the post-construction monitoring to determine if an ecologically significant disturbance/avoidance effect to Canada Warbler is occurring, and whether such effect is attributed to the wind turbines and not external factors. These discussions will determine whether contingency measures will be undertaken.	<p>Point count survey using pre-construction methods.</p> <p>Point counts extending from the base of wind turbine generators located within 120 m of breeding habitat with an equal number of point counts located more than 120 m from wind turbine generators in appropriate woodland habitat (i.e., control sites).</p> <p>Methods are outlined in detail in the Environmental Effects Monitoring Plan</p>	In Features CWH-6, 8, 9, 10, 12, 20, 23, and 25, if they are determined to be significant as a result of habitat use studies*, CWH-11 and 18, as there are turbines proposed within 120 m of these features.	Three times during the breeding season (mid-May to early July), with at least 10 days between surveys, annually for three years.	Breeding pair density is a standard measure that can be compared among years or between control/impact sites	Annual Report will be submitted to MNR with the following anticipated dates: February 2015 February 2016 February 2017	<p>Should performance objectives not be met:</p> <ul style="list-style-type: none"><li>- Compare declines to population trends noted through regional, provincial or continent-wide breeding bird surveys</li><li>- develop additional studies to determine extent of disturbance effect</li><li>- investigate habitat management means to increase breeding density</li></ul> <p>Additional monitoring and/or mitigation may be required where post-construction monitoring identifies ecologically significant disturbance/avoidance effects associated with breeding habitat for Canada Warbler. Results will be reviewed collectively by the proponent, MNR and other relevant agencies to determine if and when additional monitoring and/or mitigation is required. The best available science and information should be considered when determining appropriate mitigation.</p> <p>MNR will be consulted on contingency measures to be implemented.</p>
Mortality Monitoring for Birds and Bats								
Direct mortality to birds through turbine collisions	Post-construction mortality monitoring program	Maintain mortality below thresholds	<p>Post-construction monitoring of mortality rates; carcass searches</p> <p>Searcher efficiency trials</p>	<p>At 12 turbines (all birds) and 36 turbines (raptors)</p> <p>MNR will be consulted to determine location</p>	Conducted twice-weekly (3-4 day intervals) at 12 turbines from May 1-October 31. Weekly monitoring for raptors will continue until	Bird and Bird Habitats: Guidelines for Wind Power Projects, 2011	Annual Report will be submitted to MNR with the following anticipated	<p>Post-construction mitigation, including operational controls, will be considered if annual mortality of birds exceeds any of the following thresholds defined by the MNR (2011a):</p> <ul style="list-style-type: none"><li>- 14 birds/turbine/year at individual</li></ul>

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Potential Negative Effect	Mitigation Strategy	Performance Objective	Monitoring Plan					Contingency Measures
			Methods	Location	Frequency	Rationale	Reporting	
			Methods are outlined in detail in the Environmental Effects Monitoring Plan	of turbines to be monitored.	November 30.  Monitoring of all 36 turbines for raptor fatalities once a month from May 1-November 30.  Monitoring to be conducted for three years.		dates: February 2015 February 2016 February 2017	turbines or turbine groups; - 0.2 raptors/turbine/year (all raptors) across a wind power project; or - 0.1 raptors of provincial conservation concern/turbine/year across a wind power project. - Or if bird mortality during a single mortality monitoring survey exceeds: - 10 or more birds at any one turbine; or - 33 or more birds (including raptors) at multiple turbines.  Mitigation may include operational controls, such as periodic shut-down on select turbines or blade feathering at specific times of the year, or alternate plan agreed to by the Proponent and MNR  MNR will be consulted on contingency measures to be implemented.
Direct mortality to bats through turbine collisions	Post-construction mortality monitoring program	Maintain mortality below thresholds	Post-construction monitoring of mortality rates; carcass searches  Searcher efficiency trials  Methods are outlined in detail in the Environmental Effects Monitoring Plan	At 12 turbines  MNR will be consulted to determine location of turbines to be monitored.	Conducted twice-weekly (3-4 day intervals) at 12 turbines from May 1-October 31.  Monitoring to be conducted for three years.	Bats and Bat Habitats: Guidelines for Wind Power Projects, 2011	Annual Report will be submitted to MNR with the following anticipated dates: February 2015 February 2016 February 2017	Operational mitigation is required where annual post-construction mortality monitoring exceeds 10bats/turbine/year (MNR, 2011).  Mitigation may include operational controls, such as changing the rotor cut-in speed or blade feathering at specific times of the year, or alternate plan agreed to by the Proponent and MNR.  MNR will be consulted on contingency measures to be implemented.