



Henvey Inlet Wind LP

# Henvey Inlet Wind Transmission Line

## Appendix B3. Route A Transmission Line Terrestrial Environment Baseline Report

**Henvey Inlet Wind LP**

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## **Henvey Inlet Route A Transmission Line – Terrestrial Environment Baseline Report**

**Prepared by:**

AECOM

105 Commerce Valley Drive West, Floor 7

Markham, ON, Canada L3T 7W3

[www.aecom.com](http://www.aecom.com)

905 886 7022

tel

905 886 9494

fax

**Project Number:**

60341251

**Date:**

September 2015

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# AECOM Signatures

**Report Prepared By:**

---

Julie Ellis, B.Sc. (Hons.)  
Terrestrial Biologist

---

William McLeod, CISEC  
Environmental Technician

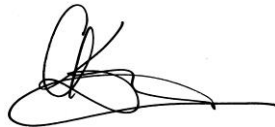
---

Heather Kime, B.Sc. (Hons.)  
Terrestrial Ecologist

---

Robert Conohan, B.Sc. (Hon).  
Wildlife Biologist

---

James Kamstra, B.Sc., M.E.S.  
Senior Ecologist**Report Reviewed By:**

---

Carla K. Korpijaakko-Arduengo, H.B.E.Sc.  
Environmental Scientist

---

Gary Epp, B.Sc. (Hons.), M.Sc., Ph.D.  
Director of Ecology,  
Water & Natural Resources, Environment



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# 1. Introduction

## 1.1 Project Description

Nigig Power Corporation (Nigig) received a Feed-in-Tariff (FIT) contract from the Ontario Power Authority (OPA) in 2011 for a 300 megawatt (MW) wind energy generation centre. Henvey Inlet Wind LP (HIW), a limited partnership between Pattern Renewable Holdings Canada ULC (Pattern) and Nigig, is proposing to develop the Henvey Inlet Wind Energy Centre (HIWEC), a 300-MW facility on Henvey Inlet First Nation Reserve No. 2 (HIFN I.R. #2). The HIWEC requires a new off-Reserve Transmission Line to deliver the electricity generated by the HIWEC to the Ontario electricity grid. AECOM Canada Ltd. (AECOM) was retained by HIW to conduct the Environmental Screening Process under Ontario Regulation (O.Reg.) 116/01 for 01 for two (2) proposed alternative off-Reserve Transmission Lines, Routes A and B.

This Environmental Baseline Report (EBR) summarizes available background information and the results of the 2014 and 2015 AECOM terrestrial environment field studies conducted within the Route A Transmission Line study area (**Figure 1-1**).

## 1.2 Study Area

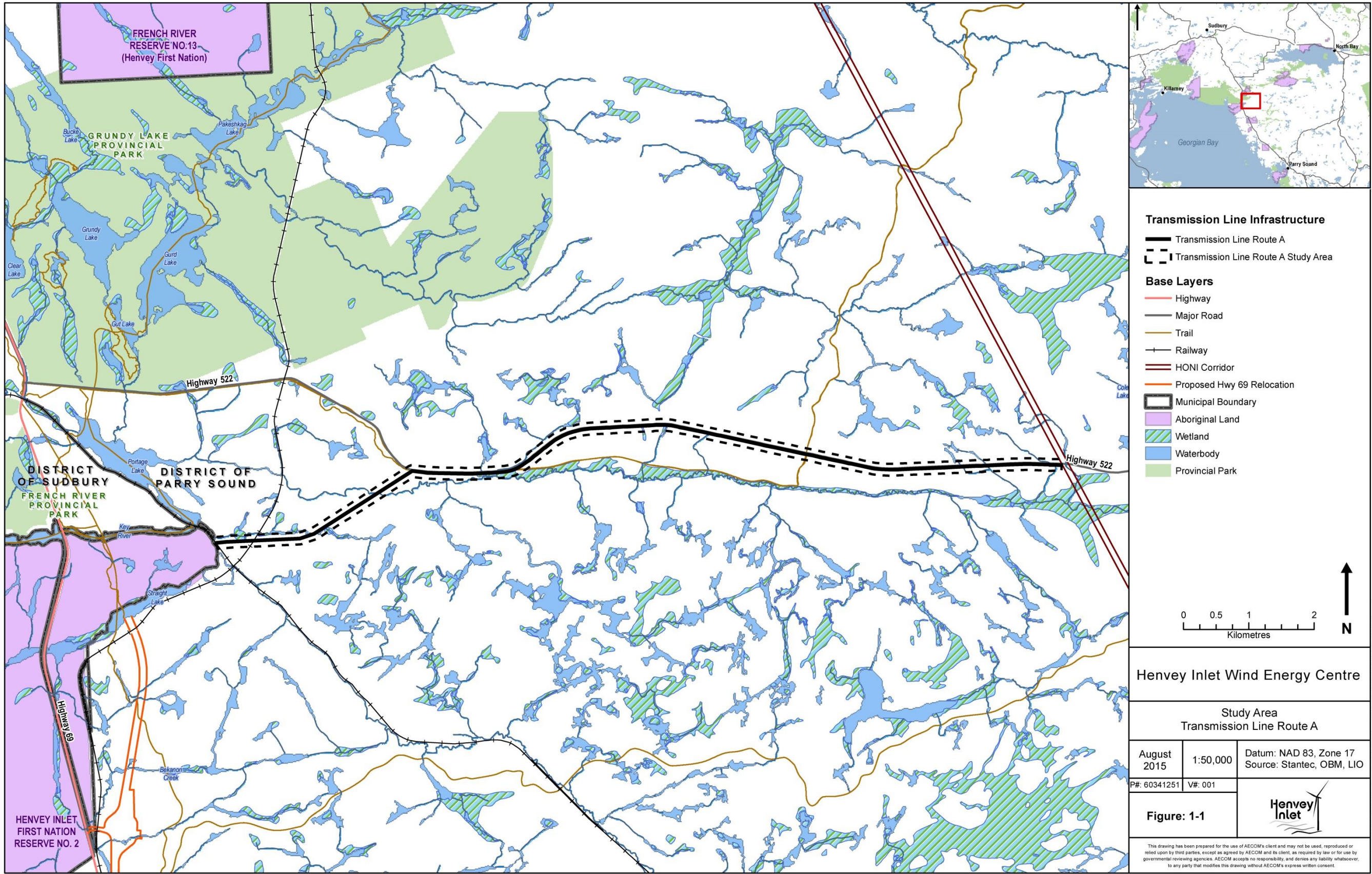
East of HIFN I.R. #2, the Route A Transmission Line study area is located within the District of Parry Sound and extends east through two (2) Unincorporated Townships: Mowat and Blair (under jurisdiction by the Archipelago Planning Board). The Route A Transmission Line originates at the eastern edge of HIFN I.R. #2 and travels for approximately 4 km to Highway 522. It then travels parallel to Highway 522 for approximately 10 km before connecting to the existing 500 kV Hydro One Networks Inc. (HONI) system near its intersection with Highway 522. The actual width of the Route A Transmission Line corridor will be up to 30 m.

The Route A Transmission Line study area is defined in the background review as 0.5 km on either side of the 30 m wide Right of Way (ROW) / corridor; for the purposes of field investigations, the study area extended 25 m from either side of the ROW centreline, with the exception of areas which MNRF identified as areas of interest for Blanding's Turtle and Eastern Massasauga Rattlesnake; in those cases, the study area extended 60 m from either side of the 30 m ROW.

The Route A Transmission Line study area is located within the Canadian Shield, which is part of a vast horseshoe-shaped area around Hudson Bay covering eastern and central Canada. The study area is characterised by exposed bedrock formations, bedrock barrens and bedrock plains with shallow soils and organic soil accumulations in low lying areas (Ecoplans, 2006). Much of the Canadian Shield rock has been carved and arranged by the last ice age, to form millions of lakes, ponds and wetlands (Wilkem, *et al.* date unknown). The study area landscape is a combination of upland rock barrens scattered by wetland drainages between the rocky ridges and includes the waterbodies of the Key River, Henvey Inlet and Portage Lake. These larger waterbodies are located at the northwestern limit of the Route A study area near HIFN I.R. #2. Refer to **Figure 1-1**.



Figure 1-1: Route A Transmission Line Study Area





## 2. Background Review

A background information review of terrestrial natural heritage features and functions located within 0.5 km (on either side) of the Route A Transmission Line was conducted using the following resources:

- Ontario Ministry of Natural Resources and Forestry (MNRF) Natural Resource Values Information System (NRVIS) mapping (MNRF, 2014);
- MNRF Make-a-Map: Natural Heritage Areas Application;
- MNRF Crown Land Use Policy Atlas (<http://www.ontario.ca/page/crown-land-use-policy-atlas>);
- MNRF Natural Heritage Information Centre (NHIC) Rare Species Records (MNRF, 2005);
- MNRF Significant Wildlife Technical Guide (MNRF, 2000);
- Draft Significant Wildlife Habitat 5E Criterion Schedule (MNRF, 2012a);
- Ontario Breeding Bird Atlas (OBBA) Website (BSC, 2006);
- Ontario Reptile and Amphibian Atlas (Ontario Nature, 2014);
- Atlas of the Mammals of Ontario (Dobbyn, 1994);
- Important Bird Areas Canada (BSC, 2015);
- The Neegan Burnside Nigig Power Corp/Henvey Inlet Wind Project Preliminary Environmental Constraints Analysis (Neegan Burnside, 2011);
- The Ecosystems of Ontario Part 1: Ecozones and Ecoregions. (Crins, *et al.* 2009); and
- Forest Regions of Canada (Rowe, 1972).

Species at Risk (SAR) are considered in this background review; these include species listed as Endangered or Threatened under the provincial *Endangered Species Act*, 2007 (Government of Ontario, 2007; hereafter *ESA*) or under Schedule 1 of the federal *Species at Risk Act* (Government of Canada, 2002; hereafter *SARA*).

Provincially rare species are also considered in this record review process, which includes species with designations Special Concern under the *ESA*, those on the Species at Risk in Ontario (SARO) list, as well as those ranked by the NHIC as S1 (Critically Imperiled), S2 (Imperiled), and S3 (Vulnerable).

### 2.1 Ministry of Natural Resources and Forestry Consultation

Consultation with the MNRF has been ongoing throughout the duration of the project thus far. This consultation has included:

- An initial information request (January 2015) and responses received thereafter;
- In-person kick-off meeting at the MNRF Parry Sound District office (March 4, 2015);
- Ongoing email and telephone correspondence;
- Follow-up meeting at the MNRF Parry Sound District office (June 25, 2015).

MNRF provided input to the 2015 SAR work plan, field methods, provided background information for our review and identified SAR permitting requirements as well as anticipated timelines.

### 3. Environmental Baseline

AECOM conducted field studies throughout the spring and summer of 2015. The field program was developed in consultation with the MNRF and included the following surveys:

- Ecological Land Classification (ELC) of vegetation communities and vascular plant inventory;
- Snag / Cavity tree density plots at pre-selected locations within the study area;
- Breeding bird surveys;
- Spring waterfowl migration / stopover surveys via helicopter;
- Crepuscular surveys via acoustic monitor recordings;
- Eastern Massasauga Rattlesnake and incidental snake hibernacula and gestation surveys; and,
- Blanding's Turtle and incidental turtle habitat surveys.

Amphibian surveys were not included in the field program, as MNRF indicated (meeting, J. Rouse, March 4, 2015) that sufficient background data on these species and their habitat within the Route A Transmission Line study area are available.

For this extensive field program, data were collected digitally for all of the above-listed field investigations, with the exception of the aerial spring waterfowl migration/stopover surveys, during which data were collected manually, using pen and paper. Electronic tablets with Griffin Survivor ruggedized cases and Garmin Glo GPS antennas were used for the remainder of the field survey types. Traditional paper forms for terrestrial and aquatic field data collection were digitized using iForms, a cloud based form solution. Field staff collected their specifically-assigned data on the tablets and synchronized their findings upon return to the base station. Data were then aggregated into a centralized database. Reports were created via Reporting Services and published to our SharePoint project portal for QA/QC and analysis purposes.

**Table 3-1** below summarizes the survey types, dates conducted, and the surveyors who conducted the investigations.

**Table 3-1: Summary of 2015 Field Surveys**

Survey	Date Conducted	Surveyors
<b>ELC</b>	1-May-15	Tom Shorney; Adam McClelland; Kristan Washburn; Olga Hropach; Nataliya Simonova; Justin Munro; Tom & Jason Noronha
	4-May-15	Jason Noronha & Kristan Washburn
	5-May-15	Jason Noronha & Kristan Washburn
	6-May-15	Jason Noronha & Kristan Washburn
	11-May-15	Kristan Washburn & Kasey McKenzie
	12-May-15	Kristan Washburn & Kasey McKenzie
	27-May-15	Tom Shorney & Nataliya Simonova; Jason Noronha & Ayesha Prasad
	28-May-15	Julie Ellis & Kasey McKenzie; Jason Noronha & Ayesha Prasad
	3-Jun-15	Nataliya Simonova & Jason Noronha
	4-Jun-15	Nataliya Simonova & Jason Noronha
	7-Jul-15	Sarah Richer & Kasey McKenzie
	8-Jul-15	Sarah Richer
<b>Bat Cavity/Snag Density</b>	7-Apr-15	Emily McNaughton & Nataliya Simonova; Ami Arsenault; Kristan Washburn; Tom Shorney & Justin Munro; James Kamstra & Ayesha Prasad; Adam McClelland & Casey O'Driscoll; Sarah Richer & Rob Conohan; Amy Ingriselli & Johanna Perz
	8-Apr-15	Olga Hropach & Nataliya Simonova; Ami Arsenault; Ayesha Prasad; James Kamstra; Adam McClelland & Casey O'Driscoll; Sarah Richer & Rob Conohan; Tom Shorney & Jason Noronha; Amy Ingriselli & Johanna Perz
	23-Apr-15	Tom Shorney & Kristan Washburn

**Table 3-1: Summary of 2015 Field Surveys**

Survey	Date Conducted	Surveyors
<b>Spring Waterfowl Migration/ Stopover and Staging Areas</b>	24-Apr-15	James Kamstra & Jessica Walker
	13-May-15	James Kamstra, Tom Shorney & Carla Korpjaakko
<b>Blanding's/Turtle</b>	1-May-15	Sarah Richer
	7-May-15	Adam McClelland; Nataliya Simonova
	19-May-15	Kristan Washburn
	28-May-15	Sarah Richer & Tom Shorney
	2-Jun-15	Rob Conohan & Johanna Perz
<b>Breeding Bird and Least Bittern</b>	1-Jun-15	Rob Conohan & Johanna Perz
	2-Jun-15	Rob Conohan & Johanna Perz
	15-Jun-15	Rob Conohan
	16-Jun-15	Rob Conohan
<b>Acoustic Crepuscular and Bat Monitor Deployment</b>	11-May-15	Ami Arsenault & Bill McLeod
	12-May-15	Ayesha Prasad & Bill McLeod
	15-May-15	Kristan Washburn; Tom Shorney
	27-May-15	Johanna Perz; Casey O'Driscoll
	28-May-15	Julie Ellis & Kasey McKenzie
	11-Jun-15	Casey O'Driscoll
	22-Jun-15	Casey O'Driscoll
	6-Jul-15	Casey O'Driscoll
	7-Jul-15	Sarah Richer & Casey O'Driscoll
<b>Eastern Massasauga/Snake</b>	1-May-15	Sarah Richer
	7-May-15	Adam McClelland; Nataliya Simonova
	19-May-15	Kristan Washburn; Amy Ingriselli & Tom Shorney; Kasey McKenzie & Casey O'Driscoll
	28-May-15	Julie Ellis & Kasey McKenzie; Sarah Richer & Tom Shorney; Ayesha Prasad & Jason Noronha
	1-Jun-15	Rob Conohan & Johanna Perz
	2-Jun-15	Rob Conohan & Johanna Perz
	25-Jun-15	Kristan Washburn; Sarah Richer
	29-Jun-15	Adam McClelland
	3-Jul-15	Casey O'Driscoll
	6-Jul-15	Casey O'Driscoll

## 3.1 Vegetation

### 3.1.1 Background Review

The Route A Transmission Line study area is located within Ecoregion 5E, the Georgian Bay Ecoregion. The ecoregion is underlain by bedrock of the Precambrian Shield (Crins, *et al.* 2009). Land cover in the ecoregion is largely dominated by mixed forest (32.0%), deciduous forest (22.2%), coniferous forest (12.1%) and sparse forests (11.3%) (Crins, *et al.* 2009). Water and pasture comprise 11.0% and 3.0% cover, respectively (Crins, *et al.* 2009). The ecoregion is located within the Great Lakes-St. Lawrence Forest Region and consists of a number of Forest Sections including: Algoma, Sudbury-North Bay, Algonquin-Pontiac, Georgian Bay, and Middle Ottawa (Rowe, 1972). Forests within the Great Lakes-St. Lawrence Forest Region are composed of Eastern White Pine (*Pinus strobus*), Red Pine (*Pinus resinosa*), Eastern Hemlock (*Tsuga canadensis*), and Yellow Birch (*Betula alleghaniensis*) (Crins, *et al.* 2009). Mesic sites host more hardwood species including: Sugar Maple (*Acer saccharum*), American Beech (*Fagus grandifolia*), Black Cherry (*Prunus serotina*), Basswood (*Tilia americana*) and White Ash (*Fraxinus americana*) (Crins, *et al.* 2009). Furthermore, boreal species including: Black Spruce (*Picea mariana*), White Spruce (*Picea glauca*), Balsam Fir (*Abies balsamea*), Jack Pine (*Pinus banksiana*), and Tamarack (*Larix laricina*) may also be present (Rowe, 1972).

In general, the vegetation within the vicinity of the Route A Transmission Line study area is sparse in areas due to extensive rock outcrops and organic soils (Neegan Burnside, 2011). Given that the uplands have little to no soil, biological productivity in these areas is low. Conversely, as the lowlands have accumulated more soils, these areas have greater amounts of vegetation present and thus have higher biological productivity (Neegan Burnside, 2011).

The 2011 Neegan Burnside Nigig Power Corp / Henvey Inlet Wind Project Preliminary Environmental Constraints Analysis Report indicates the following tree species are present within the vicinity of the Route A Transmission Line study area:

- Red Pine (*Pinus resinosa*), White Pine (*Pinus Strobus*) and Jack Pine (*Pinus banksiana*);
- White Birch (*Betula papyrifera*), Yellow Birch (*Betula alleghaniensis*);
- White Spruce (*Picea glauca*), Eastern Hemlock (*Tsuga Canadensis*), Red Cedar (*Juniperus virginiana*);
- Hard & Soft Maple (*Acer spp.*), Poplar (*Populus spp.*), Red Oak (*Quercus rubra*); and
- Aspen (*Populus spp.*), Balsam Fir (*Abies balsamea*) and Beech (*Fagus grandifolia*).

Additional information relating to the vascular plant species or vegetation communities is not available for the Route A Transmission Line study area due to the relative scarcity of existing background information and field studies in the area. Ecological Land Classification was conducted by AECOM during the 2015 field season to classify the vegetation communities present, and to document the vascular plant species present within the Route A Transmission Line study area.

### 3.1.2 Field Investigations

AECOM conducted field investigations to characterize vegetation communities and compile data on plant species within the Route A Transmission Line study area in the spring and summer of 2015. This section describes the methods and results of these field investigations.

#### 3.1.2.1 Methods

Field investigations for vegetation in the Route A Transmission Line study area began with a desktop review of aerial photography, which involved identifying areas of interest and completing preliminary delineation of vegetation community boundaries. This high level assessment provided an understanding of site conditions to community series (i.e., FOM, FOD, FOC, etc.). This was then digitized and mapped by GIS analysts for ground-truthing by field staff.

Site investigation surveys were conducted for the vast majority of the Route A Transmission Line study area within 25 m of the centre line of the Project Location (defined as the Transmission Line ROW). These surveys included the delineation and characterization of:

- Vegetation communities using ELC;
- Wetland features;
- Woodland features; and
- Candidate Significant Wildlife Habitat features.

No work of this nature had been previously completed for the Route A Transmission Line study area. Ecological Land Classification was undertaken using the protocols described in the *Ecological Land Classification for Southern Ontario: First Approximation and Its Application* (Lee, et al. 1998). The Southern ELC was applied because previous studies conducted in the general study area i.e., the HIWEC, and the alternative Route B Transmission Line alignment study area (AECOM, 2015), used the same. Remaining consistent has greatly assisted in filling information gaps expediently.

Significant Wildlife Habitat was assessed by implementing criteria from the Significant Wildlife Habitat Technical Guide (MNR, 2000) for Ecoregion 5E-7.

All vegetation communities, including areas less than 0.5 ha, were classified at a minimum into Ecosite. Revisions to community boundaries were made to existing maps in the field to accurately reflect field observations, including modifications of polygon boundaries. Ecological Land Classification codes were recorded on all maps being used in the field.

For each community encountered, field staff completed the following on electronic tablets:

- Recorded the names of the field staff, project name, polygon ID, date, start time, end time, and weather conditions (wind, precipitation, and cloud cover);
- Travelled to the vegetation unit identified on the map;
- Completed ELC cards for community classification, soils (where applicable), and vegetation;
- Attempted to assign an ELC code to all vegetation communities while in the field. Where communities could not be coded according to existing ELC codes, the community was left at the Ecosite level (e.g., FOD7). These codes were later transcribed to the polygons drawn on the maps;
- Photographed all communities;
- Completed running plant species lists for each vegetation type, and recorded the UTM co-ordinates of any potential regionally or provincially significant species;
- Recorded any incidental observations of fauna, or their evidence, for the wildlife component of the field investigations, using the Wildlife and Wildlife Habitat Form. These observations were used to identify potential for candidate Significant Wildlife Habitat; and
- Recorded and photographed any evidence of SAR or SAR habitat observed within the survey area.

Following on-site delineation of community boundaries on the maps, boundaries were digitized and mapped by GIS analysts. Field forms of community characterizations / descriptions were transcribed and analyzed.

### 3.1.2.2 Field Results

#### 3.1.2.2.1 Vegetation Communities

A total of 42 ecological communities were identified in the study area (**Figure 3-1**, Appendix A). Of these, 11 were communities that could be identified only to ELC Community Series, four (4) were identified to Ecosite, and the remaining 26 were identified down to Vegetation Type. **Table 3-2** below provides a detailed description of the ELC communities identified within the study area.

Three (3) types of Rock Barren communities were found in the Route A Transmission Line study area. Open Rock Barrens had patchy, sparse vegetation consisting mainly of lichens, mosses, grasses, and a few forbs. Shrub Rock Barrens were vegetated mainly by Red Raspberry (*Rubus idaeus*) or Common Juniper (*Juniperus communis*), or a combination of the two (2). Treed Rock Barrens supported modest tree cover consisting largely of Eastern White Pine (*Pinus strobus*) and Red Maple (*Acer rubrum*), although White Spruce (*Picea glauca*), Balsam Fir (*Abies balsamea*), and Eastern White Cedar (*Thuja occidentalis*) also occurred.



Table 3-2: ELC Vegetation Communities Identified within Route A Transmission Line Study Area

ELC Code	ELC Name	Tree Canopy	Shrub Layer	Ground Layer	Comments	Total Area (ha)	Percentage (%)
Rock Barren Communities						446.54	12.94
Open Rock Barren (RBO)						220.55	6.39
RBO	Open Rock Barren Series	Community identified by alternative site investigation (AECOM, 2015).			This is a very dry community composed mostly of exposed rock outcrops with scattered pockets of shallow soil. Vegetation is typically patchy and sparse (Lee, <i>et al.</i> , 1998).		
RBO3	Acidic Open Rock Barren Ecosite	Less than 10% tree cover: some Jack Pine and Red Oak present.	Less than 10% shrub cover: consisted primarily of saplings of Red Oak, Jack Pine, Red Pine, and White Birch. Common Juniper, Pin Cherry, and Red Raspberry were also present in small proportions.	Variable patchy ground cover usually dominated by grasses. Lichens were abundant; Bracken Fern, Fire Moss, and Yellow Dog's-tooth Violet also occurred in some cases.			
RBO3-1	Dry Acidic Open Rock Barren Type	Less than 10% tree cover: contained Red Maple or Eastern White Pine in some sites.	Greater than 25% shrub cover: consisted of Bush Honeysuckle.	Variable patchy ground cover usually dominated by Common Hairgrass. Lichens were abundant; Poverty Oat Grass, Cow-wheat, Rusty Woodsia, Pale Corydalis, Fringed Buckwheat, Hedwig's Moss and Bristly Sarsaparilla were also present at some sites.			
Shrub Rock Barren (RBS)						16.80	0.49
RBS3-1	Blueberry Acidic Shrub Rock Barren Type	Tree cover less than 25%: consisted of Jack Pine and Eastern White Pine. Some Red Maple and Red Oak also occurred but were rare.	Greater than 25% shrub cover: dominated by Low Sweet Blueberry. Common Juniper was also abundant, along with some Bush Honeysuckle.	Ground cover greater than 60%: dominated by Lichens and Mosses. Bracken Fern was abundant. Spreading Dogbane, Bristly Sarsaparilla, Sheep Sorrel, Fringed Black Bindweed, Common Yarrow, Devil's Paintbrush, Pale Corydalis, Cow-wheat, and Goldenrod species were also present.	This is a very dry community with exposed rock outcrops and pockets of shallow soil. Junipers can form large patches.		
RBS3-2	Common Juniper Acidic Shrub Rock Barren Type	Tree cover less than 10%: consisted of Red Maple, Eastern White Pine, and White Birch.	Greater than 25% shrub cover: dominated by Common Juniper; some Bush Honeysuckle was also present.	Ground cover greater than 25%: included Lichens, Common Hairgrass, Sheep Sorrel, Sedges, Spreading Dogbane, Common Yarrow, Virginia Strawberry, and Wild Lily-of-the-valley.			
Treed Rock Barren (RBT)						209.19	6.06
RBT	Treed Rock Barren Series	Community identified by alternative site investigation (AECOM, 2015).			This is a very dry community with exposed rock outcrops and pockets of shallow soil. Trees and shrubs are present only where there is sufficient soil. Vegetation community inclusions that are less than 0.5 ha in size can form in depressions within treed rock barren communities where deeper soils, organic material and/or wetter soil conditions have developed, and may include Shrub Fens (FES1).		
RBT3	Acidic Treed Rock Barren Ecosite	Twenty-five (25) per cent (%) to 60% tree cover: dominated by Red Maple and Eastern White Pine. Contained some White Spruce, Balsam Fir, and Eastern White Cedar, as well, at some sites.	Shrub layer cover greater than 25%: dominated by Common Juniper, and Low Sweet Blueberry.	Ground cover greater than 25%: included Lichens.			
Forest Communities						2458.66	71.24
Coniferous Forest (FOC)						514.61	14.91
FOC	Coniferous Forest Series	Community identified by alternative site investigation (AECOM, 2015).					
FOC1-2	Dry – Fresh White Pine – Red Pine Coniferous Forest Type	Tree cover between 25 and 60%: dominated by Eastern White Pine, together with varying proportions of Red Pine, White Spruce, and Balsam Fir. Small amounts of White Birch, Red Maple, and Trembling Aspen were also present.	Shrub cover variable between 10 and greater than 60%: dominated by saplings of Eastern White Pine and Balsam Fir. Beaked Hazel, Allegheny Blackberry, Red-osier Dogwood, and Northern Wild Raisin also occurred in some cases	Ground cover less than 10%: consisted mainly of Bracken Fern, Wild Sarsaparilla, Large-leaved Aster, Devil's Paintbrush, and Wild-Lily-of-the-valley.	n/a		
FOC3-1	Fresh – Moist Hemlock Coniferous Forest Type	Tree cover between 25 and 60%: dominated by Eastern Hemlock, White Spruce, and Balsam Fir. Small amounts of Red Maple, Eastern White Pine, and Red Oak were also present.	Shrub cover less than 25%: dominated by saplings of Balsam Fir. American Fly Honeysuckle also occurred.	Ground cover generally less than 25%: consisted mainly of ferns, such as Bracken Fern and Spinulose Wood Fern, and Lady Fern, as well as Bunchberry, Star-flower, and Wild-Lily-of-the-valley.	n/a		
Mixed Forest (FOM)						1772.70	51.37
FOM	Mixed Forest Series	Community identified by alternative site investigation (AECOM, 2015).			Mixed forests are characterized by having canopies composed of greater than 25% deciduous species and greater than 25% coniferous species (Lee, <i>et al.</i> 1998).		
FOM2-1	Dry – Fresh White Pine – Oak Mixed Forest Type	Tree cover greater than 60%: co-dominated by Bur Oak and Eastern White Pine with some Sugar Maple, White Spruce, White Birch, and Black Ash.	The shrub layer consisted of Beaked Hazel, Black Ash, Sugar Maple, and Skunk Currant.	Ground cover greater than 60% with a mix of species that sometimes included Yellow Dog's Tooth Violet, White Trillium, Wild Lily-of-the-valley, and Star-flower.			
FOM5-2	Dry – Fresh Poplar Mixed Forest Type	Canopy consisted of White Spruce, Large-tooth Aspen, and Black Ash.	Variable shrub layer dominated by Beaked Hazel, with some Black Ash.	Ground layer with the greatest cover of Wild Sarsaparilla, Foamflower, and Oak Fern.	n/a		



Table 3-2: ELC Vegetation Communities Identified within Route A Transmission Line Study Area

ELC Code	ELC Name	Tree Canopy	Shrub Layer	Ground Layer	Comments	Total Area (ha)	Percentage (%)
FOM8-1	Fresh – Moist Poplar Mixed Forest Type	Both coniferous and deciduous species made up over 60% of the canopy with Trembling Aspen, Balsam Fir, Red Maple, and White Birch.	Often dense shrub layer dominated by Beaked Hazel, with Red Maple, and Trembling Aspen.	Ground layer cover exceeded 60%: consisted of Bracken Fern, Wild Sarsaparilla, Large-leaved Aster, and Wild Lily-of-the-valley.	Typically an early successional forest following a disturbance; soil textures are variable (Lee, <i>et al.</i> 1998).	171.35	4.97
FOM8-2	Fresh – Moist White Birch Mixed Forest Type	Tree cover between 25 and 60%: dominated by White Birch, Trembling Aspen, and Red Maple along with White Spruce and Eastern White Pine.	Shrub cover between 25 and 60%: consisted largely of Beaked Hazel and American Fly Honeysuckle; saplings of Balsam Fir were also present.	Ground cover variable and consisted mainly of Bracken Fern, Wild Lily-of-the-valley, Spinulose Wood Fern, Bunchberry, and Goldthread.			
Deciduous Forest (FOD)							
FOD3-1	Dry – Fresh Poplar Deciduous Forest Type	Tree cover greater than 60%: forest community dominated by deciduous trees consisting mainly of Trembling aspen; some White Birch, Balsam Poplar or Black Ash were also present.	Shrub cover greater than 25%: dominated by Beaked Hazel and Pin Cherry.	Greater than 25% ground cover: consisted of Yellow Dog’s-tooth Violet, White Trillium, and Large-leaved Aster.	Deciduous forests are characterized by greater than 75% of tree cover within the canopy being deciduous (Lee, <i>et al.</i> 1998).	171.35	4.97
FOD6-5	Fresh – Moist Sugar Maple – Hardwood Deciduous Forest Type	Greater than 60% tree cover: dominated by Sugar Maple together with Red Maple. Ironwood occurred in the sub-canopy occasionally.	The shrub layer was greater than 25%: included Mountain Maple.	Ground cover exceeded 60%: consisted of Yellow Dog’s-tooth Violet and Wild Lily-of-the-valley.	Deciduous forests are characterized by greater than 75% of tree cover within the canopy being deciduous (Lee, <i>et al.</i> 1998). Tree cover greater than 60% dominated by Sugar Maple, and occurring on moist soils.		
FOD7-2	Fresh – Moist Ash Lowland Deciduous Forest Type	Over 75% of canopy layer comprised of deciduous species including Black Ash, Trembling Aspen, and Red Maple with some Yellow Birch.	Greater than 60% shrub cover: dominated by Beaked Hazel together with Red Maple.	The ground layer cover exceeded 60%: consisted of Wild Sarsaparilla and Large-leaved Aster.	Deciduous tree species form more than 75% of canopy cover with a mixture of upland and wetland species; represents a wetland–terrestrial transitional forest (Lee, et al. 1998).		
FOD8-1	Fresh – Moist Poplar Deciduous Forest Type	Tree cover between 25 and 60%: dominated by Trembling Aspen, together with Black Ash, and some Red Maple.	The shrub layer consisted of Beaked Hazel, Viburnum species, and saplings of Red Maple.	The ground layer cover was between 25 and 60%, and consisted of Wild Sarsaparilla, Foamflower, and Asters.	n/a		
Cultural Communities						9.24	0.27
Cultural Plantation (CUP)						9.24	0.27
CUP3-1	Red Pine Coniferous Plantation Type	Between 25 and 60% tree cover: consisted entirely of Red Pine. Sub-canopy consisted mainly of White Spruce.	Shrub cover greater than 25%, but less than 60%, and consisted of saplings of Red Maple and Red Pine, together with American Fly Honeysuckle, Allegheny Blackberry, and Red Raspberry.	Ground cover less than 10%: comprised mostly of Bracken Fern. Some Wild Lily-of-the-valley was also present.	n/a		
Swamp Communities						150.53	4.36
Mixed Swamp (SWM)						65.90	1.91
SWM	Mixed Swamp Series	Community identified by alternative site investigation (AECOM, 2015).			Mixed swamps are characterized by having both deciduous and coniferous species, each making up at least 25% of total tree cover. Variable flooding regimes with water depths of less than 2 m (Lee, <i>et al.</i> 1998).		
SWM5-1	Red Maple – Conifer Organic Mixed Swamp Type	Swamp community was a mixture of deciduous tree species (over 25%) and coniferous species (over 25% of total tree cover): dominated by Red Maple with Black Spruce, Balsam Fir, White Birch, and Eastern White Pine. The sub-canopy contained Speckled Alder.	Shrub cover greater than 60%: consisted of a tall layer of Mountain-holly, Speckled Alder, and Northern Wild Raisin. A low shrub layer consisting of Leatherleaf and Low Sweet Blueberry also occurred.	Vegetation cover of ground layer greater than 60%, contained Wild Lily of-the-valley, Star-flower, Royal Fern, and Sensitive Fern. Moss layer was dominated by Sphagnum species.			
Deciduous Swamp (SWD)						55.59	1.61
SWD	Deciduous Swamp Series	Community identified by alternative site investigation (AECOM, 2015).			n/a		
SWD2-1	Black Ash Mineral Deciduous Swamp Type	Twenty-five (25) per cent (%) to 60% tree cover: dominated by Black Ash. Some White Spruce, Red Maple, and Balsam Fir were also present occasionally, particularly in the sub-canopy.	Less than 25% shrub cover: consisted mainly of Red Raspberry, Beaked Hazel, and American Fly Honeysuckle. Some Prickly Gooseberry also occurred at some sites	Ground cover exceeded 60%: consisted mainly of grasses together with Dwarf Raspberry, Sensitive Fern, Tall Meadow-rue, and Wild Lily-of-the-valley. Some Yellow Dog’s-tooth Violet also occurred in some cases	n/a		
Thicket Swamp (SWT)						29.04	0.84
SWT	Thicket Swamp Series	Community identified by alternative site investigation (AECOM, 2015).					
SWT2-1	Alder Mineral Thicket Swamp Type	Tree cover less than 25%, and consisted of Trembling Aspen.	Shrub cover, dominated by Speckled Alder, exceeded 25%.	Ground layer composed of greater than 60% Sedges, Sensitive Fern, Blue-joint grass, and Canada Anemone.	Thicket swamps are characterized by having tree cover less than 25% and hydrophytic shrub greater than 25%, variable flooding regimes, and often some standing water or vernal pooling (Lee, <i>et al.</i> 1998). Organic soils less than 40 cm deep are present.		

Table 3-2: ELC Vegetation Communities Identified within Route A Transmission Line Study Area

ELC Code	ELC Name	Tree Canopy	Shrub Layer	Ground Layer	Comments	Total Area (ha)	Percentage (%)
Fen Communities						23.53	0.68
Open Fen (FEO)						23.53	0.68
FEO	Open Fen Series	Community identified by alternative site investigation (AECOM, 2015).			n/a		
Marsh Communities						296.80	8.60
Meadow Marsh (MAM)						135.16	3.92
MAM	Meadow Marsh Series	Community identified by alternative site investigation (AECOM, 2015).					
MAM2-1	Bluejoint Mineral Meadow Marsh Type	None present.	None present.	Ground cover greater than 60%: dominated by Blue-joint grass together with some Tall Meadow-Rue.	Meadow marshes have a water table that drops below the ground surface in summer and generally no standing water is present (Lee, <i>et al.</i> 1998). Grass or sedges are usually dominant; richer areas are dominated by clonal species; wave swept, ice-scoured areas are sparsely vegetated (Lee, <i>et al.</i> 1998).		
MAM2-2	Reed-canary Grass Mineral Meadow Marsh Type	None present.	Less than 25% shrub cover: consisted mainly of Narrow-leaved Meadow-sweet.	Greater than 60% ground cover: consisted almost entirely of Reed Canary Grass. Broad-leaved Cattail and Marsh Marigold were also present.	n/a		
MAM2-3	Red-top Mineral Meadow Marsh Type	Less than 10% tree cover, which may have included some White Spruce or Balsam Fir.	Less than 10% shrub cover: with Speckled Alder, White Spruce, and Balsam Fir.	Ground cover exceeded 60%: dominated by Redtop; Tall Meadow-rue, Wood Horsetail, and other species occurred occasionally.	n/a		
MAM2-10	Forb Mineral Meadow Marsh Type	None present.	Between 25 and 60% shrub cover: dominated by American Elderberry and Speckled Alder. Some Red Raspberry and Allegheny Blackberry also occurred.	Ground cover exceeded 25%: composed mainly of grasses, such as Blue-joint Grass. Common Milkweed, Goldenrods, Virgin's-bower, and Tall Meadow-rue were common.	n/a		
Shallow Marsh (MAS)						161.64	4.68
MAS	Shallow Marsh Series	Community identified by alternative site investigation (AECOM, 2015).					
MAS2-1	Cattail Mineral Shallow Marsh Type	Less than 10% tree cover: comprised of White Birch and Eastern White Pine.	Less than 25% shrub cover: consisted of Leatherleaf.	Ground layer dominated by Cattail; some Blue-joint grass was also present.	Dominated by graminoids, with hydrophytic emergent macrophyte cover greater than 25%; shallow standing water (up to 2 m deep) often present (Lee, <i>et al.</i> 1998).		
MAS2-2	Bulrush Mineral Shallow Marsh Type	None present.	Sparse shrub layer, consisting of Allegheny Blackberry, was present.	Ground layer dominated by Hard-stemmed Bulrush, Sedges, such as Wool-grass, and grasses, such as Reed Canary Grass; some Sensitive Fern, Asters, and Broad-leaved Cattail were also fairly common.	Dominated by graminoids, with hydrophytic emergent macrophyte cover greater than 25%; shallow standing water (up to 2 m deep) often present (Lee, <i>et al.</i> 1998).		
MAS3	Organic Shallow Marsh Ecosite	Sparse canopy, consisting of White Spruce, was present.	Sparse shrub layer, consisting of Allegheny Blackberry and Speckled Alder, was present.	Ground layer dominated by Reed Canary Grass and Sedges.	Dominated by graminoids, with hydrophytic emergent macrophyte cover greater than 25%; shallow standing water (up to 2 m deep) often present (Lee, <i>et al.</i> 1998).		
MAS3-3	Narrow-leaved Sedge Organic Shallow Marsh Type	None present.	Sparse shrub layer, consisting of Narrow-leaved Meadow-sweet, was present.	Ground layer dominated by various Sedges and Reed Canary Grass. Sensitive, Aster species, Blue Cohosh, and Woodland Strawberry were also present.	Dominated by graminoids, with hydrophytic emergent macrophyte cover greater than 25%; shallow standing water (up to 2 m deep) often present (Lee, <i>et al.</i> 1998).		
Open Water Communities						5.77	0.17
Open Aquatic (OAO)						5.77	0.17
OAO	Open Aquatic	None present.	None present.	None present.	Open aquatic communities are characterized with water depths greater than 2 m, with sparse or no submerged aquatic plant cover (Lee, <i>et al.</i> 1998).		

Table 3-2: ELC Vegetation Communities Identified within Route A Transmission Line Study Area

ELC Code	ELC Name	Tree Canopy	Shrub Layer	Ground Layer	Comments	Total Area (ha)	Percentage (%)
Shallow Water Communities						60.01	1.74
Shallow Water (SA)						45.97	1.33
SA	Shallow Water Series	Community identified by alternative site investigation (AECOM, 2015).			n/a		
Submerged Shallow Aquatic (SAS)						11.72	0.34
SAS1	Submerged Shallow Aquatic Ecosite	None present. Very sparse cover of White Spruce along the margins of the feature.	None present. Few individuals of Swamp Currant along the margins of the feature.	Submerged macrophytes included Water-pepper, and emergent vegetation, included grasses, Sedges and Rush species.	n/a		
Mixed Shallow Aquatic (SAM)						2.31	0.07
SAM1-6	Bladderwort Mixed Shallow Aquatic Type	None present.	None present.	Vegetation cover exceeds 25%, and consisted of a combination of floating-leaved species, such as Bulhead Pond-lily, and submerged species, such as Flat-leaved Bladderwort.	n/a		
Floating-leaved Shallow Aquatic (SAF)							
SAF1-1	Water Lily – Bullhead Lily Floating-leaved Shallow Aquatic Type	None present.	None present.	Floating-leaved macrophytes exceed 25% cover and included Water-shield, Fragrant Water-lily, and Bulhead Pond-lily. Some Pondweeds were present; emergent vegetation, including Sedges and Blue-joint grass were also present.	Floating-leaved shallow aquatic communities are dominated by floating-leaved macrophytes in up to 2 m of permanent water (Lee, <i>et al.</i> 1998).		

All three (3) types of forest communities – Coniferous (FOC), Mixed (FOM), and Deciduous (FOD) – were found in the study area. Coniferous Forests were typically dominated by Eastern White Pine, Red Pine (*Pinus resinosa*) or Hemlock (*Tsuga canadensis*), which sometimes co-occurred with other conifers, such as White Spruce and Balsam Fir, as well as broad-leaved species, such as White Birch (*Betula papyrifera*) and Trembling Aspen (*Populus tremuloides*). Mixed Forests had large proportions of both coniferous and deciduous species; Eastern White Pine, White Spruce, and Balsam Fir co-occurred with Bur Oak (*Quercus macrocarpa*), White Birch, Red Maple, Trembling Aspen, Large-tooth Aspen (*Populus grandidentata*), and Black Ash (*Fraxinus nigra*). Deciduous forests were dominated by Aspens (*Populus* species), Maples (*Acer* species), and Black Ash, although other broad-leaved species, such as White and Yellow Birch (*Betula alleghaniensis*) also occurred. The shrub layer in these forests was typically comprised of saplings of the canopy species along with, most commonly, Speckled Alder (*Alnus incana* ssp. *rugosa*), Beaked Hazel (*Corylus cornuta*), Pin Cherry (*Prunus pensylvanica*), American Fly Honeysuckle (*Lonicera canadensis*), Red-osier Dogwood (*Cornus sericea*), Northern Wild Raisin (*Viburnum nudum* var. *cassinoides*), Allegheny Blackberry (*Rubus allegheniensis*), and Currants (*Ribes* species). These forests had a ground layer with an abundance of ferns, particularly Bracken Fern (*Pteridium aquilinum* var. *latiusculum*), and a variety of forbs, the most common of which were Asters, Wild Lily-of-the-valley (*Maianthemum canadense*), Wild Sarsaparilla (*Aralia nudicaulis*), Bunchberry (*Cornus canadensis*), and White Trillium (*Trillium grandiflorum*).

Cultural communities were scarce relative to the other ecological communities in the study area; one (1) Red Pine Coniferous Plantation (CUP3-1) was found. The understory in this community contained Red Raspberry, Allegheny Blackberry, and Bracken Fern.

Three (3) major swamp communities – Mixed (SWM), Deciduous (SWD) and Thicket (SWT) – were found in the Route A Transmission Line study area. Mixed Swamps consisted of a tree layer largely comprised of Red Maple, and conifers such as Black Spruce (*Picea mariana*) and Eastern White Pine, together with a tall shrub layer consisting of Mountain-holly (*Nemopanthus mucronatus*), Speckled Alder, and Northern Wild Raisin. Deciduous Swamps were typically dominated by Black Ash, with a shrub layer of Red Raspberry and Beaked Hazel. Thicket Swamps had a relatively sparse tree layer but were comprised mainly of shrubs such as Speckled Alder. In all three (3) Swamp communities, Sphagnum moss, ferns, such as Royal Fern (*Osmunda regalis* var. *spectabilis*) and Sensitive Fern (*Onoclea sensibilis*), and grasses, such as Blue-joint Grass (*Calamagrostis canadensis*) were abundant on the ground. Forbs such as Wild Lily-of-the-valley and Star-flower (*Trientalis borealis* ssp. *borealis*) were also common.

Wetland communities in the Route A Transmission Line study area consisted almost entirely of Marshes – Meadow Marshes (MAM) and Shallow Marshes (SAM). Meadow Marshes were typically dominated by one species of grass such as Blue-joint Grass, Reed Canary Grass (*Phalaris arundinacea*), or Red-top (*Agrostis gigantea*); some contained an abundance of forbs, such as Tall Meadow-rue (*Thalictrum pubescens*), Marsh-Marigold (*Caltha palustris*), and Wood Horsetail (*Equisetum sylvaticum*) in addition to grasses. The shrub layer in Meadow Marshes was sparse, and typically contained Speckled Alder, Narrow-leaved Meadow-sweet (*Spiraea alba*), Red Raspberry, Allegheny Blackberry, and American Elderberry (*Sambucus canadensis*). Shallow Marsh communities were dominated by Broad-leaved Cattail (*Typha latifolia*), Hard-stemmed Bulrush (*Schoenoplectus acutus* var. *acutus*), or a variety of narrow-leaved sedges. Other ground species in Shallow Marshes included Asters, Blue Cohosh (*Caulophyllum thalictroides*), and Sensitive Fern.

Shallow Water communities in the study area consisted of Submerged (SAS), Mixed (SAM), and Floating-leaved (SAF) Shallow Aquatic communities. Submerged macrophytes, such as Water-pepper (*Polygonum hydropiper*) were abundant in SAS communities, and Floating-leaved macrophytes, such as Water-shield (*Brasenia schreberi*), Fragrant Water-lily (*Nymphaea odorata*), and Bulhead Pond-lily (*Nuphar variegata*) dominated SAF communities. Mixed Shallow Aquatic communities were dominated by a combination of submerged species, such as Flat-leaved Bladderwort (*Utricularia intermedia*), and floating-leaved species, such as Bulhead Pond-lily. Emergent vegetation, comprised of sedges, grasses, rushes, and Pondweeds (*Potamogeton* species), were also common along the fringes of Shallow Aquatic communities.

### 3.1.2.2.2 Vascular Plants

The vegetation species identified within the Route A Transmission Line study area are provided in **Appendix B: Plant List**. A total of 421 vascular plant species were recorded within the study area. An additional six (6) species of lichen and ten (10) mosses were also identified. Of the 421 vascular plant species, 211 (50.1%) were native species, while 210 (49.9%) were non-native/exotic species.

Floristic quality was assessed based on the Coefficient of Conservatism (CC), Wetness Index, and Weediness Index. The CC values are assigned to native Ontario vegetation species in the Floristic Quality Assessment System for Southern Ontario (Oldham, *et al.*, 1995), based on the tolerance of a species to disturbance and habitat fidelity. The CC scores range from 0 (low conservatism, or, low sensitivity to disturbance) to 10 (high conservatism, or, high sensitivity to disturbance). CC values of 8, 9 or 10 indicate a species which is a habitat specialist (MNR, 2008). Of the 421 vascular plants, 57 (27%) had CC values of 0 to 3 (lowest sensitivity), 97 (46%) had CC values of 4 to 6 (moderate sensitivity), 46 (22%) had CC values of 7 to 8 (high sensitivity), and 11 (5%) had CC values of 9 to 10 (highest sensitivity).

No provincially-ranked Special Concern, Threatened or Endangered plant species were encountered, nor any Species of Conservation Concern (SOCC).

## 3.2 Fauna

The Route A Transmission Line study area is largely undeveloped and as such, provides habitat to a high diversity of wildlife. The following subsections list and discuss mammals, reptiles and amphibians commonly encountered in the region, as well as targeted field surveys conducted by AECOM in 2015. Incidental wildlife observations recorded during 2015 field investigations are also discussed in the following sections.

### 3.2.1 **Mammals**

#### 3.2.1.1 **Background Review**

The Atlas of the Mammals of Ontario (Dobbyn, 1994) indicates that commonly-encountered mammals within the study area include:

- Eastern Cottontail (*Sylvilagus floridanus*);
- Beaver (*Castor canadensis*);
- Muskrat (*Ondatra zibethicus*);
- Gray Wolf (*Canis lupus*);
- Red Fox (*Vulpes vulpes*);
- Black Bear (*Ursus americanus*);
- Raccoon (*Procyon lotor*);
- Marten (*Martes americana*);
- Fisher (*Martes pennanti*);
- Mink (*Mustela vison*);
- Striped Skunk (*Mephitis mephitis*);
- River Otter (*Lutra canadensis*);
- White-tailed Deer (*Odocoileus virginianus*); and
- Moose (*Alces alces*).

All of these species are ranked as S4 or S5, and considered common and secure in Ontario. According to the Atlas of the Mammals of Ontario (Dobbyn, 1994), and the Bat Conservation International Species Profiles (BatCon, 2015) three (3) Species at Risk bats: Little Brown Bat (*Myotis lucifugus*), Northern Myotis (formerly Northern Long-eared Bat) (*Myotis septentrionalis*), and Eastern Small-footed Myotis (*Myotis leibii*) may be present within the Route A Transmission Line study area. The Little Brown Bat, Northern Myotis, and Eastern Small-footed Myotis have come to receive protection under the *ESA* fairly recently (2013 and 2014). Therefore, assessment for them or their habitat had not been undertaken in studies previously completed in the area. Furthermore, two (2) of these species, Little Brown Bat and Northern Myotis, are also listed as Endangered under the *SARA*.



### 3.2.1.2 Field Investigations

As discussed above, a review of background information indicated many common mammals and mammal SAR may exist within the Route A Transmission Line study area. Field investigations conducted by AECOM in spring and summer 2015 particularly focused on mammal SAR, which are further discussed below. Incidental observations of mammals were also recorded and are discussed below.

#### 3.2.1.2.1 Mountain Lion/Cougar

No targeted surveys for this species were required; however, incidental observations of tracks and dens were recorded during all field surveys.

#### 3.2.1.2.2 Little Brown Myotis, Northern Myotis, Eastern Small-footed Myotis

Little Brown Myotis, Northern Myotis, and Eastern Small-footed Myotis bats are known to have ranges within the Route A Transmission Line study area. As such, candidate habitat observed incidentally during field studies was recorded; this included observations of bat cavity trees providing suitable habitat for Myotis species (which were subsequently mapped) when observed incidentally during other surveys. Additionally, snag density survey plots and acoustic monitoring were undertaken for the Route A Transmission Line study area. These are further described below.

##### 3.2.1.2.2.1 Snag / Cavity Tree Density Plots

Cavity Tree / Snag Density Plots surveys were conducted in the spring of 2015, under leaf-off conditions, following MNRF protocols. Given the access difficulties, size / length of the study area, and extent of contiguous forest communities, AECOM had estimated and proposed to survey a total of five (5) plots per linear kilometre, resulting in 90 plots for the Route A Transmission Line study area. Sites within appropriate ELC communities (swamp or forest) were selected randomly to cover the full extent of suitable ecosites available for Route A using a Sampling Design Tool for ArcGIS (NOAA's Biogeography Branch, 2007). Each point was no less than 26 m away from another point (allowing for a 12.6 m buffer around each point so as to avoid overlap between plots), and each point was assigned a unique ID.

Candidate SAR bat habitat considered ecosites as identified by MNRF protocols for Northern Ontario:

- Deciduous forests (FOD);
- Mixed wood forests (FOM);
- Coniferous forests (FOC);
- Deciduous swamp (SWD);
- Mixed wood swamps (SWM);
- Coniferous swamps (SWC); and,
- To a lesser extent, cultural woodlands (CUW).

The following information was recorded:

- Date and times;
- Weather conditions including temperature (°C), precipitation, wind (Beaufort Scale), % cloud cover;
- Mapping co-ordinates of centre of plot;
- Species name and decay class of every cavity tree within the plot; and
- General habitat photos taken and numbers recorded.



According to MNRF protocols, snag density was calculated as follows:

- Fixed area 12.6-m radius plots (equates to 0.05 ha) were surveyed;
- The number of snags / cavity trees greater than or equal to 25 cm diameter-at-breast-height (DBH) in each plot was quantified;
- The formula  $\pi r^2$  was used to determine number of snags per hectare; and
- Locations where each snag density plot was calculated were mapped.

The snag density was calculated using the following formula to determine whether the site met the target for candidate significant wildlife habitat under these criteria:

- $\pi r^2$  to determine number of snags per hectare
- Total # of candidate trees / (# of plots x 0.05 ha) = density

Where the density was greater than ten (10) snags / cavity trees (which were greater than 25 cm dbh) per hectare, the site was considered a candidate for maternity colonies under Provincial Policy Statement (2014; hereafter PPS); as well as Candidate SAR bat habitat under the *ESA*. This calculation was being undertaken at the time of preparing this report, and will be included in the Species At Risk Permitting Report for submission to the MNRF.

A total of 88 snag / cavity tree density plots were surveyed by field staff in early April 2015; locations are provided below in **Figure 3-3** (Appendix A). The results were in the process of being analyzed at the time of preparation of this report. These results will be submitted under a separate cover as part of the Overall Benefit Permit SAR application to MNRF in September 2015.

The surveys aid in determining the presence and significance of bat SWH. The snag / cavity density plots allow for estimation of the total number of cavity trees which are likely to be removed within each study area. Given the scale of the development, it is unfeasible to assess each individual snag / cavity tree which is likely to be removed. The results of the density plot surveys and calculations allow AECOM to assess the potential impacts of the proposed development on bat SAR habitat, and develop adequate mitigation and compensation measures.

Consultation with the MNRF (via email, March 25, 2015) indicated that bat SAR surveys would be required along any proposed transmission line corridor greater than 30 m from an existing roadway corridor, as well as the identification of all potential maternal roosting / cavity trees in areas with confirmed SAR bat presence.

Further consultation with the MNRF on June 25, 2015 indicated that no additional snag / cavity tree density plot surveys, in addition to those completed in spring 2015 would be required.

#### 3.2.1.2.2.2 Bat Acoustic Monitoring

Consultation with MNRF (email May 11, 2015) indicated that acoustic monitoring for bat and bat SAR was to take place along transmission line corridors during the appropriate season (June) in areas located away (greater than 30 m) from existing paved roadways. This correspondence also indicated that, where SAR bat presence was confirmed, bat habitat, including but not limited to maternal roosting habitats, was to be identified within 60 m of the edge of the 30 m wide Transmission Line study areas.

Bat acoustic monitoring data were collected using the SM3BAT monitors from Wildlife Acoustics. Recordings were collected simultaneously for both bats and crepuscular birds. The latter will be discussed further below. Bat recordings were collected using an ultrasonic microphone. An ultrasonic monitor recording program was installed to record bat and crepuscular bird activity from 30 minutes before sunset to 30 minutes after sunrise.

Four (4) acoustic monitoring units were deployed at sites along the Route A Transmission Line study area. These were deployed in late May to record for ten (10) days at the start of June, then moved to new sites for another ten (10) days, and moved to a third set of new sites for the final ten (10) days of June, resulting in 12 sites monitored for bats.

Site selection was first conducted via desktop exercise through review of ELC (mapping of vegetation communities) determined through aerial photography interpretation, and focused on deployment in areas identified as Forest or Swamp communities; locations for each round are presented in **Figures 3-4, 3-5 and 3-6** in Appendix A. Detectors were placed in edge habitat or small clearings on tree trunks at an average height of 1.6 m. Ultrasonic microphones were attached to the detector using 3-m recording cables. The omni-directional ultrasonic microphones were extended and fastened approximately 2 m above the ground, and in the direction of open areas and travel corridors. Placing the microphones at this height and direction improved recording quality by eliminating surface echoes and ground noise caused by proximal vegetation, which can distort ultrasonic signals. Placing microphones in the direction of open areas and travel corridors allowed for recordings of communicating bats, which are the type of calls that are most easily analyzed / identified.

Bat acoustic data were recorded on SD cards within the detector. These data are currently being analyzed by AECOM using the Wildlife Acoustics' Kaleidoscope Pro 3 Analysis Software. This software is designed to convert files, sort, and categorize bat data by species. It is then confirmed by trained individuals who review the results.

#### 3.2.1.2.2.3 Field Results

Analysis of 2015 field results was in progress during the preparation of this document. Results of field investigations for these species will be submitted to the MNRF separately as part of the SAR Permitting Application package.

#### 3.2.1.2.3 Incidental Mammal Observations

Over the course of the 2015 field investigations, nine (9) incidental observations of mammal species or their traces were made (**Table 3-3**).

**Table 3-3: Incidental Mammal Observations within the Route A Transmission Line Study Area during 2015 Field Investigations**

Species	Scientific Name	S-rank	G-rank	SARO	SARA	Number of Observations	Observation Details
River Otter	<i>Lutra canadensis</i>	S5	G5	No Status	No Status	2	Visual observation: ▪ One (1) individual seen ▪ Scat found
Weasel	<i>Mustela sp.</i>	S4	G5	No Status	No Status	1	Visual observation ▪ Species not determined
Moose	<i>Alces alces</i>	S5	G5	No Status	No Status	4	Visual observation: ▪ Tracks discovered ▪ Scat found
Fisher	<i>Martes pennanti</i>	S5	G5	No Status	No Status	1	Visual observation: ▪ Individual seen
Eastern Wolf	<i>Canis lupus lycaon</i>	S4	G4TNR	THR	THR S1	1	Visual observation: ▪ Tracks discovered ▪ Evidence of feeding

## 3.2.2 Avifauna

### 3.2.2.1 Background Review

According to the Ontario Breeding Bird Atlas (hereafter OBBA; BSC, *et al.* 2006), a total of 200 bird species have been recorded within the six (6) 10 x 10 square km (km<sup>2</sup>) grids in the study area (ID: 17NL37, 17NL38, 17NL47, 17NL48, 17NL57 and 17NL58) (see **Appendix C: Ontario Breeding Bird Atlas Results**). This total includes the one (1) Endangered, eight (8) Threatened, and 13 Special Concern bird species previously discussed. No S1 (Critically Imperiled) species were recorded within the study area. Four (4) S2 (imperiled) species were recorded: Bald Eagle (*Haliaeetus leucocephalus*), Great Black-backed Gull (*Larus marinus*), Loggerhead Shrike (*Lanius ludovicianus migrans*) and Short-eared Owl (*Asio flammeus*). With the exception of Great Black-backed Gull, all of these species are also SAR, and are additionally discussed in **Section 3.3.3**. An additional seven (7) S3 (vulnerable) species were recorded: Black Tern (*Chlidonias niger*), Black-crowned Night-Heron (*Nycticorax nycticorax*), Caspian Tern (*Sterna caspia*), Louisiana Waterthrush (*Seiurus motacilla*), Peregrine Falcon (*Falco peregrinus anatum*), Prairie Warbler (*Dendroica discolor*) and Wilson's Phalarope (*Phalaropus tricolor*). Black Tern, Louisiana Waterthrush, and Peregrine Falcon are also SAR and are further discussed in **Section 3.3.3**. A total of 180 species were ranked as either S4 or S5, and considered common and secure in Ontario. The remaining species were ranked SNA, which means that a conservation status rank is not applicable because the species is not a suitable target for conservation activities.

Region 28 of the OBBA, which encompasses the Route A Transmission Line study area, indicates no record of confirmed breeding for Bald Eagles. There were, however, observations of individuals in four (4) squares within Region 28, which indicated probable breeding evidence.

### 3.2.2.2 Breeding Bird Point Counts

#### 3.2.2.2.1 Methods

Twelve (12) breeding bird point count stations for Route A Transmission Line study area were selected based on desktop review of aerial photography, and results of ELC Field Investigations across a variety of habitat types. Point count locations were spaced at least 250 m apart. Two (2) point count surveys were conducted at least ten (10) days apart at each station between June 1 and June 16, 2015 which is within the peak breeding bird period. Point count stations were situated at a vantage point which allowed observation of surrounding habitats. Data collected during each full ten (10) minute-point count was also recorded in smaller intervals of the first three (3) minutes and first five (5) minutes to allow for comparison to other relatively common survey methods, including the North American Breeding Bird Survey, a long-term volunteer bird monitoring program. All bird species seen or heard were recorded during the point counts.

Surveys were conducted during calm weather conditions (little to no precipitation, calm winds of 1 to 3 on the Beaufort Scale), between 30 minutes after sunrise and 10 a.m. The following information was documented during the surveys:

- Weather conditions including temperature (°C), precipitation, wind (Beaufort Scale), % cloud cover;
- Species seen or heard, and their approximate numbers;
- Highest breeding evidence of individuals species observed (i.e., singing male, suitable habitat);
- UTM co-ordinates of point count locations;
- Details of any encountered SAR/SCC observations;
- Habitat descriptions including vegetation types;
- Photos of habitat along with photo numbers; and
- Date and times of observations.

### 3.2.2.2.2 Field Results

Surveys were conducted at 12 breeding bird points on June 1, 2, 15 and 16, 2015; locations are presented in **Figure 3-7** in Appendix A. Weather conditions were favourable during the survey dates (**Table 3-4**).

**Table 3-4: Weather Conditions during the 2015 Breeding Bird Point Counts**

Date	Cloud Cover (%)	Wind (Beaufort Scale)	Precipitation	Temp (°C)
June 1, 2015	0-15	0-1	None	12
June 2, 2015	0	1	None	10
June 15, 2015	100	1	None	16
June 16, 2015	100	1	None	16

During the course of these point-count surveys, 49 species of birds were observed, from a total of 461 observed individuals. Red-eyed Vireo (*Vireo olivaceus*) was the most abundant species with 51 observations (11.1% of the total number of individual birds observed). The next most frequently documented species was Ovenbird (*Seiurus aurocapillus*), followed by Chestnut-sided Warbler (*Dendroica pensylvanica*), Yellow-rumped Warbler (*Dendroica coronata*), Black-throated Green Warbler (*Dendroica virens*), and Winter Wren (*Troglodytes hiemalis*).

Three (3) Canada Warblers (*Wilsonia canadensis*), a COSEWIC-ranked Threatened species, were also documented within suitable breeding habitat during the course of the surveys.

**Table 3-5: Summary of Breeding Bird Point Count Observations within the Route A Transmission Line Study Area**

Common Name	Scientific Name	Provincial Status <sup>1</sup>	Breeding Status in 10 km X 10 km Square Grid <sup>2</sup>	Field Survey Record <sup>3</sup>	
Alder Flycatcher	<i>Empidonax alnorum</i>	S5	CONF	X	Y
American Goldfinch	<i>Carduelis tristis</i>	S5	CONF	X	
American Redstart	<i>Setophaga ruticilla</i>	S5	CONF	X	Y
American Robin	<i>Turdus migratorius</i>	S5	CONF	X	Y
Black-and-white Warbler	<i>Mniotilta varia</i>	S5	CONF	X	Y
Bay-breasted Warbler	<i>Dendroica castanea</i>	S5	CONF		Y
Black-backed Woodpecker	<i>Picoides arcticus</i>	S4	CONF		Y
Black-capped Chickadee	<i>Poecile atricapillus</i>	S5	CONF	X	Y
Blackburnian Warbler	<i>Dendroica fusca</i>	S5	CONF	X	Y
Blue Jay	<i>Cyanocitta cristata</i>	S5	CONF	X	Y
Brown Creeper	<i>Certhia americana</i>	S5	CONF	X	Y
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>	S5	CONF		Y
Black-throated Green Warbler	<i>Dendroica virens</i>	S5	CONF	X	Y
Canada Goose	<i>Branta canadensis</i>	S5	CONF		Y
Canada Warbler	<i>Wilsonia canadensis</i>	S4	CONF	X	Y
Cedar Waxwing	<i>Bombycilla cedrorum</i>	S5	CONF	X	Y
Chipping Sparrow	<i>Spizella passerina</i>	S5	CONF	X	Y
Common Raven	<i>Corvus corax</i>	S5	CONF	X	Y
Common Yellowthroat	<i>Geothlypis trichas</i>	S5	CONF	X	Y
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	S5	CONF	X	Y
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	S4	CONF	X	

1. Source: NHIC 2008

2. Source: OBBA (2001-2005); Cadman, et al. (2007)

3. X= documented during the 1<sup>st</sup> Visit (June 1, 2015 and June 2, 2015); Y= documented during 2<sup>nd</sup> visit (June 15, 2015 and June 16, 2015)

**Table 3-5: Summary of Breeding Bird Point Count Observations within the Route A Transmission Line Study Area**

Common Name	Scientific Name	Provincial Status <sup>1</sup>	Breeding Status in 10 km X 10 km Square Grid <sup>2</sup>	Field Survey Record <sup>3</sup>	
Golden-crowned Kinglet	<i>Regulus satrapa</i>	S5	CONF	X	
Hermit Thrush	<i>Catharus guttatus</i>	S5	CONF	X	Y
Least Flycatcher	<i>Empidonax minimus</i>	S4	CONF		Y
Mourning Warbler	<i>Oporornis philadelphia</i>	S4	CONF	X	Y
Nashville Warbler	<i>Vermivora ruficapilla</i>	S5	CONF	X	Y
Northern Flicker	<i>Colaptes auratus</i>	S4	CONF	X	Y
Northern Waterthrush	<i>Seiurus noveboracensis</i>	S5	CONF	X	Y
Ovenbird	<i>Seiurus aurocapillus</i>	S4	CONF	X	Y
Pine Warbler	<i>Dendroica pinus</i>	S5	CONF	X	Y
Pileated Woodpecker	<i>Dryocopus pileatus</i>	S5	CONF	X	Y
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	S4	CONF		Y
Red-breasted Nuthatch	<i>Sitta canadensis</i>	S5	CONF	X	Y
Red-eyed Vireo	<i>Vireo olivaceus</i>	S5	CONF	X	Y
Ruffed Grouse	<i>Bonasa umbellus</i>	S4	CONF	X	Y
Swainson's Thrush	<i>Catharus ustulatus</i>	S4	CONF	X	
Tennessee Warbler	<i>Vermivora peregrina</i>	S5	PROB	X	
Veery	<i>Catharus fuscescens</i>	S4	CONF	X	Y
Winter Wren	<i>Troglodytes troglodytes</i>	S5	CONF	X	Y
White-throated Sparrow	<i>Zonotrichia albicollis</i>	S5	CONF	X	Y
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	S5	CONF	X	Y
Yellow-rumped Warbler	<i>Dendroica coronata</i>	S5	CONF	X	Y
Yellow Warbler	<i>Dendroica petechia</i>	S5	CONF	X	

### 3.2.2.3 Crepuscular Surveys: Eastern Whip-poor-will

#### 3.2.2.3.1 Method

Consultation with MNRF (meeting March 25, 2015, and email May 11, 2015) indicated that acoustic monitoring for crepuscular birds, specifically Eastern Whip-poor-will, was to take place along the Route A Transmission Line study area during the appropriate season (late May through early July) in areas located away (greater than 50 m) from existing paved roadways, and for an area 60 m from the edge of the 30-m ROW. Mapping and acoustic monitoring for crepuscular birds was identified as not required by MNRF for areas where the Route A Transmission Line study area runs parallel to Highway 522 (email May 11, 2015).

Site selection was first conducted via a desktop exercise through the review of ELC communities within the study area, as determined through aerial photography interpretation. It focused on deployment in open areas identified, such as rock barrens and other open communities, within the portion of Route A where the Transmission Line corridor lies between HIFN I.R. #2 and Highway 522. Acoustic monitors were deployed in mid- to late-May, 2015 in order to capture data during the two (2) primary survey windows for Eastern Whip-poor-will in 2015 – when the moon was greater than 50% illuminated, and was visible after sunset. For the 2015 field season, these windows were from May 25 through June 9, and June 24 through July 8. Within the portion of Route A where the transmission line study area corridor lies between HIFN I. R. #2 and Highway 522, a total of five (5) acoustic monitors were set up to record for crepuscular birds. Station locations are presented in **Figure 3-4**, **Figure 3-5** and **Figure 3-6** in Appendix A.

Crepuscular recordings were collected using an acoustic microphone attached to the SM3BAT monitors from Wildlife Acoustics; recordings were collected simultaneously for both bats and crepuscular birds, the former of

which was discussed previously in Section 3.2.1.2. The acoustic monitors were programmed for crepuscular activity, and to record for one (1) hour at dusk and one (1) hour before sunrise. Detectors were mounted on tree trunks at an average height of 1.6 m. Acoustic microphones were attached to the detector using 3-m long recording cables. Placing the microphones at this height and direction improved recording quality by eliminating surface echoes and ground noise caused by proximal vegetation, which can distort ultrasonic signals. Placing microphones in the direction of open areas and travel corridors allowed for recordings of crepuscular birds.

Crepuscular acoustic data were recorded on SD cards within the detector. These data are currently being downloaded, transcribed, and analyzed for a total of five (5) days (morning and dusk), in order to determine whether Whip-poor-wills were present / calling.

#### 3.2.2.3.2 Field Results

Analysis of 2015 field results was in progress during the preparation of this document. Results of field investigations for this species will be submitted to the MNRF separately, as part of the SAR Permitting Application package.

#### 3.2.2.4 Least Bittern

Least Bittern was identified through background review as having records of presence in the region. Desktop review of aerial photography indicated supporting habitat for this species was limited. Within the Route A Transmission Line study area, approximately 29.68 ha of marsh communities were identified; of these, 10.12 ha (or 34%) were cattail marshes, although not quite of the size or characteristics required to support Least Bittern breeding. As such, no targeted surveys for this species were undertaken for the Route A Transmission Line study area in 2015. All other field investigations did include incidental wildlife observations, especially with respect to SAR; however, no Least Bittern observations or suitable habitat were recorded during the 2015 field program.

##### 3.2.2.4.1 Field Results

No observations of individuals of this species were recorded during the 2015 field program.

#### 3.2.2.5 Bobolink and Eastern Meadowlark – Grassland Breeding Bird Surveys

Bobolink was observed by Stantec in 2013 at 14 point count locations within the region (AECOM, 2014a). However, preliminary desktop review of aerial photography as well as results of ELC in 2015 did not identify suitable habitat for these species within the Route A Transmission Line study area. As such, no targeted surveys for either of these species, or other grassland species, were undertaken during the 2015 field program.

##### 3.2.2.5.1 Method

Breeding surveys via incidental observations were conducted in conjunction with all other point count surveys. Incidental observations included any individuals seen or heard during other field studies.

##### 3.2.2.5.2 Field Results

No observations of individuals of either species, or habitats for the species, were recorded during the 2015 field program.



### 3.2.2.6 Chimney Swift

#### 3.2.2.6.1 Method

No specific breeding surveys were conducted for Chimney Swift. Instead, presence / absence of this species in the study area was determined solely via incidental observations (of any individuals seen or heard) recorded during general breeding bird point count surveys and other field investigations. Due to the scarcity of buildings, especially buildings with chimneys, suitable habitat for Chimney Swift is limited in the study area, and observations of this species were not expected during field studies.

#### 3.2.2.6.2 Field Results

As expected, no Chimney Swifts (or suitable habitat for them) were observed during 2015 field studies. However, it is possible that Chimney Swifts were recorded by the acoustic monitors deployed to capture crepuscular bird vocalizations. The presence / absence of Chimney Swifts will be confirmed after the analysis of these acoustic data, which is currently underway, is complete. The results of this analysis will be submitted to the MNRF separately, as part of the SAR Permitting Application package.

### 3.2.2.7 Barn Swallow

#### 3.2.2.7.1 Methods

Similarly, no specific breeding surveys were conducted for Barn Swallow. Instead, presence / absence of this species in the study area was determined via incidental observations (of any individuals seen or heard) recorded during general breeding bird point count surveys and other field investigations. Additionally, structures, such as barns, houses, bridges, road culverts, overpasses, sheds or natural locations, and natural areas, such as rock faces and / or caves, were searched, during the course of other field studies, for the presence of nesting Barn Swallows. These searches were conducted only when it was safe to do so, and access was permitted. Field staff were trained to distinguish Barn Swallow from Cliff Swallow, Eastern Phoebe, American Robin and other birds that are similar in appearance and nest in similar locations.

#### 3.2.2.7.2 Field Results

No Barn Swallows (or suitable habitat for them) were recorded during the 2015 field program.

### 3.2.2.8 Golden Eagle and Bald Eagle

Golden Eagle and Bald Eagle are both documented as migrants moving through the region on their way to northern breeding grounds. Bald Eagle is, however, considered to be a probable breeder in the area (BSC, 2006).

#### 3.2.2.8.1 Methods

No targeted surveys for either of these species were conducted, as these are typically migrants moving to / from the far north. Breeding surveys via incidental observations were conducted in conjunction with all other point count surveys. Incidental observations included any seen or heard during other field studies.

#### 3.2.2.8.2 Field Results

No observations of Golden Eagles, or potential habitats or stick nests, were recorded during the 2015 field program.

One observation of a Bald Eagle was recorded incidentally during field investigations in 2015 as it flew by overhead on June 15, 2015.

### 3.2.2.9 Incidental Avifauna Observations

Incidental observations of avifauna SAR, SOCC, or otherwise significant species were recorded during 2015 field investigations within the Route A Transmission Line study area (Table 3-6).

**Table 3-6: Incidental Avifauna Observations within the Route A Transmission Line Study Area during 2015 Field Investigations**

Species	Scientific Name	S-rank	G-rank	ESA	SARO	SARA	Number of Observations	Observation Details
American Robin	<i>Turdus migratorius</i>	S5	G5	-	-	-	1	Visual observation: ▪ One (1) individual seen on nest
Bald Eagle	<i>Haliaeetus leucocephalus</i>	S2	G5	SC	SC	-	1	Visual observation: ▪ One (1) individual seen flying overhead
Broad-winged Hawk	<i>Buteo platypterus</i>	S5	G5	-	-	-	1	Visual observation: ▪ One (1) individual seen flying overhead and calling
Brown creeper	<i>Certhia americana</i>	S5	G5	-	-	-	1	Auditory observation: ▪ One (1) individual heard calling
Canada Warbler	<i>Wilsonia canadensis</i>	S4	G5	SC	SC	THR Schedule 1	3	Visual and auditory observation: ▪ One (1) individual seen on territory ▪ Two (2) individuals heard calling
Eastern Wood-pewee	<i>Contopus virens</i>	S4	G5	SC	-	-	1	Auditory observation: ▪ One (1) individual heard calling
Hairy Woodpecker	<i>Picoides villosus</i>	S5	G5	-	-	-	1	Auditory observation: ▪ One (1) juvenile individual heard making begging calls
Northern Goshawk	<i>Accipiter gentilis atricapillus</i>	S4	G5	-	NAR	-	1	Visual observation: ▪ One (1) individual seen soaring
Philadelphia Vireo	<i>Vireo philadelphicus</i>	S5	G5	-	-	-	1	Auditory observation: ▪ One (1) individual heard calling
Red-breasted Nuthatch	<i>Sitta canadensis</i>	S5	G5	-	-	-	1	Auditory observation: ▪ One (1) individual heard calling
Sharp-shinned Hawk	<i>Accipiter striatus</i>	S5	G5	-	-	-	1	Visual observation: ▪ Stick nest discovered in typical nesting habitat.
Vireo sp.							1	Visual observation: ▪ Individual seen
Winter Wren	<i>Troglodytes troglodytes</i>	S5	G5	-	-	-	1	Auditory observation: ▪ One (1) individual heard calling
Yellow-rumped Warbler	<i>Dendroica coronata</i>	S5	G5	-	-	-	1	Auditory observation: ▪ One (1) individual heard calling

### 3.2.3 Herpetofauna

#### 3.2.3.1 Background Review

The following amphibians were observed by LGL in 2011 (Neegan Burnside, 2011) during related studies in the region, although not specifically within the Route A Transmission Line study Area:

- Blue-spotted Salamander (*Ambystoma laterale*);
- Eastern Newt (*Notophthalmus viridescens viridescens*);
- American Toad (*Anaxyrus americanus*);
- Tetraploid Gray Treefrog (*Hyla versicolor*);
- Western Chorus Frog -Great Lakes/St. Lawrence – Canadian Shield Population (*Pseudacris triseriata*);
- Spring Peeper (*Pseudacris crucifer*);
- American Bullfrog (*Lithobates catesbeiana*);
- Green Frog (*Lithobates clamitans*);
- Pickerel Frog (*Lithobates palustris*);
- Northern Leopard Frog (*Rana pipiens*);
- Mink Frog (*Lithobates septentrionalis*); and
- Wood Frog (*Lithobates sylvatica*)

All of these species are ranked as S4 or S5, and considered common and secure in Ontario, with the exception of the Western Chorus Frog, which is listed as Threatened Schedule 1 under the federal *Species at Risk Act* (SARA, 2002) but does not receive provincial protection. The results of the LGL field investigations combine observations from the proposed HIWEC and two (2) former Transmission Line corridors (Neegan Burnside, 2011) it is unclear in which study area the Western Chorus Frog was observed. Western Chorus Frog is considered to have low probability of occurrence within the Route A Transmission Line study area because the maps available from Ontario Nature do not include records within or in the vicinity of the Route A Transmission Line study area (Ontario Nature, 2014). Known occurrences of the species are, in fact, located further south, closer to Parry Sound.

The following reptiles were observed by LGL in 2011 (Neegan Burnside, 2011) during related studies in the region, although not specifically within the Route A Transmission Line study area:

- Snapping Turtle (*Chelydra serpentina*);
- Midland Painted Turtle (*Chrysemys picta marginata*);
- Restricted Species<sup>4</sup>;
- Blanding's Turtle (*Emydoidea blandingii*);
- Common Musk Turtle (*Sternotherus odouratus*);
- Five-lined Skink – Southern Shield population (*Plestiodon fasciatus*);
- Ring-necked Snake (*Diadophis punctatus*);
- Eastern Foxsnake – Georgian Bay population (*Pantherophis gloydi*);
- Northern Watersnake (*Nerodia sipedon sipedon*);
- Red-bellied Snake (*Storeria occipitomaculata*);
- Eastern Gartersnake (*Thamnophis sirtalis sirtalis*);
- Smooth Greensnake (*Liophorophis vernalis*); and
- Eastern Massasauga Rattlesnake – Great Lakes / St. Lawrence population (*Sistrurus catenatus catenatus*).

4. Records of Species At Risk considered to be restricted are not being made public due to the threat of poaching experienced by these species. These records will be provided under a separate cover to the Ministry of Natural Resources and Forestry (MNRF) and / or Environment Canada – Canadian Wildlife Service (EC-CWS) for permitting purposes.

Two (2) of the species observed during previous studies reviewed by AECOM, Snapping Turtle and Five-lined Skink, are provincially listed as Special Concern species, two (2) of the species observed, Blanding's Turtle and Eastern Massasauga Rattlesnake, are provincially listed as Threatened, and two (2) of the species observed, a Restricted Species and Eastern Foxsnake, are listed as Endangered under the *ESA*. The remaining species are ranked as S4 or S5, and considered common and secure in Ontario. The results of the LGL field investigations combine observations from the proposed Wind Energy Centre and two (2) former Transmission Line corridors; (Neegan Burnside, 2011) therefore, it is unclear in which study area these species were observed. Eastern Foxsnake is considered to have a low probability of occurrence within the Route A Transmission Line study area, because suitable habitat for this species is not widely available; however other SAR reptiles may be present, because suitable habitat is available, and records for these species exist.

Aerial photo interpretation revealed that there are large forests, rock barrens, abundant wetlands, and large bodies of water located within the study area, which may provide suitable habitat for these species.

### 3.2.3.2 AECOM 2015 Field Investigations

Field investigations were undertaken by AECOM in 2015 and included surveys for snakes and turtles, targeting SAR with records in the area. The work program was developed in part through consultation with the MNRF. These methods and results are further described below.

#### 3.2.3.2.1 Breeding Amphibian Surveys

##### 3.2.3.2.1.1 Methods

Breeding amphibian surveys were not undertaken for the Route A Transmission Line study area. This decision was based upon consultation with MNRF (meeting March 17, 2015), which indicated that no SAR frog records were known for the area. Additionally, given that habitat for frogs is known and widespread in the area, their presence was assumed where habitat was confirmed.

#### 3.2.3.2.2 Eastern Massasauga Rattlesnake and Eastern Hog-nosed Snake

##### 3.2.3.2.2.1 Methods

Snake basking surveys were commenced in late April and early May, 2015 in the Route A study area. Potentially suitable sites in the study area, to which field staff were deployed, were first identified via desktop review of aerial photography.

Each snake basking survey was completed when temperatures were above 10 °C, for 20 minutes at each location on calm, clear or only partly cloudy days (to the extent possible). Qualified field staff conducted the snake basking surveys as follows:

- Each identified location was approached slowly and visually scanned for the presence of snakes with binoculars from several metres away;
- The perimeter of the locations was slowly walked while visually scanning the ground for snakes and evidence of snakes (e.g., shed snakeskin);
- The area itself was visually searched for snakes and evidence of snakes;
- No objects were overturned during the surveys for health and safety reasons, to prevent snake bites, and prevent crushing wildlife beneath;

- Any snakes observed were visually identified, approximate length estimated, and other visible characteristics or observed behaviour were recorded (where possible); and
- Observations of any other signs of snakes (i.e., shed snakeskin) were also recorded.

Further consultation with MNRF on May 11 and May 12, 2015 via email and telephone, resulted in minor modifications to the survey methodology being employed for Eastern Massasauga Rattlesnake. As such, surveys thereafter were conducted as follows:

- Targeted surveys for Eastern Massasauga Rattlesnake consisted of area searches extending 60 m on either side of the 30-m proposed transmission line ROW, the intent of which was to determine species' presence / absence;
- Sites identified as hibernacula were visited up to three (3) times by late May, and to the extent possible by the third week of May;
  - Candidate Massasauga Rattlesnake hibernacula are found in open or semi-open organic wetlands (MNRF email, May 15, 2015), including wetlands, swales, fens, bogs, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or hummock ground cover.
- Sites identified as gestation habitats were also visited up to three (3) times between mid-June and July 31, 2015;
  - Candidate Massasauga Rattlesnake gestational habitats are rock clusters or rock piles or areas of fissured rock with potential to extend below frost line, found on rock barrens (MNRF email May 15, 2015); and
- If a Massasauga Rattlesnake was encountered, hibernaculum and / or gestation habitat surveys at locations within 1.2 km of the observation were discontinued because the species would be considered "confirmed to be present" in the area.

Two rounds of consultation with MNRF (March 25, 2015, and May 11 and 12, 2015) confirmed that no records of this species exist for the Route A Transmission Line study area paralleling Highway 522. Therefore, no field investigations for the species were undertaken by AECOM therein during the 2015 field program. This was further confirmed during additional consultation with the MNRF on May 11 and May 12, 2015.

Specific surveys for Eastern Hognose Snake were not conducted, because this species is secretive and rarely observed. Instead, if supporting habitat was identified, presence of the species was assumed. Incidental observations of individuals or potential habitat, when encountered, were recorded. Where Massasauga visual encounter and habitat surveys were conducted, surveyors actively searched for Eastern Hog-nosed Snake as well.

Field staff were trained on identifying these species, as well as potential gestation and hibernaculum habitat for Massasaugas, by our senior ecologist. Locations of hibernacula and gestation sites, as well as species observations, were recorded and mapped.

Station locations are presented in **Figure 3-8** in Appendix A.

#### 3.2.3.2.2.2 Field Results

Analysis of 2015 field results was in progress during the preparation of this document. Preliminary analysis indicates that incidental observations of both Massasauga Rattlesnake and Eastern Hog-nosed Snake (and evidence thereof, e.g., shed skins) were recorded during various field studies, along with potential gestation or hibernaculum locations. An incidental observation of Eastern Hog-nosed Snake was recorded during unrelated field investigations in 2015.



Results of field investigations for these species will be submitted to the MNRF separately as part of the SAR Permitting Application package, and should confirm presence / absence of these species, as well as assist in the identification of potential impacts and associated mitigation measures.

### 3.2.3.2.3 Turtle Basking Surveys – Blanding's Turtle

#### 3.2.3.2.3.1 Methods

Turtle basking surveys commenced in late April, after ice-out. Potentially suitable sites within Route A were originally identified via desktop review of aerial photography. Candidate turtle wintering habitats included locations where ponds or wetlands of sufficient depth (typically 50 cm, though often these were areas of permanent water) were present in SW (swamp), MA (marsh), OA (open aquatic) or SA (shallow aquatic) ELC Community Series, as well as FEO (open fen) or BOO (open bog) ELC Ecosites. Specific sites were selected in order to cover representative habitats across the study area, with a focus on locations that were overlapped by the proposed Transmission Line corridor and, therefore, with potential for direct impacts to turtle species and their habitats.

The first round of basking turtle surveys generally followed the Visual Encounter Survey protocol developed by the MNRF for Blanding's Turtle (MNRF, 2013). Each turtle basking survey was conducted when temperatures were above 10 °C, for 20 minutes at each location on calm, clear or partly cloudy days (to the extent possible). Qualified field staff conducted the turtle basking surveys as follows:

- Each identified location was approached slowly and scanned for the presence of turtles with binoculars from several metres away;
- The perimeter of the location was slowly walked while scanning the ground for turtles;
- Any turtles observed were visually identified, approximate length estimated, and other visible characteristics or observed behaviour were documented or recorded (where possible);
- Observations of any predated eggs (i.e., shape, size, number, etc.) or other signs of turtle nesting were recorded; and
- Weather conditions including temperature (°C), precipitation, wind speed (Beaufort scale), and % of cloud cover were also recorded.

Further Consultation with MNRF on May 11 and May 12, 2015 via email and telephone, resulted in minor modifications to the survey methodology being employed for Blanding's Turtle. This included more specific direction on areas to be targeted by these surveys. As such, a second site selection was completed based on the new direction provided by the MNRF. Surveys thereafter were conducted as follows:

- Presence / absence surveys for this species were undertaken primarily in May, when likelihood of encountering basking turtles is highest;
- Surveys continued up to mid-June, because the required weather conditions as well as access permissions, were limiting factors in completing surveys at each station in May;
- Targeted survey study areas extended 60 m on either side of the 30-m proposed transmission line ROW, described in further detail under Section 2.2.4.2, below; and
- Wetlands within 500 m of each other were considered interconnected, up to 2 km from an occurrence. Therefore, if a Blanding's Turtle was observed during a survey, return visits to identified stations within 1 km of the occurrence were discontinued as it was assumed that this species would be present in the connected wetland habitats, as well. Given that the purpose of these surveys was to determine presence / absence, no further visits to a turtle basking station were warranted once a Blanding's Turtle was observed.

Survey locations are presented in **Figure 3-9** in Appendix A.

Email correspondence with AECOM (May 11, 2015 and May 13, 2015) indicated that Blanding's Turtle surveys were not required along the Highway 522 portion of Route A. Therefore, subsequent visits were dropped for this alignment. Within the portion of Route A where the study area corridor lies between HIFN I.R. #2 and Highway 522, no suitable habitat was identified; therefore, no additional targeted surveys were conducted for this species. The results of the preliminary turtle surveys for the portion of Route A on the HIFN I. R. #2 lands will be provided under a separate cover to satisfy the requirements of EC-CWS.

Incidental observations were recorded for these species during other field investigations. Field staff were trained on identifying the turtle SAR that were likely to occur in the Route A study area, as well as suitable turtle nesting or overwintering habitats.

### 3.2.3.2.3.2 Field Results

Analysis of 2015 field results was in progress during the preparation of this document. Preliminary analysis indicates that Blanding's Turtles were recorded during the 2015 field investigations.

Results of field investigations for this species will be submitted to the MNRF separately as part of the SAR Permitting Application package.

### 3.2.3.3 Incidental Herpetofauna Observations

Numerous incidental observations of herpetofauna were made during the 2015 field investigations, including two Species at Risk. **Table 3-7** below provides a list of incidental herpetofauna observations made within the Route A Transmission Line study area during the 2015 field investigations.

**Table 3-7: Incidental Herpetofauna Observations within the Route A Transmission Line Study Area during 2015 Field Investigations**

Species	Scientific Name	S-rank	G-rank	SARO	SARA	Number of Observations	Observation Details
Gray Tree Frog	<i>Hyla versicolor</i>	S5	G5	No Status	No Status	1	Auditory observation: ▪ One (1) Individual heard calling
Green Frog	<i>Lithobates clamitans</i>	S5	G5	No Status	No Status	4	Visual and auditory observation: ▪ Three individuals seen across two locations ▪ One individual heard calling
Spring Peeper	<i>Pseudacris crucifer</i>	S5	G5	No Status	No Status	1	Auditory observation: ▪ Calls heard
Blanding's Turtle	<i>Emydoidea blandingii</i>	S3	G4	THR	THR S1	1	Visual observation: ▪ Remains discovered at side of road
Midland Painted Turtle	<i>Chrysemis picta marginata</i>	S4	G5T5	No Status	No Status	1	Visual observation: ▪ Remains of one individual discovered at side of road
Eastern Hog-nosed Snake	<i>Heterodon platirhinos</i>	S3	G5	THR	THR S1	1	Visual observation: ▪ Individual seen in rock barren
Northern Watersnake	<i>Nerodia sipedon sipedon</i>	S5	G5T5	NAR	NAR	1	Visual observation: ▪ Individual seen basking

### 3.3 Significant or Rare Species<sup>5</sup>

Significant or Rare Species are those which are considered either SAR or SOCC.

SAR includes species listed as Endangered or Threatened under the provincial *ESA* or under Schedule 1 of the federal *SARA*. Provincially rare species includes species designated as Special Concern under the *ESA* and on Species at Risk in Ontario (SARO) list, as well as species ranked by the NHIC as S1 (Critically Imperiled), S2 (Imperiled), and S3 (Vulnerable). A review of background information, comprised of documents and studies listed in **Section 2**, was undertaken to determine records, presence and likelihood of terrestrial SAR, SOCC, and species protected under the federal *SARA*.

Various SAR have records within the Route A Transmission Line study area. These required specific consideration for field investigations.

#### NHIC Database Results

The Make-a-map: Natural Heritage Areas Application (MNR, 2015a) was used to search for NHIC rare species records within any of the 1 km UTM squares that intersected the Route A Transmission Line study area. The search resulted in a total of three (3) provincially rare species including two (2) species designated as Threatened: Blanding's Turtle (*Emydoidea blandingii*) and Eastern Massasauga Rattlesnake (*Sistrurus c. catenatus*); and one (1) species designated Special Concern: Eastern Musk Turtle (*Sternotherus odouratus*). Refer to **Table 3-8** below. Some of these records are historical (more than 30 years old), and are not considered conclusive evidence of the species' continued presence within the Route A Transmission Line study area.

**Table 3-8: NHIC Rare Species Records for the Vicinity of the Study Area**

Taxon	Common Name	Scientific Name	S-Rank	COSEWIC Status	COSSARO Status	Year Last Observed
Reptile	Blanding's Turtle <sup>1</sup>	<i>Emydoidea blandingii</i>	S3	THR	THR	2007
Reptile	Eastern Musk Turtle <sup>1</sup>	<i>Sternotherus odouratus</i>	S3	SC	THR	1982
Reptile	Eastern Massasauga Rattlesnake (Great Lakes / St. Lawrence population) <sup>1</sup>	<i>Sistrurus catenatus</i>	S3	THR	THR	2004

Note: 1. Indicates species also observed during previous field studies.

#### 3.3.1 Plants

The Branched Bartonian (*Bartonia paniculata* ssp. *paniculata*) was the only plant SAR identified through background review. The known range for Branched Bartonian does not extend north of Parry Sound, and this species was not observed during field investigations. No other significant plants were recorded within the Route A Transmission Line study area either.

5. Records of Species At Risk considered to be restricted are not being made public due to the threat of poaching experienced by these species. These records will be provided under a separate cover to the Ministry of Natural Resources and Forestry (MNR) and / or Environment Canada – Canadian Wildlife Service (EC-CWS) for permitting purposes.

### 3.3.2 Mammals

#### 3.3.2.1 Mountain Lion / Cougar

The Cougar (*Puma concolor*), known also as mountain lion or puma, is provincially ranked as Endangered, and is Canada's largest and most powerful wildcat. This species lives in large, undisturbed forests or other natural areas where there is little human disturbance (MNRF, 2014c). It ranges across much of North, Central and Southern America; in Ontario, it is most likely to occur in the northern regions of the province given the area's remoteness and minimal human activity (*ibid*), although there have been reports of Cougar observations in southern parts of the province. Cougars observed in Ontario may be pet or zoo escapees, or some individuals moving in from the western portions of the continent, sometimes native to Ontario, or a combination of these scenarios (*ibid*).

The Cougar is under threat due to human disturbance and forestry, which removes habitat and reduces its prey populations. The Cougar received provincial General Habitat Protection in June of 2008.

This species was not encountered during the 2015 field program.

#### 3.3.2.2 Little Brown Myotis, Northern Myotis, Eastern Small-footed Myotis

Three (3) of the eight (8) bat species known to occur in Ontario now receive protection under the Ontario ESA. These are: Little Brown Myotis, (*Myotis lucifugus*) Endangered as of January 24, 2013, Northern Myotis (*Myotis septentrionalis*), Endangered as of January 24, 2013, and Eastern Small-footed Myotis (*Myotis leibii*), Endangered as of June 27, 2014. All three (3) of these species are under extreme threat due to White-nosed Syndrome (WNS), a fungus that has caused a great decline in the populations of these three (3) bat species, after being inadvertently introduced from Europe (MNRF, 2015b; 2015c; 2015d). The study area does fall within their ranges, and provides suitable habitat. Therefore, these three (3) SAR were considered.

The Little Brown Myotis roosts during the day in trees and buildings (barns, attics, and abandoned structures); this species may hibernate from October through April in caves or abandoned mines (MNRF, 2015b). In natural areas, Little Brown Myotis roosts in tree cavities in old growth, mixed or conifer forests (COSEWIC, 2013). The species was formerly found as far north in Ontario as Moose Factory and Favourable Lake (MNRF, 2015b). The Little Brown Myotis is most active for two to three (2-3) hours after dusk, when it emerges from its roost to forage for insects (MNRF, 2015b). This species demonstrates strong fidelity to breeding and hibernation sites, and does not migrate far; the distance between summer and winter habitat may be less than 250 km (COSEWIC, 2013). Mating occurs late in the summer, and in winter; females often form large maternal colonies to rear their young (COSEWIC, 2013). Offspring develop quickly, and are able to forage independently within a month of birth (COSEWIC, 2013).

The Northern Myotis is often associated with old growth mixed or conifer forests, and is known to roost under loose bark or in tree cavities (COSEWIC, 2013; MNRF, 2015c). Unlike other bats, this species rarely roosts in man-made structures (COSEWIC, 2013). Its range includes all of southern Ontario to the north shore of Lake Superior (MNRF, 2015c). The Northern Myotis also shows strong site fidelity, and individuals have been known to remain within 50 km of their habitat (COSEWIC, 2013). Breeding occurs in late summer in maternal colonies, and migration to hibernation sites in caves or mines begins in October (COSEWIC, 2013). This species remains in hibernation until late March or April (MNRF, 2015c).

The Eastern Small-footed Myotis roosts in a variety of habitats, including under rocks and bridges, in rock outcrops, caves, mines, and hollow trees, and may change their roosting location daily (MNRF, 2015d). This Myotis hibernates in caves and abandoned mines, with a preference for colder, drier sites, and demonstrates strong hibernation site fidelity (MNRF, 2015d). Its range extends from the south of Georgian Bay to Lake Erie, and east to

Pembroke; there have also been sightings in the Bruce Peninsula, Espanola area, and within Lake Superior Provincial Park (MNRF, 2015d). This species was most recently emergency-listed under the *ESA*, because it is one of the rarest bats in eastern North America, even prior to the introduction of WNS (MNRF, 2015d).

All three (3) of these Species at Risk bats receive general habitat protection under the *ESA* (MNRF, 2015b; 2015c; 2015d). Habitat surveys and associated acoustic monitoring were undertaken by AECOM during the 2015 field investigations. Analysis of 2015 field results was in progress during the preparation of this document. Results of field investigations for this species will be submitted to the MNRF separately as part of the SAR Permitting Application package.

Mammal Significant Species observed during the 2015 field program are presented in **Figure 3-10** in Appendix A.

### 3.3.3 Avifauna

According to the Ontario Breeding Bird Atlas, two (2) Endangered, eight (8) Threatened, and 13 Special Concern bird species have been recorded within the six (6) 10 x 10 square km (km<sup>2</sup>) grids (ID: 17NL37, 17NL38, 17NL47, 17NL48, 17NL57 and 17NL58,) that encompass the study area (**Table 3-9**) (BSC, *et al.* 2006).

**Table 3-9: OBBA Bird Species at Risk Records**

Species	Scientific Name	ESA Status	SARA Status	COSEWIC Status	Breeding Evidence	OBBA Square
Loggerhead Shrike	<i>Lanius ludovicianus migrans</i>	END	END Schedule 1	END	None	17NL37 and 17NL38,
Bank Swallow	<i>Riparia riparia</i>	THR			Confirmed	17NL37, 17NL38, 17NL47, 17NL48, 17NL57 and 17NL58
Barn Swallow	<i>Hirundo rustica</i>	THR		THR	Confirmed	17NL37, 17NL38, 17NL47, 17NL48, 17NL57 and 17NL58
Bobolink <sup>1</sup>	<i>Dolichonyx oryzivorus</i>	THR		THR	Confirmed	17NL37, 17NL38, 17NL47, 17NL48, 17NL57 and 17NL58
Cerulean Warbler	<i>Dendroica cerulea</i>	THR	SC Schedule 1	END	None	17NL37, 17NL47, 17NL57 and 17NL58
Chimney Swift	<i>Chaetura pelagica</i>	THR	THR Schedule 1	THR	Probable	17NL37, 17NL38, 17NL47, 17NL48, 17NL57 and 17NL58
Eastern Meadowlark	<i>Sturnella magna</i>	THR		THR	Possible	17NL37, 17NL38, 17NL47, 17NL48, 17NL57 and 17NL58
Least Bittern	<i>Ixobrychus exilis</i>	THR	THR Schedule 1	THR	None	17NL37, 17NL47, 17NL57 and 17NL58
Whip-poor-will <sup>1</sup>	<i>Caprimulgus vociferus</i>	THR	THR Schedule 1	THR	Possible	17NL37, 17NL38, 17NL47, 17NL48, 17NL57 and 17NL58
Bald Eagle <sup>1</sup>	<i>Haliaeetus leucocephalus</i>	SC			None	17NL37, 17NL38, 17NL47, 17NL48, 17NL57 and 17NL58
Black Tern	<i>Chlidonias niger</i>	SC			None	17NL37, 17NL38, 17NL47, 17NL48, 17NL57 and 17NL58
Canada Warbler <sup>1</sup>	<i>Wilsonia canadensis</i>	SC	THR Schedule 1	THR	Confirmed	17NL37, 17NL38, 17NL47, 17NL48, 17NL57 and 17NL58
Common Nighthawk <sup>1</sup>	<i>Chordeiles minor</i>	SC	THR Schedule 1	THR	Confirmed	17NL37, 17NL38, 17NL47, 17NL48, 17NL57 and 17NL58
Eastern Wood-Pewee	<i>Contopus virens</i>	SC		SC	Confirmed	17NL37, 17NL38, 17NL47, 17NL48, 17NL57 and 17NL58
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	SC	THR Schedule 1	THR	Possible	17NL37, 17NL38, 17NL47, 17NL48, 17NL57 and 17NL58
Louisiana Waterthrush	<i>Seiurus motacilla</i>	SC	SC Schedule 1	SC	None	17NL37, 17NL47, 17NL57 and 17NL58



**Table 3-9: OBBA Bird Species at Risk Records**

Species	Scientific Name	ESA Status	SARA Status	COSEWIC Status	Breeding Evidence	OBBA Square
Olive-sided Flycatcher <sup>1</sup>	<i>Contopus cooperi</i>	SC	THR Schedule 1	THR	Possible	17NL37, 17NL38, 17NL47, 17NL48, 17NL57 and 17NL58
Peregrine Falcon	<i>Falco peregrinus anatum</i>	SC	SC Schedule 1	SC	None	17NL38 and 17NL48
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	SC	THR Schedule 1	THR	None	17NL37, 17NL38, 17NL47, 17NL48, 17NL57 and 17NL58
Short-eared Owl	<i>Asio flammeus</i>	SC	SC Schedule 1	SC	None	17NL37, 17NL38, 17NL47, 17NL48, 17NL57 and 17NL58
Wood Thrush	<i>Hylocichla mustelina</i>	SC		THR	Possible	17NL37, 17NL38, 17NL47, 17NL48, 17NL57 and 17NL58
Yellow Rail	<i>Coturnicops noveboracensis</i>	SC	SC Schedule 1	SC	None	17NL37, 17NL38, 17NL47, 17NL57 and 17NL58
Red-shouldered Hawk	<i>Buteo lineatus</i>		SC Schedule 3		None	17NL37, 17NL38, 17NL47, 17NL48, 17NL57 and 17NL58
Rusty Blackbird	<i>Euphagus carolinus</i>		SC Schedule 1	SC	None	17NL37, 17NL38, 17NL47, 17NL48, 17NL57 and 17NL58

Note: 1. Indicates species observed during previous field studies.

The following species are considered to have low probabilities of occurrence within the Route A Transmission Line study area because the occurrence maps available from the MNRF (MNRF, 2015a) do not include records for them within or in the vicinity of the study area: Black Tern (*Chlidonias niger*), Cerulean Warbler (*Dendroica cerulea*), Least Bittern (*Ixobrychus exilis*), Louisiana Waterthrush (*Seiurus motacilla*), Red-headed Woodpecker (*Melanerpes erythrocephalus*), Short-eared Owl (*Asio flammeus*), and Yellow Rail (*Coturnicops noveboracensis*).

The Route A Transmission Line study area is dominated by rock barrens, forests, bogs, fens, and marshes. Species which breed in these habitats, including Eastern Whip-poor-will (*Caprimulgus vociferous*), Bald Eagle (*Haliaeetus leucocephalus*), Canada Warbler (*Wilsonia canadensis*), Common Nighthawk (*Chordeiles minor*), Eastern Wood-Pewee (*Contopus virens*), Golden-winged Warbler (*Vermivora chrysoptera*), and Wood Thrush (*Hylocichla mustelina*), have a high likelihood of occurrence in the study area.

### 3.3.3.1 Eastern Whip-poor-will

The Eastern Whip-poor-will (*Caprimulgus vociferous*) inhabits early successional deciduous or mixed forest containing pine, oak, aspen, and birch (*Pinus*, *Quercus*, *Populus*, and *Betula* species, respectively) with moderate shrub cover and well-drained soils (Environment Canada, 2015a; Cornell, 2015a). This species forages for insects in open areas such as forest edges and rock barrens, and typically does not forage farther than 500 m from a nest site (Environment Canada, 2015a). After selecting a nest site, eggs are laid on a bed of leaves or on bare ground in areas of limited vegetation cover (Environment Canada, 2015a). The breeding territories of Whip-poor-wills range from 3 ha to 11 ha, and their home ranges may be much greater (MNRF, 2013b; Environment Canada, 2015a). This species may use a nesting site repeatedly (Environment Canada, 2015a).

The Eastern Whip-poor-will is listed as a Threatened species; its habitat also receives protection. Critical habitat sites are selected based on comparisons of habitat suitability with breeding survey results within 10 km x 10 km areas (Environment Canada, 2015a). When a nest is discovered, it receives a protection buffer of 500 m; the area 170 to 500 m away from the nest is considered to be least vulnerable to alteration (Category 3), and is primarily foraging habitat (MNRF, 2013b).

This species is known to occur within the study area. Analysis of 2015 field results was in progress during the preparation of this document. Results of field investigations for this species will be submitted to the MNRF separately as part of the SAR Permitting Application package.

### 3.3.3.2 Loggerhead Shrike

The Loggerhead Shrike (*Lanius ludovicianus migrans*) inhabits open grasslands and alvars, where it forages for invertebrates and, occasionally, other small prey (MNRF, 2013e). In Ontario, this species primarily nests in Hawthorn (*Crataegus* species) and Red Cedar (*Juniperus virginianus*) (MNRF, 2013c). Breeding pairs are very territorial, and aggressively defend areas up to 12 ha (MNRF, 2013e).

Loggerhead Shrikes are listed as Endangered, and their general habitat is protected. Category 1 habitat is considered to be an area of 200 m around a nest, and is the most vulnerable to disturbance; this area contains nesting, perching, and foraging sites (MNRF, 2013c). Category 2 habitat lies between 200 and 400 m from a nest, and it primarily foraging and perching habitat (MNRF, 2013c).

Critical habitat of the Loggerhead Shrike is identified by comparing suitable grassland / alvar habitat against site occupancy (determined from breeding survey data); the site occupancy criterion was considered met if at least one (1) breeding pair was confirmed between 2004 and 2008, and if at least one (1) breeding pair was confirmed in any two (2) years between 1999 and 2003 (Environment Canada, 2015b).

Loggerhead Shrike has a low probability of occurrence within the Route A Transmission Line study area because this alvar-specialist species is known to breed in only two (2) grassland habitats: the Carden Plain located north of Lindsay, Ontario, and the Napanee Limestone Plain (MNRF, 2015e). However, there have also been observations of this species on Manitoulin Island (MNRF, 2015e). Within the Route A Transmission Line study area, this species was recorded in only two (2) of the six (6) OBBA squares, and no breeding evidence was recorded.

Although this species could occur within the study area, as supporting habitat is available, it was not observed during the 2015 field investigations.

### 3.3.3.3 Least Bittern

The Least Bittern (*Ixobrychus exilis*) has been observed in various types of wetlands, but prefers to inhabit marshes with dense cattail stands (MNRF, 2015f). Ideal wetlands are larger than 5 ha, and with areas of open water up to 50 cm deep for foraging (Environment Canada, 2011a). Nests are constructed in cattail stands, and there is documentation of this bird breeding in small colonies (Environment Canada, 2011a). Least bitterns are most often found south of the Canadian Shield, but there are small populations that breed north of the Great Lakes (MNRF, 2015f). Individuals remain in breeding habitat from early May until early September, and may not use the same nesting site repeatedly (Environment Canada, 2011a). It should also be noted that these birds may occupy wetlands for non-breeding purposes before relocating; the presence of a least bittern may not immediately indicate critical habitat (Environment Canada, 2011a).

Although this species could occur within the study area, it was not observed during the 2015 field investigations.

### 3.3.3.4 Bobolink and Eastern Meadowlark

The Bobolink (*Dolichonyx oryzivorus*) inhabits tallgrass prairies, meadows, and hayfields, where it nests on the ground in dense patches of grasses or forbs (MNRF, 2015g). This species arrives late to its breeding ground, as the spring migration north is dependent on the growth of plants, and the availability of seeds (COSSARO, 2010).

When nesting, Bobolinks forage for seeds and invertebrates close to the ground (MNRF, 2015g). The Bobolink is very vulnerable to habitat loss in farmlands, due to the repeated clearing of hayfields (MNRF, 2015g).

The habitat of the Eastern Meadowlark (*Sturnella magna*) is very similar to that of the Bobolink. This bird also nests in farm pastures and hayfields, but may also be found nesting along roads or in overgrown fields (MNRF, 2015h). Nests are built on the ground in dense vegetation, and in small depressions (Cornell, 2015b). The Eastern Meadowlark requires grasslands of at least 2.42 ha in order to form its territory (Cornell, 2015b).

In Ontario, the Bobolink and Eastern Meadowlark are most often seen south of the Canadian Shield; they are mostly absent from the northeast shores of Georgian Bay, but are known to breed farther north, in the areas of North Bay, Sault Ste. Marie, and Sudbury (McCracken, *et al.* 2013).

There is little open grassland and few residential or industrial buildings within the Route A Transmission Line study area; consequently, birds such as Bobolink, Eastern Meadowlark, and Barn Swallow (*Hirundo rustica*) were unlikely to be found here. Neither of these species was expected to be found within the study area, because supporting habitat was not available. As anticipated, neither individuals of these species, nor their habitats, were encountered during 2015 field investigations.

### 3.3.3.5 Chimney Swift

The Chimney Swift (*Chaetura pelagica*) is most likely to be encountered in the Carolinian zone, but is known to occur across Ontario, south of the 49<sup>th</sup> parallel (MNRF, 2015i). The natural habitat of this species is old growth forests; nests are made in cavities of Eastern White Pine (*Pinus strobus*), Sycamore (*Platanus occidentalis*), and Yellow Birch (*Betula alleghaniensis*) (MNRF, 2013d). Chimney swifts nest near open water, where they forage for flying insects (MNRF, 2015i). In urban areas, this bird builds nests in chimneys and other similar structures that are dark, and have a vertical surface (Cornell, 2015c).

As of 2012, 60% of the known chimney swift nests in Ontario were located in the Greater Toronto Area (MNRF, 2013d). If a tree containing a nest is discovered in the wild, it is suggested that a 90-m buffer around the tree be created to protect habitat and the tree's root system (MNRF, 2013d).

There is little open grassland and few residential or industrial buildings within the Route A Transmission Line study area. Consequently, Chimney Swift, which rely on these habitats, have a lower probability of occurring. Although this species could occur within the study area, it was not observed during the 2015 field investigations.

### 3.3.3.6 Barn Swallow

The open farmlands of Ontario provide ideal habitat for the Barn Swallow (*Hirundo rustica*) which has several requirements for its breeding habitat. This species nests primarily in man-made structures, such as old barns, sheds, and the underside of bridges (Cornell, 2015d). The Barn Swallow is an aerial insectivore, and requires foraging sites (fields, beaches, ponds) within 500 m of its nest site (Heagy, *et al.* 2014). A source of mud must also be nearby, as this is the material used to construct nests (Cornell, 2015d). Nest sites may be used several times in a season, and barn swallows often return to a chosen breeding site year after year (Heagy, *et al.* 2014).

There is little open grassland and few residential or industrial buildings within the Route A Transmission Line study area. Consequently, Barn Swallows, which rely on these habitats, have a lower probability of occurring. Although this species could within the study area, it was not observed during the 2015 field investigations.

### 3.3.3.7 Bald Eagle

The historical range of the Bald Eagle (*Haliaeetus leucocephalus*) includes all of Ontario; significant concentrations of this species exist along the shorelines of the Great Lakes (Armstrong, 2014). Bald Eagles require mature forest for nesting, and often make use of tall Eastern White Pine (*Pinus strobus*) or Poplar (*Populus* species) with a full crown and multiple perches (Armstrong, 2014). Nests are typically located within 200 m of a large waterbody, where the eagles forage for fish, their primary food source; breeding territories may be as large as 4 km<sup>2</sup> (Armstrong, 2014). If a nest is destroyed, a mating pair may not make another attempt until the following year; repeated failure may result in the abandonment of a chosen territory (Armstrong, 2014).

The breeding season for Bald Eagles may begin as early as February, when mating pairs begin returning to their breeding territories, which they may use repeatedly (Armstrong, 2014). Eggs, typically one to three (1 to 3), have been observed in nests from February to the end of June (Armstrong, 2014). Fledglings often leave the nest at ten (10) to 11 weeks, but remain within 30 km<sup>2</sup> for another one to two (1 to 2) months (Armstrong, 2014). In Ontario, adults remain in their breeding territories until autumn, and migrate south when food becomes scarce (Armstrong, 2014). Bald Eagles may overwinter as far south as Missouri, but individuals from northern Ontario populations may find suitable overwintering habitat in southern Ontario, if food is available (Armstrong, 2014). Overwintering habitat requires mature forests with suitable roosting sites and cover (often coniferous forests), as well as nearby waterbodies or rivers for foraging (Armstrong, 2014).

This species does have supporting habitat within the study area, and was encountered during the 2015 field investigations. One observation of a Bald Eagle was also recorded incidentally during field investigations in 2015 as it flew by overhead.

### 3.3.3.8 Golden Eagle

The Golden Eagle (*Aquila chrysaetos*) migrates to the northernmost regions of Ontario to breed, inhabiting areas where open tundra and wet meadows border boreal forest (Wyshynski and Pulfer, 2015). The only documented nest sites in Ontario have been in the Hudson Bay Lowlands and the Severn River area near Kenora (Wyshynski and Pulfer, 2015). There may be breeding activity in the northern areas of the Canadian Shield, as Golden Eagles have been sighted in areas that qualify as suitable habitat (Wyshynski and Pulfer, 2015).

This species inhabits mountainous terrain, typically near water and sparsely vegetated areas, where they hunt for mammals (Wyshynski and Pulfer, 2015). Nest sites are typically on cliffs and plateaus, in close proximity to foraging habitat; nests may also be built near the top of tall coniferous trees, and often have an unobstructed view of the surrounding areas (Wyshynski and Pulfer, 2015).

The spring migration north occurs in March and April; Golden Eagles avoid crossing large waterbodies, which affect their migration routes (Wyshynski and Pulfer, 2015). A mating pair constructs a nest and lays eggs by the end of May; the incubation period lasts 41 to 45 days (Wyshynski and Pulfer, 2015). Nestlings leave the nest in 65 to 75 days, but remain near it for two (2) weeks before leaving the area (Wyshynski and Pulfer, 2015).

There is currently insufficient data to determine the critical habitat requirements for the Golden Eagle (Wyshynski and Pulfer, 2015). It is unlikely, however, to be encountered within the study area. The Golden Eagle does have supporting habitat within the study area and is likely to be present; however, it was not encountered during the 2015 field investigations.

### 3.3.3.9 Bank Swallow

The Bank Swallow (*Riparia riparia*) is a colonial breeder, and nests in lake and river banks with sandy or silty substrates (MNRF, 2015j). This species is also known to nest in man-made sand and gravel pits, if a vertical face is present (MNRF, 2015j). Colonies are extremely variable in size, and may range from ten (10) to 2000 nests (Cornell 2015e). An individual requires several days to construct a nest, and digs approximately 65 centimeters (25 inches) into the upper portion of the bank (Cornell, 2015e). Bank swallows are aerial insectivores, and require open areas of land or water nearby for foraging (Cornell, 2015e).

Although this species could occur within the study area, it was not observed during the 2015 field investigations.

### 3.3.3.10 Cerulean Warbler

The Cerulean Warbler (*Dendroica cerulea*) is known to breed across southern Ontario, in the southeastern Georgian Bay area, and in one location on Manitoulin Island (MNRF, 2015k). This bird nests in the upper canopy of mature deciduous forests with an open understorey (Cornell, 2015f). The Cerulean Warbler forages for insects in the canopy, and typically feeds butterfly larvae to its young (Cornell, 2015f). This species may be vulnerable to edge effects; the abundance of individuals has been observed to increase with distance from forest edges into the interior (Environment Canada, 2011b).

Although this species could occur within the study area, it was not observed during the 2015 field investigations.

### 3.3.3.11 Black Tern

The Black Tern (*Chlidonias niger*) reaches its breeding grounds in Ontario in early May, and inhabits shallow marshes near the Great Lakes (Burke, 2012; MNRF, 2015l). This species occurs in high densities in the areas of the Bruce Peninsula, Manitoulin Island, and near the southeast edges of Georgian Bay (MNRF, 2015l). The Black Tern is a colonial breeder, and often seeks out large wetlands greater than 20 ha in size, with equal areas of open water and emergent vegetation cover (Burke, 2012). Nests are constructed near the water surface in thick vegetation, often in cattails, and are several meters apart (Burke, 2012). Colony size is variable, with larger colonies occurring in coastal areas (Burke, 2012). Eggs are laid by early June, and hatch by early July; the young fledge the nest within 24 days, and move to feeding territories in areas of open water, where they are still tended to by the adults (Burke, 2012). This species may not demonstrate site fidelity, as habitat conditions may become unsuitable between seasons; increased vegetation cover and fluctuating water levels may eliminate suitable foraging and nesting sites (Burke, 2012).

The Black Tern does not have supporting habitat within the study area and was unlikely to be encountered. Neither individuals, nor supporting habitat, were observed during the 2015 field investigations.

### 3.3.3.12 Canada Warbler

According to the OBBA database the Canada Warbler (*Wilsonia canadensis*) has the highest densities (1.56 to 4.04 birds per point count) along the northern shores of the Great Lakes, particularly Lake Superior, and in the region along, and to the east of, Georgian Bay. In its North American breeding range, the Canada Warbler is found in a variety of forest types, but is most common in wet, mixed deciduous-coniferous forest with a well-developed shrub layer (Conway, 1999). The shrub layer provides foraging habitat, where Canada Warblers hunt for invertebrates (Environment Canada, 2015c).



The Canada Warbler typically arrives late to its breeding grounds in Ontario, where it occurs mainly in the Canadian Shield; its greatest distribution is in the southern Shield (MNRF, 2015m). A breeding pair establishes a territory of one (1) to three (3) hectares, often within 100 m of a riparian corridor (Environment Canada, 2015c). Nesting sites are near the ground, in logs or stumps, and covered by shrubs and ferns (MNRF, 2015m; Environment Canada 2015c). Upon leaving the nest, offspring remain nearby, within the shrub cover, for several days (Environment Canada, 2015c).

Long-term Breeding Bird Survey (BBS) data show that both in the long (1968-2007) and short (1997-2007) term, Canada Warbler populations have experienced significant declines - 85% and 43% overall population declines in the last 38 years and the last decade, respectively (COSEWIC, 2008a). It is not clear as to what is driving these global, Canada-wide, and provincial declines in the Canada Warbler population (COSEWIC, 2008a). Although habitat loss and degradation, both in the species' over-wintering and breeding ranges, are thought to be important drivers of these declines (Lambert and Faccio, 2005), a clear, reliable linkage between the two has not been established yet (COSEWIC, 2008a). The removal of forest cover in its wintering ground is likely to be an important determinant of its overall global population decline (COSEWIC, 2008a). In Ontario, forested wetland Canada Warbler habitats have been extensively drained (Tiner, 1984; Conway, 1999) and converted to agriculture or urban developments (Cadman, *et al.* 1987; Gauthier and Aubry, 1996). There is currently a lack of data on the critical habitat requirements of this species (Environment Canada, 2015c).

The Canada Warbler does have supporting habitat within the study area, and one (1) male was incidentally observed during the 2015 field investigations.

### 3.3.3.13 Common Nighthawk

The Common Nighthawk (*Chordeiles minor*) inhabits open areas with little ground cover, such as coniferous or mixed forest clearings, rock barrens, and fields (MNRF, 2015n), where it forages for insects at dawn and dusk; suitable habitats in an individual's home range may be several kilometres apart (Environment Canada, 2015d). A strong indication of breeding activity is the distinct sound that territorial males make in flight; air rushing through their feathers as they dive creates a booming sound (Environment Canada, 2015d). Common Nighthawks nest in areas with little or no ground cover, laying their eggs among leaves, moss, and woody debris (Cornell, 2015g). Several nests may be located with 75 m of each other (Environment Canada, 2015d). Once hatched, nestlings move around in search of shade, and cover from predators (Environment Canada, 2015d). There is currently a lack of data on the critical habitat requirements of this species (Environment Canada, 2015d).

Although this species could occur within the study area, it was not observed during the 2015 field investigations.

### 3.3.3.14 Eastern Wood-Pewee

The Eastern Wood-Pewee (*Contopus virens*) occurs across southern and central Ontario, and inhabits mid-aged or mature deciduous and mixed forests with sparse understories (MNRF, 2015O). It occupies the mid-canopy of forest clearings and edges, and prefers to nest in Elm (*Ulmus* species), Maple (*Acer* species), Oak (*Quercus* species), or Birch (*Betula* species) trees (MNRF, 2015O; Cornell, 2015h). Nests are constructed on branches 4.5 to 21 meters (15 to 70 feet) off the ground, and are well-camouflaged with lichen (Cornell, 2015h). Once laid, eggs hatch in 12 to 14 days, and nestlings remain in the nest for 16 to 18 days (Cornell, 2015h). Males can be aggressive during the breeding season, and defend territories of varying size (5-20 acres) (Cornell, 2015h).

The Eastern Wood-Pewee does have supporting habitat within the study area, and it was observed incidentally during the 2015 field investigations.

### 3.3.3.15 Golden-winged Warbler

The Golden-winged Warbler (*Vermivora chrysoptera*) inhabits large forest landscapes, with less than 30% coniferous tree cover (Environment Canada, 2014a). The breeding range of this species includes all of central Ontario; as of 2012, sightings have been documented in the Bruce Peninsula and east of Gravenhurst (MNRF, 2015p). Breeding sites require early successional habitat and a variety of vegetation cover, including trees that are widely spaced, patches of shrub and herbaceous cover, and forest edges; Alder (*Alnus* species) swamps and Tamarack (*Larix laricina*) bogs may also provide suitable cover (Environment Canada, 2014a). A mating pair establishes a territory that is typically one to two (1 to 2) ha (Environment Canada, 2014a); females are very sensitive to disturbance, and may abandon their nests even after eggs have been laid (Cornell, 2015i). The nest is constructed on the ground at the base of a plant, usually within 200 m of a forest edge (Environment Canada, 2014a). Eggs are incubated for ten (10) to 12 days, and nestlings remain in the nest for eight to nine (8 to 9) days (Cornell, 2015i).

Critical habitat for the Golden-winged Warbler requires that a forested landscape have greater than 50% deciduous or mixed cover, and that forest edge habitat extends 200 m into both the forest habitat and the open / shrub habitat (Environment Canada, 2014a).

Although this species could occur within the study area, it was not observed during the 2015 field investigations.

### 3.3.3.16 Olive-sided Flycatcher

The Olive-sided Flycatcher (*Contopus cooperi*) is widely distributed across central and northern Ontario, and inhabits coniferous / mixed forests near rivers and wetlands (MNRF, 2015q). This species is attracted to areas disturbed by forestry or fire, both of which create openings in the canopy that allow for foraging (MNRF, 2015q). Olive-sided Flycatchers perch on trees or snags, fly out from their perches to catch prey, and return (MNRF, 2015q). A mating pair establishes a large territory, between ten (10) and 20 ha (Environment Canada, 2015e). Nests are constructed on the branches of coniferous trees, typically spruce (*Picea* spp.), Jack Pine (*Pinus banksiana*) or Balsam Fir (*Abies balsamea*) (Environment Canada, 2015e). The entire nesting period may last 36 to 46 days, and fledglings remain near the nest for several days after fledging (Environment Canada, 2015e).

There are currently insufficient data on the critical habitat requirements of the Olive-sided Flycatcher (Environment Canada, 2015c).

Although this species could occur within the study area, it was not observed during the 2015 field investigations.

### 3.3.3.17 Louisiana Waterthrush

In Ontario, the Louisiana Waterthrush (*Seiurus motacilla*) is known to breed only in the south, mainly along the Niagara Escarpment and in southwestern Ontario; the breeding population in Canada is believed to be less than 200 pairs (MNRF, 2015r). This species typically inhabits forested ravines near fast-flowing streams, but may also be found in deciduous swamps (MNRF, 2015r). Nests are constructed on stream banks, usually in fallen tree roots or under logs; eggs are laid between May and July, and usually hatch in 12 to 14 days (Environment Canada, 2012). Once the young have fledged, the adults continue to care for them for several weeks (Environment Canada, 2012). Nesting territories are typically 2 ha in size, but a mating pair may use up to 25 ha of habitat throughout the breeding season (Environment Canada, 2012).

Although Louisiana Waterthrush could occur within the study area, it was not observed during the 2015 field investigations.

### 3.3.3.18 Peregrine Falcon

In Ontario, the population of the Peregrine Falcon (*Falco peregrinus anatum*) has been split; in southern Ontario, this species has adapted to living in urban environments, whereas in northern Ontario, it still inhabits natural areas, mainly around Lake Superior (MNRF, 2015s). Historically, numerous nesting sites were documented in central Ontario, south of the French River; however, the Peregrine Falcon has not repopulated the area, and is rarely seen (Ontario Peregrine Falcon Recovery Team (OPFRT), 2010).

The Peregrine Falcon, when breeding in natural areas, nests on the ledges of steep cliffs near large waterbodies, where they also forage (OPFRT, 2010; MNRF, 2015s). The northern Ontario population returns to its breeding grounds in late March, and eggs are laid by the end of April (OPFRT, 2010). A mating pair builds its nest on a ledge 50 m to 200 m high, with perches nearby, and typically within 800 m of water (OPFRT, 2010). Eggs hatch by late May or early June, and the young fledge by early July (OPFRT, 2010). Peregrine Falcons show strong fidelity to nest sites, and also return to the habitat type they were raised in (natural vs. urban environment) (OPFRT, 2010).

The Peregrine Falcon is likely to be present, as supporting habitat is available; however, it was not observed during the 2015 field investigations.

### 3.3.3.19 Red-headed Woodpecker

The Red-headed Woodpecker (*Melanerpes erythrocephalus*) has a wide distribution across southern Ontario, but is rarely seen (MNRF, 2015t). This species inhabits open deciduous woodlands, but may also be found in parks and golf courses (MNRF, 2015t). Nests are constructed in pine, maple, oak, and birch, and often in snags that no longer have bark, into which gourd-shaped nests are carved out (Cornell, 2015j). Mating pairs lay eggs between May and June; the eggs hatch in 12 to 14 days, and nestlings remain in the nest for 24 to 31 days (Cornell, 2015j).

Although this species could occur within the study area, as supporting habitat is available, it was not observed during the 2015 field investigations.

### 3.3.3.20 Short-eared Owl

The Short-eared Owl (*Asio flammeus*) has a scattered population across Ontario, and those that live in the north are migratory (MNRF, 2015u). This owl inhabits grasslands and marshes, where it forages for small mammals; individuals are nomadic, and move between areas with an abundance of prey (MNRF, 2015u). Short-eared Owls are active at dawn and dusk, and often only seen in flight (MNRF, 2015u). Individuals reach their breeding grounds between March and May, and eggs are laid between late April and early June (COSEWIC, 2008b). To construct a nest, a depression is dug into the ground and lined with grasses (Cornell, 2015k). Eggs are incubated for approximately 27 days, and nestlings begin to leave the nest after 14 to 17 days (COSEWIC, 2008b).

Although this species could occur within the study area, it was not observed during the 2015 field investigations.

### 3.3.3.21 Wood Thrush

The Wood Thrush (*Hylocichla mustelina*) occurs all across southern Ontario, but has a scattered distribution across northern Ontario (MNRF, 2015v). This species inhabits mature deciduous and mixed forests, with tall trees and mixed understories of shrubs, saplings, and open forest floor (MNRF, 2015v; Cornell, 2015l). Wood Thrushes arrive at their breeding grounds between April and June, and nest in the lower branches of shrubs and saplings (COSEWIC, 2012a; Cornell, 2015l). Incubation lasts 12 to 15 days, and nestlings leave the nest within 15 days of hatching (Cornell, 2015l).

Although this species could occur within the study area, it was not observed during the 2015 field investigations.

### 3.3.3.22 Yellow Rail

The main breeding grounds of the Yellow Rail (*Coturnicops noveboracensis*) lie in shallow wetlands of the Hudson Bay Lowlands, and some marshes in southern Ontario (MNRF, 2015w). It has not yet been determined whether this species breeds in the boreal regions south of the Lowlands (MNRF, 2015w). Individuals reach their breeding grounds between late April and mid-May; eggs are typically laid by early June (Environment Canada, 2013). Yellow Rails construct their nests in patches of reeds, sedges, and dead vegetation in shallow wetlands; nesting sites are often less than 15 cm deep (Environment Canada, 2013). These birds are rarely seen, as they often remain hidden deep in wetlands, and make calls at night (MNRF, 2015w; Cornell, 2015m).

Although this species could occur within the study area, it was not observed during the 2015 field investigations.

### 3.3.3.23 Red-shouldered Hawk

The breeding records for the Red-shouldered Hawk (*Buteo lineatus*) in Ontario are mainly from the Great Lakes Forest Region (COSEWIC, 2006). This species inhabits deciduous swamps, mixed upland forests, and woodlands near urban areas; open subcanopies allow foraging for small mammals and amphibians (Cornell, 2015n). Individuals reach their breeding habitats between February and April, and construct nests over the course of four to five (4 to 5) weeks (COSEWIC, 2006). Nest sites are located just below the canopy, in areas with 70% cover or greater, and typically within 250 m of a stream or wetland (COSEWIC, 2006). Red-shouldered Hawks commonly nest in stands dominated by maple, Yellow Birch, and Oak (COSEWIC, 2006). Eggs are incubated for 32 to 40 days, and nestlings remain in the nest for another 42 to 49 days (COSEWIC, 2006). This species shows strong fidelity to nesting sites, and may use the same site for many years; old nests may even be reused (Cornell, 2015n). Activity in a nest is indicated by the presence of feces below it; nestlings are able to defecate over the edge within five days of hatching (Cornell, 2015n).

Although the Red-shouldered Hawk could occur within the study area, it was not observed during the 2015 field investigations.

### 3.3.3.24 Rusty Blackbird

In Ontario, the Rusty Blackbird (*Euphagus carolinus*) nests in the edges of wet boreal forests bordering beaver ponds, streams, fens, and bogs; this species rarely enters the forest interior (Cornell, 2015o; Government of Canada, 2015). The northern shores of Georgian Bay are close to the southern edge of this species' breeding range in Ontario (Environment Canada, 2014b). Rusty Blackbirds reach their breeding habitat in April and May, and seek out nesting sites in riparian vegetation (Government of Canada, 2015). Eggs are incubated for two (2) weeks, and nestlings will leave in 11 to 13 days (Government of Canada, 2015).

Although this species could be found within the study area, it was not observed during the 2015 field investigations.

Avifauna Significant Species observations during the 2015 field program are presented in **Figure 3-11** in Appendix A.

## 3.3.4 Herpetofauna

According to the Ontario Nature Reptile and Amphibian Atlas (Ontario Nature, 2014), one (1) Endangered, four (4) Threatened, and four (4) Special Concern reptile species are known to occur within the vicinity of the Route A Transmission Line study area. These species are listed in **Table 3-10** below. No SAR amphibians are known to occur within the Route A Transmission Line study area.

**Table 3-10: Ontario Nature Reptile and Amphibian Atlas Records**

Taxon	Common Name	Scientific Name	ESA Status	SARA Status	COSEWIC Status
<b>Reptile</b>	Restricted Species <sup>6</sup>				
<b>Reptile</b>	Blanding's Turtle <sup>1</sup>	<i>Emydoidea blandingii</i>	THR	THR Schedule 1	THR
<b>Reptile</b>	Eastern Foxsnake <sup>1</sup>	<i>Pantherophis gloydi</i>	THR	END Schedule 1	END
<b>Reptile</b>	Eastern Hog-nosed Snake	<i>Heterodon platirhinos</i>	THR	SC Schedule 1	THR
<b>Reptile</b>	Massasauga <sup>1</sup>	<i>Sistrurus catenatus</i>	THR	THR Schedule 1	THR
<b>Reptile</b>	Eastern Musk Turtle <sup>1</sup>	<i>Sternotherus odouratus</i>	SC	THR Schedule 1	SC
<b>Reptile</b>	Five-lined Skink <sup>1</sup>	<i>Plestiodon fasciatus</i>	SC	SC Schedule 1	SC
<b>Reptile</b>	Milksnake	<i>Lampropeltis triangulum</i>	SC	SC Schedule 1	SC
<b>Reptile</b>	Snapping Turtle <sup>1</sup>	<i>Chelydra serpentina</i>	SC	SC Schedule 1	SC

Note: 1. Indicates species observed during previous field studies.

### 3.3.4.1 Eastern Massasauga Rattlesnake

The historical and current range of the Eastern Massasauga Rattlesnake (*Sistrurus catenatus catenatus*) in Canada lies entirely within Ontario, which hosts approximately 10% of the global distribution of the subspecies (Oldham, *et al.* 1999). In Ontario, there are two broad population units of this species - the Carolinian, and the Great Lakes/St. Lawrence, which includes sub-populations in the Georgian Bay region. In the Great Lakes / St. Lawrence region, 15% of all historical populations are considered extirpated. Consequently, Massasaugas either no longer occur along the southern shore of Georgian Bay or remain only in small, localized, populations (COSEWIC, 2012b). The species' cryptic nature makes population size and trend estimation extremely difficult (Harvey, 2008). Some of the most secure populations of the Eastern Massasauga Rattlesnake in North America occur in the Georgian Bay region, where the overall population is estimated to be roughly 10,000 adults, and mostly concentrated along the upper Bruce Peninsula, and along the eastern shore of Georgian Bay.

The Massasauga inhabits a variety of habitats but in general require microsites having low canopy cover with abundant rocks and shrubbery for cover (COSEWIC, 2012b). Hibernation and gestation sites are also critical habitat for this species. Hibernation sites typically used by the Great Lakes / St. Lawrence population of the Massasauga include root systems, small mammal burrows or rocky crevices that are located below the frost line and provide structural stability, as well as access to the water table or moist substrate, and protection from extreme temperature variation (COSEWIC, 2012b). In the Georgian Bay area, these sites are often found in conifer or shrub swamps, poor fens, and rock barrens (Parks Canada, 2013). Gestation sites used by the Great Lakes / St. Lawrence population of Massasauga are typically located in rock barrens with large table rocks and cover habitat that provides retreat sites (COSEWIC, 2012b). It is recommended that a 30 m radius around gestation sites and a 100 m radius around hibernation sites be left undisturbed in order to maintain a suitable microclimate (MNR, 2013e).

Massasaugas may have large home ranges up to 1.2 km (MNR, 2013e). Upon emergence in the spring, individuals remain near hibernation sites for several weeks before dispersing to gestation and foraging sites (MNR, 2013b); in suitable weather conditions, dispersal occurs by late May (J. Rouse, MNR, personal communication, May 11, 2015). Individuals make use of forested areas with suitable cover as they travel between hibernation and gestation sites (MNR, 2013e). Sparse forests and forest edges provide habitat for small rodents,

6. Records of Species At Risk considered to be restricted are not being made public due to the threat of poaching experienced by these species. These records will be provided under a separate cover to the Ministry of Natural Resources and Forestry (MNR) and / or Environment Canada – Canadian Wildlife Service (EC-CWS) for permitting purposes.



which are a primary food source for the Massasauga; wetlands and fields are also suitable foraging sites (Parks Canada, 2013). Gravid females remain at gestation sites for approximately three (3) months, before giving birth in August or early September (MNRF, 2013e).

The viability of Eastern Massasauga Rattlesnake populations is threatened by several anthropogenic pressures in combination with factors, such as biennial reproduction, cool temperatures, and a long generation time, that limit the ability of these species to recover from human pressures (COSEWIC, 2012b). The two (2) main threats to the Massasauga are habitat loss, and roads. Persecution, collection, and small population sizes also play a role in the species' decline. Although, currently none of these threats is likely to significantly impact Massasauga populations, on its own, together they have the potential to synergistically drive long-term population declines and extinction risk, especially in geographically restricted subpopulations (COSEWIC, 2012b).

The Route A Transmission Line study area runs parallel to Highway 522; this may make the local snake population vulnerable to road mortality. To date, there have been no records of Massasauga mortality along Highway 522, which may indicate their absence in the area (J. Rouse, MNRF, meeting minutes, March 4, 2015).

The Massasauga is listed as Threatened, and its general habitat is automatically protected. Habitat receives a protective buffer of 30 m around gestation sites, and 100 m around hibernation sites (MNRF, 2013e). Any suitable habitat within 1.2 km of a sighting is also protected (MNRF, 2013e).

The Eastern Massasauga Rattlesnake does have supporting habitat within the portion of Route A where the Transmission Line study area lies between HIFN I.R. #2 and Highway 522, and was likely to be encountered therein; however, no individuals were recorded during the 2015 field investigations.

### 3.3.4.2 Eastern Foxsnake

The Georgian Bay coast regional population of Eastern Foxsnake (*Pantherophis gloydi*) is known to inhabit coastlines, and snakes are typically found within 1 km of the shoreline (COSEWIC, 2008c), in rocky areas with limited tree / shrub cover (MNRF, 2015x). Foxsnakes are excellent swimmers, and will cross open water when necessary (Ontario Nature, 2015a). This species is known to hibernate communally in bedrock crevices and mammal burrows (Ontario Nature, 2015a). Breeding occurs in April and May, and rotting logs or leaf piles are typically used as nesting sites (Ontario Nature, 2015a). The Route A Transmission Line study area is located greater than 1 km away from the Georgian Bay shoreline; therefore, Eastern Foxsnake has a low probability for occurrence.

The Eastern Foxsnake is Endangered; hibernation and gestation sites receive a protective buffer of 100 m and 30 m, respectively (MNRF, 2012b). Any suitable habitat that is within 3600 m of these sites, but not more than 500 m inland, is also protected (MNRF, 2015b).

The study area is east of this species' known range, making it unlikely for it to be found therein. It was not encountered during the 2015 field investigations.

### 3.3.4.3 Milksnake

The Eastern Milksnake (*Lampropeltis triangulum*) is commonly found in fields, forest edges, and areas with rock outcrops (Ontario Nature, 2015b). This snake hunts for mice and small birds at night, and remains under cover during the day (MNRF, 2015y). Breeding occurs in the spring; nests are made in abandoned mammal burrows, or rotting logs and stumps (Ontario Nature, 2015b). The eggs hatch in seven to ten (7 to 10) weeks, and hatchlings mature within four (4) years (Ontario Nature, 2015b). Milksnakes may be mistaken for Massasaugas, because they have similar markings, and behave like Massasaugas when threatened (Ontario Nature, 2015e).

This species was not encountered during the 2015 field investigations.

#### 3.3.4.4 Eastern Hog-nosed Snake

The Eastern Hog-nosed Snake (*Heterodon platirhinos*) requires habitats with sandy well-drained soils, which includes forests, fields, shorelines, and shrublands (Ontario Nature, 2015c); these areas are also inhabited by amphibians, particularly American Toads, the Hog-nosed Snake's primary prey (Seburn, 2008). In the Georgian Bay area, this species may also be found in rock barrens and forest clearings, but only when adjacent to its other habitats (Ontario Nature, 2015c). Hog-nosed Snakes mate in June or July; the female then burrows into the sand to lay eggs, which take approximately two (2) months to hatch (Ontario Nature, 2015c). This snake also burrows in order to hibernate, but is not known to hibernate communally (Ontario Nature, 2015c).

Eastern Hog-nosed Snakes often have large home ranges (the average range length is 2.7 km), and can travel up to 100 m per day (Seburn, 2008). There is documentation of Hog-nosed Snakes perishing on roads (Seburn, 2008); if present in the Route A Transmission Line study area, the local population may be vulnerable to road mortality due to close proximity to Highway 522.

Preliminary review of data revealed that the Hog-nosed Snake, as well as suitable gestation hibernaculum sites for the species, occur within the Route A study area. Final results of field investigations for this species will be submitted to the MNRF separately as part of the SAR Permitting Application package.

#### 3.3.4.5 Eastern Musk Turtle

Eastern Musk Turtle (*Sternotherus odoratus*) typically inhabits the littoral zones of waterbodies with little current and soft bottoms; this species prefers shallow water with an abundance of aquatic vegetation (COSEWIC, 2012c). It is rarely observed on land, as individuals often travel along the bottom of waterbodies or bask underneath floating vegetation (MNRF, 2015z). Musk turtles nest in close proximity to water, between three (3) and 11 m from the shoreline (COSEWIC, 2012c). Suitable substrate for nesting sites includes soil, decaying vegetation, and rotting wood; in some cases, old muskrat lodges may be used (MNRF, 2015z). Nests are typically dug very shallow, and may even be on open ground (Ontario Nature, 2015d). Mating / nesting occur between late May and early July; the eggs do not hatch until autumn (Ontario Nature, 2015d).

This species does have supporting habitat within the portion of Route A where the Transmission Line study area lies between HIFN I.R. #2 and Highway 522, and has the potential to be encountered therein; however, it was not recorded during the 2015 field investigations.

#### 3.3.4.6 Blanding's Turtle

The Blanding's Turtle (*Emydoidea blandingii*) has one of the smallest global ranges of Canadian reptiles (COSEWIC, 2005). In Canada, most of the Blanding's Turtle's range (approximately 20% of the global range; Austen and Oldham, 2001) occurs in eastern, southern, and south-central Ontario (Ontario Herpetofaunal Summary, 2004; MNRF, 2013a); Quebec and Nova Scotia also support small populations. Although the size of the Ontario population, also known as the Great Lakes / St. Lawrence population, is impossible to estimate accurately, rough estimates place it at about 10,000 individuals (COSEWIC, 2005), with 1,411 sightings of the species reported in the Ontario Herpetofaunal Summary database between 1984 and 2002 (COSEWIC, 2005).

Blanding's Turtles inhabit wetlands and waterbodies including lakes, ponds, creeks, marshes, meadow marshes and coastal areas; preferred wetlands are those with shallow waters, organic substrates and abundant aquatic vegetation (COSEWIC, 2005). This species travels long distances overland during the breeding and nesting

seasons and, therefore, may be observed far from water and outside their expected habitat types (COSEWIC, 2005). Wetlands that are less than 500 m apart are considered part of a complex, and the areas in between are also considered part of the habitat (MNR, 2013a). Nests are usually found within 250 m of wetlands, and these areas provide corridors for hatchlings to reach wetlands (MNR, 2013a). Blanding's Turtles lay their eggs in sand or gravel substrates, in areas with little vegetation cover that receive significant sunlight throughout the day (MNR, 2013a). It is recommended that a 30 m buffer around suitable habitats be left undisturbed in order to maintain the microclimate; individuals are often found basking within 30 m of suitable habitat (MNR, 2013a). Blanding's Turtles demonstrate high fidelity to their habitat, and return to the same nesting and wintering sites every year (MNR, 2013a). Within the portion of Route A where the transmission line study area corridor lies between HIFN I.R. #2 and Highway 522, field investigations did not reveal suitable wetland habitats (MNR meeting minutes, 2015b).

Blanding's Turtles live at low densities (less than one adult per km<sup>2</sup>), and in isolated populations (COSEWIC, 2005). They are exceptionally long-lived, known to survive in the wild in excess of 75 years (Congdon, *et al.* 1993; Congdon, *et al.* 2001; Ruben, *et al.* 2001), and also late-maturing; in Ontario, Blanding's Turtles are known to mature at up to 25 years (COSEWIC, 2005). Models based on demographic data from a long-term study indicate that the population stability of such a long-lived, late-maturing species, in Canadian populations, likely requires greater than 76.76% annual juvenile (ages 2 to 14 years) survivorship, and greater than 96% annual adult survivorship. However, a suite of limiting factors and threats seriously undermines survivorship in Blanding's Turtles.

The development of wetlands, and the terrestrial ecosystems that surround them, results in extensive fragmentation of Blanding's Turtle habitats, and consequently, fragmentation and isolation of populations, preventing any natural 'rescue effect' from other populations. Therefore, although several protected areas within Ontario specifically include the protection of Blanding's Turtle habitats, these areas are most often not contiguous, and do not afford sub-populations adequate habitat connectivity, thus undermining their capacity to serve as refugia (COSEWIC, 2005).

Nesting females are attracted to the gravel along roadways (Standing, *et al.* 1999, Congdon, *et al.* 2000). Increases in road density and vehicular traffic, resulting from development, lead to greater mortality not only for nesting females but also hatchlings. Models parametrized with empirical multi-year data (Congdon, *et al.* 1993) suggest that for northern populations of Blanding's Turtle, such as those in the Study Route A Transmission Line study area, an annual average nest survivorship of approximately 90% is required in order to maintain stable populations (COSEWIC, 2005); current nest survivorship rates in the Great Lakes/St. Lawrence population is most likely less than 1% for metropolitan areas to 15% for pristine environments (Edge, *et al.* 2010).

Extensive predation by skunks, foxes, and raccoons (Harding, 1997), and increasing levels of parasitism by sarcophagid fly larvae (Gillingwater and Brooks, 2001) are important drivers of recent declines in nest survivorship (COSEWIC, 2005). So also, prolonged fluctuations in temperature outside the optimal temperature range for incubating eggs, can lead to their failure to hatch or reduction in the viability of hatchlings (Ernst, *et al.* 1994). Populations at the extreme periphery of the species' range, such as in north-central Ontario are already near the limits of their physiological tolerance, and may be particularly susceptible to climate change and extreme weather events (Herman, *et al.* 2003). As a threatened species, the general habitat of the Blanding's Turtle is automatically protected.

This species does have supporting habitat within the portion of Route A where the Transmission Line study area corridor lies between HIFN I.R. #2 and Highway 522, and was encountered therein.

### 3.3.4.7 Snapping Turtle

The Snapping Turtle (*Chelydra serpentina*) is another turtle species that is long-lived but slow to reach maturity; while they can live for 70 years, females do not reach maturity until 17 to 19 years of age (Ontario Nature, 2015e). Mating and nesting occurs in May and June; Snapping Turtles dig into sandy substrates along roadsides,

shorelines, and stream banks to lay their eggs (Ontario Nature, 2015e). The eggs hatch in autumn (Ontario Nature, 2015e). During the breeding season, Snapping Turtles may travel through rocky streams to reach different bodies of water (COSEWIC, 2008d).

This species prefers to inhabit areas with shallow, slow-moving water, such as wetlands, ponds, and even ditches (Ontario Nature, 2015e). Abundant vegetation cover and muddy / sandy substrates help create ideal habitat (Ontario Nature, 2015e). Snapping turtles are poor swimmers, and often walk along the bottom of their habitat, foraging for plant and dead animal matter (Ontario Nature, 2015e). Due to their long life, it is possible for a Snapping Turtle to bioaccumulate many toxins if they suffer exposure for long periods of time (Ontario Nature,

Although the Snapping Turtle could occur within the study area, as supporting habitat is available, it was not observed during the 2015 field investigations.

### 3.3.4.8 Five-lined Skink

The Five-lined Skink (*Plestiodon fasciatus*) is the only lizard native to Ontario. In the Georgian Bay area, this species typically uses rocks and rotting woody debris for cover, and can be found in areas with rock outcrops, such as open woods and shorelines (Environment Canada, 2014c). Skinks are not territorial, and may relocate several times in a season; the home range of a population may be very large, exceeding 2000 m<sup>2</sup> (Environment Canada, 2014c). However, an individual may not travel more than 25 m to forage / bask / nest (Environment Canada, 2014c). Skinks also remain under cover for most of the day which, combined with their tendency to relocate, may make surveying a population challenging (Environment Canada, 2014c).

The breeding time for this species is May through early June (Ontario Nature, 2015f). Females lay their eggs under rotting wood (either logs or stumps), and may nest in groups (Ontario Nature, 2015f). They also defend their nests, and warm the eggs by basking and returning to cover them (Ontario Nature, 2015f). Females leave the nest to forage for invertebrates in leaf litter and woody debris, and may climb trees in search of prey (Ontario Nature, 2015f). In addition to nesting in groups, Skinks also hibernate together, usually under rocks or rotting logs (Ontario Nature, 2015f).

When an individual is discovered, a 30-m buffer is established around the location of the observation; any suitable habitat that intersects this buffer and creates a larger complex is also protected (Environment Canada, 2014c).

Although the Five-lined Skink could occur within the study area, as supporting habitat is available, it was not observed during the 2015 field investigations.

Reptile Significant Species observations during the 2015 field program are presented in **Figure 3-12** in Appendix A.

### 3.3.5 Insects

There were no incidental observations of insect SAR, SOCC, or otherwise significant insect species during 2015 field investigations within the Route A Transmission Line study area.

## 3.4 Environmentally Significant Areas

Environmentally Significant Areas such as Conservation Reserves and Areas of Natural and Scientific Interest, along with Provincial Parks, are discussed further below, and presented in **Figure 3-13** in Appendix A. Areas of provincial Crown Land are presented in **Figure 3-14** in Appendix A.

### 3.4.1 Significant Wetlands

#### 3.4.1.1 Background Review

There are no Provincially Significant Wetlands (PSWs) or Locally Significant (Non-Provincially) Wetlands identified within or in the vicinity of the Route A Transmission Line study area. However, unevaluated wetlands are abundant, and include swamps, bogs and fen communities (Neegan Burnside, 2011). Ecological Land Classification was conducted by AECOM during the 2015 field season to characterize vegetation communities within the Route A Transmission Line study area. Wetlands of the area are presented in **Figure 3-15** in Appendix A.

#### 3.4.1.2 Field Investigations

AECOM conducted field investigations to characterize vegetation communities, identify wetlands and compile data on plant species within the Route A Transmission line study area in spring and summer of 2015. This section describes the field methods and results.

##### 3.4.1.2.1 Methods

Site investigation surveys were conducted in spring and summer of 2015 for the Route A Transmission Line study area. These surveys included delineation and characterization of the following:

- Vegetation communities using ELC;
- Wetland features;

The methods undertaken to conduct ELC are described in detail in Section 3.1.1.2 above. The work began with a review of previous studies, and a desktop review of aerial photography for the Route A Transmission Line study area, identifying areas of interest, and completing a preliminary delineation of vegetation community boundaries. This high-level assessment provided an understanding of site conditions to community series (i.e., FOM, FOD, FOC, etc.) prior to commencing field investigations.

Wetland analyses were conducted as desktop analyses which utilized both ELC field data collected in the spring and summer of 2015, as well as orthophotographic interpretation conducted by AECOM in the spring of 2015. Wetland boundaries and the complexing of wetlands were conducted using standardized methods outlined in the *Ontario Wetland Evaluation System (OWES)*, *Northern Manual* (MNRF, 2014d). Important characteristics of the wetland complexes within the Route A Transmission Line study area were described using OWES methods; however a complete Wetland Evaluation undertaken will not be undertaken because effects to wetlands are likely to be minimal, in any case, as Transmission Line poles will be placed specifically outside wetland boundaries.

##### 3.4.1.2.2 Field Results

A total of eight (8) unevaluated wetland complexes were identified within the Route A Transmission Line study area through the 2015 field investigations. These wetland complexes (shown in **Figure 3-15** in Appendix A) are considered riverine or palustrine in nature, are largely composed of marsh, open water marsh, and fen. Wetland communities comprise 22.45 ha of the Route A Transmission Line study area and are composed of 13.52 ha, 6.36 ha, and 2.35 ha of marsh, open water marsh, and fen, respectively. A description important wetland characteristics including size, wetland type, site type, vegetation communities present within in complex, and observations of rare (SAR/SOCC) species are presented in **Table 3-11**.



### 3.4.2 Significant Woodlands

Significant Woodlands are identified in the Natural Heritage Reference Manual as treed areas with ecological importance in regard to biological factors (species composition, age etc.), size, function in the landscape, and economic importance (MNRF, 2010). Protection is sought only if such areas are located in Ecoregions 6E and 7E (PPS), as over 70% of the forest cover in these areas has been lost to agricultural or urban development (MNRF, 2005).

The Route A Transmission Line study area lies within the Canadian Shield (Ecoregion 5E); woodlands within this area are not protected from development as outlined by the PPS.

### 3.4.3 Significant Valleylands

Significant Valleylands are identified as natural areas in a landform depression with either standing or flowing water that are ecologically important to a greater landscape or natural heritage system (MNRF, 2010). Protection is sought only if such areas are located in Ecoregions 6E and 7E (PPS); many natural areas have been fragmented due to development, but may still be connected by corridors of valleylands (MNRF, 2005).

The Route A Transmission Line study area lies within the Canadian Shield (Ecoregion 5E); valleylands within this area are not protected from development as outlined by the Provincial Policy Statement (PPS).

### 3.4.4 Significant Wildlife Habitat

The Significant Wildlife Habitat Technical Guide provides details and criteria regarding the identification, description, and evaluation of Significant Wildlife Habitat (MNRF, 2000). In general, SWH is defined as wildlife habitat areas that are ecologically important in terms of features, functions, representations or amount (MNRF 2000).

There are four (4) main categories of Significant Wildlife Habitat:

- Habitats of Seasonal Concentrations of Animals;
- Rare Vegetation Communities or Specialised Habitats for Wildlife;
- Habitats of Species of Conservation Concern; and
- Animal Movement Corridors.

**Table 3-12** presents the SWH types specific to Ecoregion 5E and the characteristics of these features. The SWH below may be present within the Route A Transmission Line study area.

Of the Significant Wildlife Habitat observed in the Route A Transmission Line study area, several types were specific to herpetofauna. Rock barrens and rock outcrops scattered across the study area provide suitable hibernation and basking sites for snakes. Sandy and barren areas along the shoulder of Highway 522 were found to provide nesting sites for turtles, although the nests discovered were old, and had been predated. It should be noted that roadside nesting sites, although evidence of breeding, are not considered SWH under the criteria of the Significant Wildlife Habitat Technical Guide (MNRF, 2000)

**Table 3-11: Route A Transmission Line Study Area Wetland Characteristics**

Wetland No.	Distance from Project Location	Wetland Size (ha)	Wetland Type	Percent Bog	Percent Fen	Percent Marsh	Percent Swamp	Percent Open Water Marsh	Site Type	Vegetation Communities (ELC)
WET-01	0	11.20	Marsh, Open Water Marsh	0	0	91.30	0	8.70	Riverine, Palustrine	MAM2-1 MAM2-1 MAM2-1 MAM2-1 MAM2-10 OAO SA SA SAM1-6
WET-02	0	1.79	Marsh, Open Water Marsh	0	0	71.36	0	28.64	Riverine	MAM MAM2 MAM2-3 OAO
WET-03	0	2.18	Open Water Marsh	0	0	0.00	0	100.00	Riverine	SA
WET-04	0	1.88	Fen, Marsh	0	56.13	43.87	0	0.00	Palustrine	FEO MAM2
WET-05	0	1.51	Fen, Open Water Marsh	0	86.17	0.00	0	13.83	Palustrine	FEO SAS1
WET-06	0	1.29	Marsh, Open Water Marsh	0	0	25.51	0	74.49	Palustrine	MAM MAM SAS1 SAS1 SAS1
WET-07	0	1.22	Marsh, Open Water Marsh	0	0	70.53	0	29.47	Riverine	MAM MAM SA
WET-08	0	2.60	Marsh, Open Water Marsh	0	0	33.21	0	66.79	Riverine	SA

Table 3-12: Significant Wildlife Habitat

Type of Feature	Environmental Component	Characteristics of Feature	2015 Findings
Significant Wildlife Habitats Based on the Significant Wildlife Habitat Ecoregion 5E Criterion Schedule (MNR, 2012b):			
Seasonal Concentration Areas of Animals			
Waterfowl Stopover and Staging Areas (Terrestrial)	Migratory birds	<ul style="list-style-type: none"><li>• Presence of the following Ecosites<sup>7</sup>: CUM1, CUT1; and</li><li>• Evidence of annual spring flooding from melt water or runoff.</li></ul> <u>Target species<sup>8</sup></u> : American Black Duck, Wood Duck, Green-winged Teal, Blue-winged Teal, Mallard, Northern Pintail, Northern Shoveler, American Wigeon and Gadwall	<ul style="list-style-type: none"><li>• Not found during 2015 field investigations.</li></ul>
Waterfowl Stopover and Staging Areas (Aquatic)	Migratory Birds	<ul style="list-style-type: none"><li>• Presence of the following Ecosites<sup>1</sup>: MAM, MAS, SA, and OAO;</li><li>• Where at least 5 ha of standing water is present including ponds, marshes, lakes, bays, coastal inlets and watercourses during migration. Sewage treatment ponds and stormwater ponds do not qualify as Important Wildlife Habitat;</li><li>• Important sites generally have better habitat quality (e.g., optimal vegetation composition, ratio of open water to emergent vegetation; extensive shoreline; abundant food, nocturnal roosting cover); and</li><li>• Larger wetlands are more Important (size).</li></ul> <u>Target species<sup>2</sup></u> : Canada Goose, Cackling Goose, Snow Goose, American Black Duck, Northern Pintail, Northern Shoveler, American Wigeon, Gadwall, Green-winged Teal, Blue-winged Teal, Hooded Merganser, Common Merganser, Lesser Scaup, Greater Scaup, Long-tailed Duck, Surf Scoter, White-winged Scoter, Black Scoter, Ring-necked duck, Common Goldeneye, Bufflehead, Redhead, Ruddy Duck, Red-breasted Merganser, Brant and Canvasback.	<ul style="list-style-type: none"><li>• Not found during 2015 field investigations.</li></ul>
Shorebird Migratory Stopover Areas (Shorebird Staging)	Migratory Birds	<ul style="list-style-type: none"><li>• Presence of the following Ecosites<sup>1</sup>: BBO1, BBO2, BBS1, BBS2, BBT1, BBT2, SDO1, SDS2, SDT1, MAM1, MAM2, MAM3, MAM4, MAM5; and</li><li>• Shorelines of lakes, rivers and wetlands, including beach areas, bars, seasonally flooded shoreline, mudflats, rock groynes, and other forms of armour rock lakeshore.</li></ul> <u>Target species<sup>2</sup></u> : Greater Yellowlegs, Lesser Yellowlegs, Marbled Godwit, Hudsonian Godwit, Black-bellied Plover, American Golden-Plover, Semipalmated Plover, Solitary Sandpiper, Spotted Sandpiper, Semipalmated Sandpiper, Pectoral Sandpiper, White-rumped Sandpiper, Baird’s Sandpiper, Least Sandpiper, Purple Sandpiper, Stilt Sandpiper, Short-billed Dowitcher, Red-necked Phalarope, Whimbrel, Ruddy Turnstone, Sanderling and Dunlin.	<ul style="list-style-type: none"><li>• Not found during 2015 field investigations.</li></ul>
Raptor Wintering Area	Migratory Birds	<ul style="list-style-type: none"><li>• Combination of ELC Community Series; presence of one Community Series from each land class:<ul style="list-style-type: none"><li>▪ <u>Forest</u>: FOC, FOD, FOM;</li><li>▪ <u>Upland</u>: CUM, CUT, CUS, CUW;</li></ul></li><li>• Combination of forest and upland communities must be &gt; 20 ha in size;</li><li>• Sites that are less disturbed by agricultural activities are more significant; and,</li><li>• Sites with better habitat quality (e.g., abundant prey and perches; a tendency toward less snow accumulation due to exposure to strong prevailing winds) are probably more significant.</li></ul> <u>Target species<sup>2</sup></u> : Rough-legged Hawk, Long-eared Owl, Boreal Owl, Northern Saw-whet Owl and Short-eared Owl.	<ul style="list-style-type: none"><li>• Not found during 2015 field investigations.</li><li>• Potential to occur throughout the study area.</li></ul>
Bat Hibernacula	Fauna	<ul style="list-style-type: none"><li>• All caves, abandoned mine shafts, underground foundations, karst, or one of the following Ecosites<sup>1</sup>: CCR1, CCR2, CCA1, CCA2 (buildings are not to be considered Significant Wildlife Habitat).</li></ul> <u>Target species<sup>2</sup></u> : Big Brown Bat, Little Brown Bat, Tri-coloured Bat/Eastern Pipistrelle, Northern Myotis and Eastern Small-footed Myotis.	<ul style="list-style-type: none"><li>• Not found during 2015 field investigations.</li><li>• Potential to occur throughout the study area.</li></ul>
Bat Maternity Colonies	Fauna	<ul style="list-style-type: none"><li>• Found in tree cavities and vegetation;</li><li>• Mature deciduous or mixed forest stands with &gt; 10 large cavity trees (with at least 25 cm in diameter at breast height) per ha; and</li><li>• Maternity roosts are not found in caves and mines in Ontario.</li></ul> <u>Target species<sup>2</sup></u> : Big Brown Bat, Little Brown Myotis, Silver-haired Bat and Northern Myotis.	<ul style="list-style-type: none"><li>• Not found during 2015 field investigations.</li><li>• Potential to occur throughout the study area.</li></ul>
Bat Migratory Stopover Area	Fauna	<ul style="list-style-type: none"><li>• Location and characteristics of stopover habitats are generally unknown.</li></ul>	<ul style="list-style-type: none"><li>• Not found during 2015 field investigations.</li><li>• Potential to occur throughout the study area.</li></ul>
Turtle Wintering Areas	Fauna	<ul style="list-style-type: none"><li>• Presence of all Ecosites<sup>1</sup> associated with the following ELC Community Series: FEO, BOO; or the following ELC Community Classes: SW, MA, OA, SA;</li><li>• Open water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat (Northern Map Turtle);</li><li>• Overwintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate dissolved oxygen; and</li><li>• Water has to be deep enough not to freeze to the bottom and have soft mud substrates.</li></ul> <u>Target species<sup>2</sup></u> : Midland Painted Turtle, Northern Map Turtle and Snapping Turtle.	<ul style="list-style-type: none"><li>• Not found during 2015 field investigations.</li><li>• Potential to occur throughout the study area.</li></ul>
Reptile Hibernacula	Fauna	<ul style="list-style-type: none"><li>• All ELC Ecosites<sup>1</sup> can potentially contain these habitat features;</li><li>• Wetlands can also be important over-wintering habitat in conifer or shrub swamps with sphagnum moss or sedge hummock ground cover; and</li><li>• Areas of broken and fissured rock, rock piles or slopes, stone fences, crumbling foundations, and old wells that extend below the frost line are candidate Significant Wildlife Habitat.</li></ul> <u>Target species<sup>2</sup></u> : Eastern Gartersnake, Northern Watersnake, Red-bellied Snake, Brownsnake, Smooth Green Snake, Ring-necked Snake, Milksnake, Eastern Ribbonsnake and Five-lined Skink.	<ul style="list-style-type: none"><li>• Large, deep crevice in rock barren, partially covered by Common Juniper (<i>Juniperus communis</i>)</li><li>• One site suitable for basking also observed; large rock pile at edge of rock barren. No hibernacula discovered at this site</li></ul>

7. Ecosites are defined as “mappable, landscape units integrating a consistent set of environmental factors and vegetation characteristics” (Lee, et al. 1998).

8. Target species are included for each SWH as presented in the Draft Significant Wildlife Habitat 5E Criterion Schedule (MNR, 2012).

Table 3-12: Significant Wildlife Habitat

Type of Feature	Environmental Component	Characteristics of Feature	2015 Findings
Colonially-Nesting Bird Breeding Habitat (Bank and Cliff)	Migratory Birds	<ul style="list-style-type: none"><li>• Presence of the following Ecosites<sup>1</sup>: CUM1, CUT1, CUS1, BLO1, BLS1, BLT1, CLO1, CLS1, CLT1;</li><li>• Eroding banks, sandy hills, borrow pits, steep slopes, sand piles and rock faces that are undisturbed or naturally eroding; and</li><li>• Important habitats are not located in licensed aggregate pits, man-made structures (bridges or buildings), or recently (within 2 years) disturbed soils areas.</li></ul>	<ul style="list-style-type: none"><li>• Not found during 2015 field investigations.</li></ul>
Colonially-Nesting Bird Breeding Habitat (Trees/Shrubs)	Migratory Birds	<ul style="list-style-type: none"><li>• Presence of the following Ecosites<sup>1</sup>: SWM, SWD, FET1;</li><li>• Nests in live or dead standing trees in wetlands, lakes, islands and peninsulas. Shrubs and occasionally emergent vegetation may also be used;</li><li>• Important sites generally have better habitat quality (e.g., optimal vegetation structure, abundant food); and</li><li>• Size of habitat and level of disturbance are also important.</li></ul> <p><u>Target species<sup>2</sup></u>: Great Blue Heron and Black-crowned Night Heron.</p>	<ul style="list-style-type: none"><li>• Not found during 2015 field investigations.</li></ul>
Colonially-Nesting Bird Breeding Habitat (Ground)	Migratory Birds	<ul style="list-style-type: none"><li>• Presence of the following Ecosites<sup>1</sup>: MAM1-6, MAM1-3; Ecosites associated with the following ELC Community Series: CUM, CUT, CUS;</li><li>• Any (rocky) island or peninsula (natural or artificial) within open water, marshy areas, lake or large river (two-lined on a 1:50,000 National Topographic System (NTS) map);</li><li>• Brewer’s Blackbird colonies are found in open fields or pastures with scattered trees or shrubs, loosely on the ground or in low bushes in close proximity to streams and irrigation ditches within farmlands;</li><li>• Important sites generally have better habitat quality (e.g., optimal vegetation composition, abundant food); and</li><li>• Size of habitat and level of disturbance are also important.</li></ul> <p><u>Target species<sup>2</sup></u>: Herring Gull, Great Black-backed Gull, Little Gull, Ring-billed Gull, Common Tern, Caspian Tern and Brewer’s Blackbird.</p>	<ul style="list-style-type: none"><li>• Not found during 2015 field investigations.</li></ul>
Deer Winter Congregation Areas	Fauna	<ul style="list-style-type: none"><li>• Presence of all Ecosites<sup>1</sup> associated with the following ELC Community Series: FOC, FOM, SWM,;</li><li>• Forests and swamps at least 100 ha in size;</li><li>• Deer yards provide cover for deer on the onset of winter snow and cold. Deer move to deer yards as a behavioural response in early winter and generally, when snow depths reach 20 cm; and</li><li>• Deer yards are composed of two areas referred to Stratum I, which is the core of the deer yard, and Stratum II, which covers the entire deer yard areas.</li></ul>	<ul style="list-style-type: none"><li>• Not found during 2015 field investigations.</li><li>• Potential to occur throughout the study area.</li></ul>
Rare Vegetation Communities			
Beach/Beach Ridges/ Bar/ Sand Dunes	Flora	<ul style="list-style-type: none"><li>• Any identified beach, beach ridge, or sand dune;</li><li>• Vegetation can be patchy and barren to tree cover &lt; 60%</li><li>• Presence of unstable sand; and</li><li>• Presence of the following indicator species: Marram Grass (<i>Ammophila breviligulata</i>) and Beach Pea (<i>Lathyrus japonicas</i>).</li></ul>	<ul style="list-style-type: none"><li>• Not found during 2015 field investigations.</li></ul>
Shallow Atlantic Coastal Marsh	Flora	<ul style="list-style-type: none"><li>• Presence of the following ELC community Series: MAS;</li><li>• Shallow marsh on shallow mineral (sand) or mineral organic (sandy peat) shoreline, inland lakes and beaver ponds; and</li><li>• Presence of Virginia Meadow-beauty (<i>Rhexia virgininica</i>) and other associated species:<ul style="list-style-type: none"><li>▪ Brownish beaksedge (<i>Rhynchospora capitellata</i>);</li><li>▪ Bog Yellow-eyed Grass (<i>Xyris difformis</i>);</li><li>▪ Eaton’s Rosette grass (<i>Panicum spretum</i>);</li><li>▪ Virginia Marsh-St. John’s Wort (<i>Triadenum virginicum</i>);</li><li>▪ Carey’s Smartweed (<i>Polygonum carey</i>); and</li><li>▪ Bayonet Rush (<i>Juncus militaris</i>).</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Not found during 2015 field investigations.</li></ul>
Cliffs and Talus Slopes	Flora	<ul style="list-style-type: none"><li>• Presence of all Ecosites<sup>1</sup> associated with the following ELC Community Series: TAO, CLO, TAS, CLS, TAT, CLT;</li><li>• Any cliff or talus slope; and</li><li>• A talus slope is rock rubble at the base of a cliff made up of coarse rocky debris.<ul style="list-style-type: none"><li>▪ Lichen, such as Rock Tripe (<i>Umbilicaria spp.</i>);</li><li>▪ Rock Polyploidy (<i>Polypodium virginianum</i>);</li><li>▪ Brittle Bladder-fern (<i>Cystopteris fragilis</i>);</li><li>▪ Oblong Woodsia (<i>Woodsia ilvensis</i>);</li><li>▪ Fragile rockbrake (<i>Cryptogramma stellen</i>);</li><li>▪ Alpine Woodsia (<i>Woodsia alpine</i>); and</li><li>▪ White Mountain Saxifrage (<i>Saxifrage paniculata</i>).</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Not found during 2015 field investigations.</li></ul>
Precambrian Rock Barren	Flora	<ul style="list-style-type: none"><li>• Presence of all Ecosites<sup>1</sup> associated with the following ELC Community Classes: RB;</li><li>• Any rock barren area &gt; 1 ha; and</li><li>• Extensive areas of exposed granitic bedrock that is sparsely vegetated (i.e., tree cover &lt; 60%).<ul style="list-style-type: none"><li>▪ Characteristic flora for rock barrens include: Lichens and mosses (<i>Polytrichum spp.</i>);</li><li>▪ Sparse grasslands of Poverty Oat Grass (<i>Danthonia spicata</i>) or Common Hairgrass (<i>Deschampsia flexuosa</i>);</li><li>▪ Low shrubs of Common Juniper (<i>Juniperus communis</i>), Low Sweet Blueberry (<i>Vaccinium angustifolium</i>) or Sweet Fern (<i>Comptonia peregrina</i>);</li><li>▪ Stunted open grown trees of White Oak (<i>Quercus alba</i>), Red Oak (<i>Quercus rubra</i>) or Eastern White Pine (<i>Pinus strobus</i>); and</li><li>▪ Also characterized by Bristly Sarsaparilla (<i>Aralia hispida</i>), Case’s Ladies’-tresses (<i>Spiranthes casei</i>), Early Saxifrage (<i>Saxifraga virginiensis</i>), Black Huckleberry (<i>Gaylussacia baccata</i>), Pink Corydalis (<i>Corydalis sempervirens</i>), or Bastard Toadflax (<i>Comandra umbellata</i>).</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Observed in study area.</li></ul>

Table 3-12: Significant Wildlife Habitat

Type of Feature	Environmental Component	Characteristics of Feature	2015 Findings
Sand Barrens	Flora	<ul style="list-style-type: none"><li>• Presence of any of the following Ecosites<sup>1</sup>: SBO1, SBS1, SBT1;</li><li>• Typically exposed sand habitats, generally sparsely vegetated and caused by lack of moisture, periodic fires, and erosion. Sand barrens have little or no soil, and the underlying rock protrudes through the surface. Usually located within other types of natural habitat, such as forest or savannah;</li><li>• Sites must not be dominated by non-indigenous species; and</li><li>• Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always &lt; 60%.</li></ul>	<ul style="list-style-type: none"><li>• Not found during 2015 field investigations.</li></ul>
Alvars	Flora	<ul style="list-style-type: none"><li>• Presence of any of the following Ecosites<sup>1</sup>: ALO1, ALS1, ALT1;</li><li>• Typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil;</li><li>• Sites must be at least 0.5 ha in size; and</li><li>• Sites must not be dominated by non-indigenous species.</li></ul>	<ul style="list-style-type: none"><li>• Not found during 2015 field investigations.</li></ul>
Old-growth or Mature Forests	Flora	<ul style="list-style-type: none"><li>• Presence of all Ecosites<sup>1</sup> associated with the following ELC Community Series: FOD, FOC, FOM;</li><li>• Typically relatively undisturbed, structurally complex and contain a wide variety of trees and shrubs in various age classes;</li><li>• Most important sites will contain numerous trees which are at least 140 years old. Stands containing younger trees (e.g., 100 years or older) are important where older trees no longer exist;</li><li>• Stands containing predominantly long-lived species are probably more significant than stands consisting primarily of short-lived species (e.g., trembling aspen, birch); And</li><li>• Stands &gt; 30 ha in size or with at least 10 ha of interior forest habitat (. 100 m from forest edge) are considered SWH.</li></ul>	<ul style="list-style-type: none"><li>• Not found during 2015 field investigations.</li></ul>
Bog	Flora	<ul style="list-style-type: none"><li>• Presence of all Ecosites<sup>1</sup> associated with the following ELC Community Classes: BO;</li><li>• Any size bog;</li><li>• Nutrient poor, acid peatlands dominated by peat mosses (<i>Sphagnum sp.</i>), ericaceous shrubs and sedges; and</li><li>• Water table is at or near the surface in spring and lower remainder of the year.</li></ul>	<ul style="list-style-type: none"><li>• Not found during 2015 field investigations.</li></ul>
Savannahs	Flora	<ul style="list-style-type: none"><li>• Presence of any of the following Ecosites<sup>1</sup>: TPS1, TPS2, TPW1, TPW2, CUS2;</li><li>• Tallgrass prairie habitat with tree cover between 25% and 60%. Site conditions must be restored or natural (e.g., not railway right-of-ways); and</li><li>• Sites must not be dominated by non-indigenous species.</li></ul>	<ul style="list-style-type: none"><li>• Not found during 2015 field investigations.</li></ul>
Tall-grass Prairies	Flora	<ul style="list-style-type: none"><li>• Presence of any of the following Ecosites<sup>1</sup>: TPO1, TPO2;</li><li>• Sites with ground cover dominated by prairie grasses and &lt; 25% tree cover;</li><li>• Site conditions must be restored or natural (e.g., not railway right-of-ways); and sites must not be dominated by non-indigenous species.</li></ul>	<ul style="list-style-type: none"><li>• Not found during 2015 field investigations.</li></ul>
Rare Forest (Red Spruce, Jack Pine and White Oak)	Flora	<ul style="list-style-type: none"><li>• Forest stands consisting of either Red Spruce or White Oak;</li><li>• Any Forest Stand with &gt; 10% of Red Spruce or White Oak regardless of stand size.</li></ul>	<ul style="list-style-type: none"><li>• Not found during 2015 field investigations.</li></ul>
Specialized Habitat for Wildlife			
Waterfowl Nesting Areas	Migratory Birds	<ul style="list-style-type: none"><li>• All upland habitats associated with Ecosites with the following: FO, CU, SWT, SWM that are located adjacent to (within 120 m of) the following wetland Ecosites<sup>1</sup>: MAS1, MAS, FEO, and SA, including of individual wetlands or a complex of smaller wetlands that are at least 2 ha in size;</li><li>• Upland areas should be at least 120 m wide so that predators have difficulty finding nests;</li><li>• Larger sites of suitable habitat are more important;</li><li>• Important sites generally have better habitat quality (e.g., optimal vegetation structure, stable water levels, abundant cover); and</li><li>• Sites with little disturbance (e.g., from agricultural activities such as hay cultivation or cattle grazing) are more important.</li></ul> <p><u>Target species<sup>2</sup>:</u> American Black Duck, Northern Pintail, Northern Shoveler, Gadwall, Blue-winged Teal, Green-winged Teal, Wood Duck, Hooded Merganser, Common Merganser, Red-breasted Merganser, Mallard, Canada Goose, American Widgeon, Bufflehead and Common Goldeneye.</p>	<ul style="list-style-type: none"><li>• Not found during 2015 field investigations.</li></ul>
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	Migratory Birds	<ul style="list-style-type: none"><li>• Presence of all Ecosites<sup>1</sup> associated with the following ELC Community Series: FOC, FOM, FOD, SWC, SWM, SWD, that are directly adjacent to riparian areas of rivers, lakes, ponds, wetlands, and islands; and</li><li>• Nests located on man-made objects are not Significant Wildlife Habitat.</li></ul> <p><u>Target species<sup>2</sup>:</u> Osprey and Bald Eagle.</p>	<ul style="list-style-type: none"><li>• Not found during 2015 field investigations.</li></ul>
Woodland Raptor Nesting Habitat	Migratory Birds	<ul style="list-style-type: none"><li>• Presence of all Ecosites<sup>1</sup> associated with the following ELC Community Series: FOC, FOM, FOD, SWC, SWM, SWD, or the following Ecosite: CUP3; and</li><li>• All natural or conifer plantation woodland/forest stands.</li><li>• Stick nests can be found in a variety of intermediate-aged to mature coniferous, deciduous or mixed forests within tops or crotches of trees.</li><li>• Merlin or Coopers Hawks nest along forest edges, sometimes on peninsulas or small off-shore islands.</li><li>• Barred Owls and sometimes Great Horned Owls and Merlin can nest in tree cavities.</li></ul> <p><u>Target species<sup>2</sup>:</u> Red-tailed Hawk, Great Horned Owl, Broad-winged Hawk, Sharp-shinned Hawk, Merlin, Barred Owl, Red-shouldered Hawk, Coopers Hawk and Northern Goshawk.</p>	<ul style="list-style-type: none"><li>• Suitable nesting habitat for Sharp-shinned Hawk observed</li><li>• Old stick nest discovered in spruce stand near riparian area</li><li>• Potential to occur throughout the study area.</li></ul>
Turtle and Lizard Nesting Areas	Fauna	<ul style="list-style-type: none"><li>• For turtles, exposed mineral soil (sand or gravel) areas adjacent (&lt; 100 m) or within the following ELC Ecosites<sup>1</sup>: MAM, BOO1, FEO1, CUM;</li><li>• Areas of sand and/or gravel that turtles are able to dig in that are located in open, sunny areas, including sand and gravel beaches adjacent to marshes, lakes, and rivers; and</li><li>• Nesting areas on the sides of road embankments, railway embankments and active aggregate operations are not Significant Wildlife Habitat.</li><li>• For lizards, all rock barren was considered suitable nesting habitat.</li></ul> <p><u>Target species<sup>2</sup>:</u> Midland Painted Turtle, Northern Map Turtle Snapping Turtle and Common Five-lined Skink.</p>	<ul style="list-style-type: none"><li>• Two (2) predated turtle nests discovered on shoulder of Highway 522</li><li>• One (1) site located next to a stream</li><li>• Not Significant Wildlife Habitat, but evidence of breeding in the area</li><li>• Potential to occur throughout the study area.</li></ul>
Seeps and Springs	Fauna	<ul style="list-style-type: none"><li>• Seeps and springs are areas where groundwater comes to the surface. Often they are found within headwater areas within forested habitats; and</li><li>• Any forested Ecosite<sup>1</sup> (with less than 25% meadow / field / pasture) within the headwater areas of a stream could have seeps or springs.</li></ul>	<ul style="list-style-type: none"><li>• Not found during 2015 field investigations.</li><li>• Potential to occur throughout the study area.</li></ul>



Table 3-12: Significant Wildlife Habitat

Type of Feature	Environmental Component	Characteristics of Feature	2015 Findings
Aquatic Feeding Habitat	Fauna	<ul style="list-style-type: none"><li>Habitat may be found in all forested Ecosites<sup>1</sup> adjacent to water; and</li><li>Wetlands and isolated embayments in rivers or lakes with an abundance of submerged aquatic vegetation such as pond weeds, water milfoil and yellow water lily.</li></ul> <u>Target species<sup>2</sup>:</u> Moose and White-tailed Deer.	<ul style="list-style-type: none"><li>Not found during 2015 field investigations.</li><li>Potential to occur throughout the study area.</li></ul>
Mineral Licks	Fauna	<ul style="list-style-type: none"><li>Habitat may be found in all forested Ecosites<sup>1</sup> in upwelling groundwater and the soil around these seepage areas.</li></ul> <u>Target species<sup>2</sup>:</u> Moose and White-tailed Deer.	<ul style="list-style-type: none"><li>Not found during 2015 field investigations.</li><li>Potential to occur throughout the study area.</li></ul>
Denning Sites for Mink, Otter, Marten, Fisher and Eastern Wolf	Fauna	<ul style="list-style-type: none"><li>Dens may be found in all forested Ecosites<sup>1</sup>;</li><li>Denning sites are often in cavities in large trees or under large downed woody debris for Martens (<i>Martes americana</i>) and Fishers (<i>Martes pennanti</i>);</li><li>Denning sites for Mink (<i>Neovison vison</i>) includes old muskrat lodges;</li><li>Denning sites for Eastern Wolf (<i>Canis lycaon</i>) are excavated in the ground; and,</li><li>Denning sites for River Otters (<i>Lutra canadensis</i>) include downed woody debris, old beaver lodges, log jams and crevices in rock piles.</li></ul> <u>Target species<sup>2</sup>:</u> Mink, Otter, Marten, Fisher, Grey Wolf and Eastern Wolf.	<ul style="list-style-type: none"><li>Three (3) sites observed</li><li>Two (2) sites located near watercourses; river otter spotted in vicinity of a den</li><li>One (1) site located in rock outcrop</li><li>Evidence of use</li></ul>
Amphibian Breeding Habitat (Woodland)	Fauna	<ul style="list-style-type: none"><li>Presence of all Ecosites<sup>1</sup> associated with the following ELC Community Series: FOC, FOM, FOD, SWC, SWM, SWD;</li><li>Woodland with a wetland, lake or pond, including breeding pools that may be permanent, seasonal, ephemeral, and located within or adjacent to (within 120 m of) the woodland (no minimum size);</li><li>Vernal pools or ponds in woodlands that contain water in most years until mid-July are more likely to be significant; and</li><li>Woodlands used for breeding with presence of shrubs and logs around the edges are more significant because of increased structure for calling, foraging, escape and concealment from predators.</li></ul> <u>Target species<sup>2</sup>:</u> Eastern Newt, Blue-spotted Salamander, Spotted Salamander, Four-toed Salamander, Northern Two-lined Salamander, Spring Peeper, Wood Frog and American Toad.	<ul style="list-style-type: none"><li>One (1) vernal pool observed</li><li>Site located near a marsh; sedge, grass, and shrub cover</li><li>Potential to occur throughout the study area.</li></ul>
Amphibian Breeding Habitat (Wetland)	Fauna	<ul style="list-style-type: none"><li>Presence of all Ecosites<sup>1</sup> associated with the following ELC Community Classes: SW, MA, FE, BO, OA and SA;</li><li>Wetland areas &gt; 120 m from woodland habitats;</li><li>Wetlands used for breeding with presence of shrubs and logs around the edges increase because of increased structure for calling, foraging, escape and concealment from predators;</li><li>Wetlands and pools (including vernal pools) &gt; 500 m<sup>2</sup> (about 25 m diameter) isolated from woodlands (&gt; 120 m) supporting high species diversity and larger sites of suitable habitat are significant; and</li><li>Bullfrogs require permanent water bodies with abundant emergent vegetation.</li></ul> <u>Target species<sup>2</sup>:</u> Eastern Newt, American Toad, Spotted Salamander, Four-toed Salamander, Blue-spotted Salamander, Gray Treefrog, Western Chorus Frog, Northern Leopard Frog, Pickerel Frog, Green Frog, Mink Frog and Bullfrog	<ul style="list-style-type: none"><li>Two (2) sites observed</li><li>Marsh with open water; Spring Peepers heard calling</li><li>Meadow marsh with small pools; varying water depths. Dominated by sedges, little shrub cover</li><li>Potential to occur throughout the study area.</li></ul>
Mast Producing Areas	Fauna	<ul style="list-style-type: none"><li>Mature forests &gt; 0.5 ha in size and containing numerous large beech and / or red oak trees; and</li></ul> <u>Targeted species<sup>2</sup>:</u> Black Bear, White-tailed Deer, Wild Turkey and Ruffed Grouse.	<ul style="list-style-type: none"><li>Not found during 2015 field investigations.</li></ul>
Habitat for Species of Conservation Concern (SOCC)			
Marsh Bird Breeding Habitat	Migratory Birds	<ul style="list-style-type: none"><li>Presence of the following Ecosites<sup>1</sup>: MAM1, MAS, SA, FEO1, that are equal to or &gt; 2 ha in size;</li><li>For Green Heron, presence of all Ecosite associated with the following Community Classes: SWD and SWM that are at least 0.5 ha in size and located adjacent to Ecosites identified in the point above;</li><li>Wetland habitats containing shallow water and emergent aquatic vegetation; and</li><li>For Green Heron, habitat is usually at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees.</li></ul> <u>Target species<sup>2</sup>:</u> American Bittern, Sora, Red-necked Grebe, Pied-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, Yellow Rail and Black Tern.	<ul style="list-style-type: none"><li>One site observed</li><li>Meadow marsh with small pools; varying water depths. Dominated by sedges/grasses, little shrub cover</li><li>Bird calls heard; no nests observed</li></ul>
Open Country Bird Breeding Habitat	Migratory Birds	<ul style="list-style-type: none"><li>Presence of the following Ecosite<sup>1</sup>: CUM1, CUM2; and</li><li>Grassland areas (includes natural and cultural fields and meadows) &gt; 30 ha in size, excluding Class 1 and 2 agricultural lands and lands actively used for farming (i.e., no row-cropping, intensive hay or livestock pasturing in the last five (5) years).</li></ul> <u>Target species<sup>2</sup>:</u> Upland Sandpiper, Grasshopper Sparrow, Vesper Sparrow, Northern Harrier and Savannah Sparrow and Short-eared Owl.	<ul style="list-style-type: none"><li>Not found during 2015 field investigations.</li></ul>
Shrub/Early Successional Bird Breeding Habitat	Migratory Birds	<ul style="list-style-type: none"><li>Presence of the following Ecosites<sup>1</sup>: CUT1, CUT2, CUS1, CUS2, CUW1, CUW2; and</li><li>Shrublands or successional fields &gt; 10 ha in size, excluding Class 1 or 2 agricultural lands and lands actively used for farming (i.e., no row-cropping, intensive hay or livestock pasturing in the last five (5) years).</li></ul> <u>Target species<sup>2</sup>:</u> Willow Flycatcher, Brown Thrasher, Blue-winged Warbler, Tennessee Warbler, Prairie Warbler, Eastern Towhee, Clay-colored Sparrow, Field Sparrow and Golden-winged Warbler	<ul style="list-style-type: none"><li>Not found during 2015 field investigations.</li><li>Potential to occur throughout the study area.</li></ul>
Species of Conservation Concern (SOCC) Identified Through the Records Review			
Refer to Section 3.3 for SOCC identified through the background information review.			

Table 3-12: Significant Wildlife Habitat

Type of Feature	Environmental Component	Characteristics of Feature	2015 Findings
Animal Movement Corridor			
Amphibian Corridors	Fauna	<ul style="list-style-type: none"><li>Corridors may be found in all Ecosites associated with water;</li><li>Corridors will be determined based on identifying significant amphibian breeding habitat (wetland);</li><li>Corridors should consist of native vegetation with no gaps such as roads, fields, waterways or waterbodies; and</li><li>Corridors should be at least 200 m wide with &lt; 20 m and if following riparian area with at least 15 m of vegetation on both sides of waterway.</li></ul>	<ul style="list-style-type: none"><li>Not found during 2015 field investigations.</li><li>Potential to occur throughout the study area.</li></ul>
Deer Movement Corridors	Fauna	<ul style="list-style-type: none"><li>Corridors may be found in all forested Ecosites;</li><li>Corridors will be determined based on confirmation of Deer yarding Areas, Moose aquatic feeding habitats and mineral licks ;</li><li>Corridors should consist of native vegetation and should be unbroken by roads and residential areas; and</li><li>Corridors should be at least 200 m wide with gaps &lt; 20 m and if following riparian area with at least 15 m of vegetation on both sides of waterway. Shorter corridors are more important than longer corridors.</li></ul>	<ul style="list-style-type: none"><li>Not found during 2015 field investigations.</li><li>Potential to occur throughout the study area.</li></ul>
Furbearer Movement Corridor	Fauna	<ul style="list-style-type: none"><li>All forested Ecosites adjacent to or within shoreline habitats; and</li><li>All denning sites for Mink, Otter, Marten, Fisher and Eastern Wolf are to be considered for an animal movement corridor.</li></ul>	<ul style="list-style-type: none"><li>Not found during 2015 field investigations.</li><li>Potential to occur throughout the study area.</li></ul>

Scattered wetlands discovered in the study area also provide multiple types of significant habitat. Woodland vernal pools provide suitable breeding habitat for amphibians. Marsh habitats with a mixture of vegetation cover and open water were also discovered; calling birds and amphibians (particularly Spring Peepers) were heard at these sites, which is an indication of breeding.

Several denning sites were found in forested areas along the study area. Two (2) sites were located near watercourses, and a river otter was observed running away from one site dug into a bank; it is likely the individual inhabited that site. Another site was located in a rock outcrop.

A spruce stand located adjacent to a watercourse provides significant nesting and foraging habitat for the Sharp-shinned Hawk; an old stick nest was also discovered in the area.

Candidate Significant Wildlife Habitat is presented in **Figure 3-2** in Appendix A.

#### 3.4.4.1 Spring Waterfowl Migration / Stopover and Staging Area Surveys (Aquatic Habitats)

Waterfowl are documented to move through the region during spring migration, stopping and staging in supporting habitats to rest and forage as they move to northern breeding grounds. Suitable habitats were identified through desktop review of aerial photography, and aerial helicopter surveys were undertaken in spring of 2015 to document any staging or migrating groups of waterfowl. Results of the 2015 survey are presented in **Figure 3-16** in Appendix A.

##### 3.4.4.1.1 Methods

A desktop review of aerial photography was undertaken to identify candidate habitat within 200 m of either side of the proposed 30-m wide ROW. Where ELC had already been completed, the results helped to inform site / habitat selection. Candidate habitats included wetland areas with rather extensive areas of shallow standing water with the following criteria:

- ELC Communities: MAM, MAS, SA, OA, FE; and
- Evidence of annual spring flooding or permanent open water

Helicopter surveys were conducted on April 24 and May 13, 2015. On each occasion a Bell 206L-1 Long Ranger helicopter from Central Helicopters (Parry Sound) flew over the entire length of Route A from HIFN I.R. #2 to the existing Hydro One Networks Inc. (HONI) transmission corridor. Flying time was approximately from 12:30 to 13:00 on April 24 and 12:40 to 13:00 on May 13, 2015.

Two (2) observers sat within the cockpit and looked out of either side scanning all open water for the presence of waterbirds, within 200 m of the proposed transmission corridor alignment, for the presence of waterbirds. When necessary the helicopter pilot turned around wherever waterfowl were spotted so that the observer could identify and count the birds. The pilot recorded UTM co-ordinates of observations on the GPS. From this route it was possible to see all areas of open water suitable for waterfowl. The helicopter flew at an average height of approximately 1,000 m altitude but ranged up and down. The helicopter's route was tracked by a GPS.

Weather conditions during the helicopter surveys were as follows:

- April 24, 2015: 5 °C approximately 50% high cloud cover, light wind from the west, Beaufort Scale of two to three (2 to 3). All interior lakes were ice-free but extensive pack ice was still present in Georgian Bay.
- May 14, 2015: 11 °C clear sky, light wind from the west, Beaufort Scale of two to three (2 to 3).

#### 3.4.4.1.2 Field Results

There are relatively few wetlands suitable for staging waterfowl within the Route A Transmission Line study area. One (1) 6-ha beaver pond was recorded approximately 1.5 km east of Highway 69 together with two (2) much smaller ponds nearby. A long linear marsh followed the floodplain of Key River immediately along Highway 522. The marsh did not offer much open water apart from the river channel itself, which was approximately 6 m in width, itself. The channel broadened and meandered upstream from the stretch immediately along Route A where it is further removed from Route A.

The only waterfowl observed along Route A on April 24, 2015 were a pair of Bufflehead in a wide ponded area along Key River near the east end. That location is approximately 350 m south of where the proposed Route A Transmission Line would be constructed. No waterfowl were present in any other open water areas. On May 13, 2015 no waterfowl were observed anywhere along the length of Route A Transmission Line.

As a result of the two (2) surveys it can be concluded that there are no Significant Waterfowl Stopover and Staging Areas in the vicinity of Route A. In order to be significant a site would need to support aggregations of at least 100 waterfowl for a minimum of seven (7) days during spring or autumn migration periods. The wetlands along Route A are neither large, nor productive enough to feed large numbers of staging waterfowl. While it is likely that larger groups of waterfowl than were observed during the surveys do occasionally stage on some of the wetland areas, it is unlikely that they would approach numbers required in order for the wetland to be considered significant.

#### 3.4.4.2 **Colonially-Nesting Bird Breeding Habitat (Trees / Shrubs)**

##### 3.4.4.2.1 Methods

A Records Review was conducted to identify known active heron rookeries based on a number of criteria including those that meet the definition of Colonially Nesting Bird Breeding Habitat (Trees / Shrubs) under Significant Wildlife Habitat (MNRF, 2012a). According to MNRF (2012a) only colonies with 10 or more active nests are considered to be Significant Colonially Nesting Bird Breeding Habitat (Trees / Shrubs).

In addition, helicopter surveys, which were conducted primarily for the purpose of documenting waterfowl staging, were also used to identify locations of large stick nests along the study area. On April 24 and May 13, 2015 a Bell 206L-1 Long Ranger helicopter from Central Helicopters (Parry Sound) flew over the entire length of Route A west to follow the east side of Highway 69 north to from HIFN I.R. #2. to the existing HONI corridor. Flying time was approximately from 9:50:12:30 to 10:50:13:00 on April 24 and 9:45:12:40 to 13:00 on May 13, 2015. Flying time was approximately from 12:30 to 10:45:13:00 on April 24 and 12:40 to 13:00 on May 13, 2015.

Two observers sat within the cockpit and looked out of either side scanning wetland bodies within at least 200 m of the proposed Route A for the presence of stick nests. When nests were observed the pilot turned the helicopter around so that the observers could count nests and the birds on them. The pilot recorded the UTM co-ordinates of these nest locations on the GPS. The helicopter flew at an average height of approximately 1000 m altitude but ranged higher and lower.

Weather conditions were as follows:

- April 24, 2015: 2 °C., approximately 50% high cloud cover, light wind from the west, Beaufort two to three (2 to 3).
- May 14, 2015: 6 °C., clear sky, light wind from the west, Beaufort two to three (2 to 3).

#### 3.4.4.2.2 Field Results

According to MNRF (2012a), only colonies with 10 or more active nests are considered to be Significant Wildlife Habitat under the Colonially Nesting Bird Breeding Habitat (Trees / Shrubs) criterion. No colonies were observed during the 2015 surveys.

#### 3.4.4.3 Bald Eagle and Osprey Nesting, Foraging and Perching Habitat

As per the Significant Wildlife Habitat Criteria Schedules For Ecoregion 5E (MNRF, 2012a), Bald Eagle and Osprey Nesting, Foraging and Perching Habitat Nest sites are considered Specialized Wildlife Habitat because they are used annually by these species but are fairly uncommon in Eco-region 5E. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat.

##### 3.4.4.3.1 Methods

A Records Review was conducted in order to identify known active eagle and osprey nests based on a number of criteria including those that meet the definition of Bald Eagle and Osprey Nesting, Foraging and Perching Habitat under Significant Wildlife Habitat (MNRF, 2012a).

In addition, helicopter surveys that were conducted primarily for the purpose of documenting waterfowl staging were also used to identify the locations of large stick nests that could be used by Eagles and Ospreys, along the Route A Transmission Line study area. On April 24 and May 13, 2015 a Bell 206L-1 Long Ranger helicopter from Central Helicopters (Parry Sound) flew over the entire length of Route A west to follow the east side of Highway 69 north to HIFN I.R. #2. Flying time was approximately from 9:50 to 10:50 on April 24 and 9:45 to 10:45 on May 13, 2015.

Two observers sat within the cockpit and looked out of either side scanning wetlands within 200 m of the proposed Route AA for the presence of stick nests. When nests were observed, the pilot turned the helicopter around so that the observers could count nests and the birds them. The pilot recorded UTM co-ordinates on the GPS. The helicopter flew at an average height of approximately 1000 m but ranged higher and lower.

Weather conditions were as follows:

- April 24, 2015: 2 °C approximately 50% high cloud cover, light wind from the west, Beaufort two to three (2 to 3).
- May 14, 2015: 6 °C clear sky, light wind from the west, Beaufort two to three (2 to 3).

##### 3.4.4.3.2 Field Results

Osprey nests are easily detected from the air as they primarily occur in dead trees or on artificial structures in open areas, and are typically located in standing water or within 500 m of water, especially good foraging areas (Poole, *et al.* 2002). Nests of Bald Eagles are more difficult to detect from the air because they typically make nests against the trunk, and in the top quarter of the largest available live trees, just below the crown (Buehler, 2000).

According to MNRF criteria (2012a), the presence of one or more active Osprey or Bald Eagle nests in an area qualifies the area to be considered to be Significant Bald Eagle and Osprey Nesting, Foraging and Perching Habitat. However, none were observed during the 2015 surveys.



### **3.4.5 Areas of Natural and Scientific Interest**

Areas of Natural and Scientific Interest (ANSI) are defined by the PPS as “areas of land and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study or education.” Review of MNRF LIO base mapping data (2015) indicates that there are no ANSIs designated within this study area.

### **3.4.6 Parks and Designated Natural Areas**

Grundy Lake Provincial Park is located within 2 km and to the north of the Route A Transmission Line study area (MNRF, 2015a). The Pakeshkag River forest, a conservation reserve, is located approximately 1 km north of the study area (MNRF, 2015a). The French River Provincial Park (Waterway Class) is also located immediately northwest of the study area and the Henvey Inlet First Nation lands, west of Highway 69, approximately 1.5 km north of the study area (MNRF, 2015a). No portion of the study area overlaps with any of these lands, thus no development therein will be required.

The majority of the Route A Transmission Line study area is located on federal Crown land within the North Parry Sound Enhanced Management Area (EMA) (MNRF, 2014). The North Parry Sound EMA is categorized as recreational EMA (MNRF, 2014). Recreational EMAs are intended to protect remote recreational areas, and are managed to provide recreation and resource-based tourism within a remote forested setting (ONTLA, 2001). Recreational EMAs may still permit sustainable business and industrial activities (ONTLA, 2001). Lastly, the western portion of the Route A Transmission Line study area includes Henvey Inlet First Nation lands, between Highway 69 and the Canadian National (CN) railway track (CN, 2015).

## 4. References

- AECOM, 2014:  
*Route B Transmission Line Study Area: Summary of Stantec Data – Breeding Bird Surveys.*
- AECOM, 2015:  
*Henvey Inlet Wind Energy Centre (HIWEC Study Area) - Summary of 2013 Ecosite Classification and Rare Flora surveys.*
- Armstrong, T. (E.R.), 2014:  
*Management Plan for the Bald Eagle (Haliaeetus leucocephalus) in Ontario.* Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario.
- Austen, M.J., and M.J. Oldham, 2001:  
COSSARO candidate V, T, E species evaluation form for Blanding's Turtle (*Emydoidea blandingii*). Committee on the Status of Species at Risk in Ontario (COSSARO), Ontario Ministry of Natural Resources. 21 pages.
- BatCon (Bat Conservation International), 2015:  
*Species Profiles.* Accessed February 18, 2015. Available: <http://batcon.org/resources/media-education/species-profile>.
- BSC (Bird Studies Canada), 2006:  
*Ontario Breeding Bird Atlas.* Environment Canada's Canadian Wildlife Service, Ontario Nature, Ontario Field Ornithologists and Ontario Ministry of Natural Resources. <http://www.birdsontario.org/atlas/index.jsp>. [Accessed January 26, 2015].
- BSC (Bird Studies Canada), 2015:  
*Important Bird Areas Canada,* BSC (Bird Studies Canada), Nature Canada <http://www.ibacanada.ca/mapviewer.jsp?lang=EN>. [Accessed January 26, 2015]
- Buehler, D. A., 2000:  
Bald Eagle (*Haliaeetus leucocephalus*) in *The Birds of North America Online* (A. Poole, Ed.). Ithaca: Cornell Laboratory of Ornithology. <http://bna.birds.cornell.edu/bna/species/506doi:10.2173/bna.506>
- Burke, P.S., 2012:  
*Management Plan for the Black Tern (Chlidonias niger) in Ontario.* Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources (OMNR), Peterborough, Ontario.
- Cadman, M.D., D.A Sutherland, G.G. Beck. D. Lepage and A.R. Couturier, 2007:  
*Atlas of the Breeding Birds of Ontario.* Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, Ontario Nature.
- Cadman, M.D., P.F.J. Eagles, and F.M. Helleiner (ed.), 1987:  
*Atlas of the Breeding Birds of Ontario.* University of Waterloo Press, Waterloo, Ontario.
- CN (Canadian National Railway), 2015:  
*CN Network Map Online Tool.* <http://cnebusiness.geomapguide.ca/>. [Accessed January 26, 2015]

- Congdon, J.D., A.E. Dunham, and R.C. van Loben Sels, 1993:  
Delayed sexual maturity and demographics of Blanding's Turtles (*Emydoidea blandingii*): Implications for conservation and management of long-lived organisms. *Conservation Biology*. 7: 826-833.
- Congdon, J.D., R.D. Nagel, O.M. Kinney, and R.C. van Loben Sels, 2001:  
Hypotheses of aging in a long-lived vertebrate, Blanding's Turtle (*Emydoidea blandingii*). *Experimental Gerontology*. 36: 813-827.
- Congdon, J.D., R.D. Nagle, O.M. Kinney, M. Osentoski, H.W. Avery, *et al.*, 2000:  
Nesting ecology and embryo mortality: Implications for hatchling success and demography of Blanding's Turtles (*Emydoidea blandingii*). *Chelonian Conservation and Biology*. 3(4): 569-579.
- Conway, C.J., 1999:  
Canada Warbler (*Wilsonia canadensis*). In A. Poole and F. Gill (eds.). *The Birds of North America*, No. 421. The Birds of North America, Inc., Philadelphia, PA. 24 pp.
- Cornell (Cornell Laboratory of Ornithology), 2015a:  
Eastern Whip-poor-will, Life History. Cornell University, Ithaca, New York. Available:  
[http://www.allaboutbirds.org/guide/Eastern\\_Whip-poor-will/lifehistory](http://www.allaboutbirds.org/guide/Eastern_Whip-poor-will/lifehistory). [Accessed July 10, 2015]
- Cornell (Cornell Laboratory of Ornithology), 2015b:  
Eastern Meadowlark, Life History. Cornell University, Ithaca, New York.  
[http://www.allaboutbirds.org/guide/Eastern\\_Meadowlark/lifehistory](http://www.allaboutbirds.org/guide/Eastern_Meadowlark/lifehistory). [Accessed July 8, 2015]
- Cornell (Cornell Laboratory of Ornithology), 2015c:  
Chimney Swift, Life History. Cornell University, Ithaca, New York.  
[http://www.allaboutbirds.org/guide/Chimney\\_Swift/lifehistory](http://www.allaboutbirds.org/guide/Chimney_Swift/lifehistory). [Accessed July 8, 2015]
- Cornell (Cornell Laboratory of Ornithology), 2015d:  
Barn Swallow, Life History. Cornell University, Ithaca, New York.  
[http://www.allaboutbirds.org/guide/Barn\\_Swallow/lifehistory](http://www.allaboutbirds.org/guide/Barn_Swallow/lifehistory). [Accessed July 7, 2015]
- Cornell (Cornell Laboratory of Ornithology), 2015e:  
Bank Swallow, Life History. Cornell University, Ithaca, New York.  
[http://www.allaboutbirds.org/guide/Bank\\_Swallow/lifehistory](http://www.allaboutbirds.org/guide/Bank_Swallow/lifehistory). [Accessed July 7, 2015]
- Cornell (Cornell Laboratory of Ornithology), 2015f:  
Cerulean Warbler, Life History. Cornell University, Ithaca, New York.  
[http://www.allaboutbirds.org/guide/Cerulean\\_Warbler/lifehistory](http://www.allaboutbirds.org/guide/Cerulean_Warbler/lifehistory). [Accessed July 8, 2015]
- Cornell (Cornell Laboratory of Ornithology), 2015g:  
Common Nighthawk, Life History. Cornell University, Ithaca, New York.  
[http://www.allaboutbirds.org/guide/Common\\_Nighthawk/lifehistory](http://www.allaboutbirds.org/guide/Common_Nighthawk/lifehistory). [Accessed July 10, 2015]
- Cornell (Cornell Laboratory of Ornithology), 2015h:  
Eastern Wood-Pewee, Life History. Cornell University, Ithaca, New York.  
[http://www.allaboutbirds.org/guide/Eastern\\_Wood-Pewee/lifehistory](http://www.allaboutbirds.org/guide/Eastern_Wood-Pewee/lifehistory). [Accessed July 10, 2015]
- Cornell (Cornell Laboratory of Ornithology), 2015i:  
Golden-winged Warbler, Life History. Cornell University, Ithaca, New York.  
[http://www.allaboutbirds.org/guide/Golden-winged\\_Warbler/lifehistory](http://www.allaboutbirds.org/guide/Golden-winged_Warbler/lifehistory). [Accessed July 10, 2015]

- Cornell (Cornell Laboratory of Ornithology), 2015j:  
*Red-headed Woodpecker, Life History*. Cornell University, Ithaca, New York.  
[http://www.allaboutbirds.org/guide/Red-headed\\_Woodpecker/lifehistory](http://www.allaboutbirds.org/guide/Red-headed_Woodpecker/lifehistory). [Accessed July 10, 2015]
- Cornell (Cornell Laboratory of Ornithology), 2015k:  
*Short-eared Owl, Life History*. Cornell University, Ithaca, New York.  
[http://www.allaboutbirds.org/guide/Short-eared\\_Owl/lifehistory](http://www.allaboutbirds.org/guide/Short-eared_Owl/lifehistory). [Accessed July 10, 2015]
- Cornell (Cornell Laboratory of Ornithology), 2015l:  
*Wood Thrush Life History*. Cornell University, Ithaca, New York.  
[http://www.allaboutbirds.org/guide/Wood\\_Thrush/lifehistory](http://www.allaboutbirds.org/guide/Wood_Thrush/lifehistory). [Accessed July 10, 2015]
- Cornell (Cornell Laboratory of Ornithology), 2015m:  
*Yellow Rail, Life History*. Cornell University, Ithaca, New York.  
[http://www.allaboutbirds.org/guide/Yellow\\_Rail/lifehistory](http://www.allaboutbirds.org/guide/Yellow_Rail/lifehistory). [Accessed July 10, 2015]
- Cornell (Cornell Laboratory of Ornithology), 2015n:  
*Red-shouldered Hawk, Life History*. Cornell University, Ithaca, New York.  
[http://www.allaboutbirds.org/guide/Red-shouldered\\_Hawk/lifehistory](http://www.allaboutbirds.org/guide/Red-shouldered_Hawk/lifehistory). [Accessed July 10, 2015]
- Cornell (Cornell Laboratory of Ornithology), 2015o:  
*Rusty Blackbird, Life History*. Cornell University, Ithaca, New York.  
[http://www.allaboutbirds.org/guide/Rusty\\_Blackbird/lifehistory](http://www.allaboutbirds.org/guide/Rusty_Blackbird/lifehistory). [Accessed July 10, 2015]
- COSEWIC, 2005:  
COSEWIC assessment and update status report on the Blanding's Turtle *Emydoidea blandingii* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. viii + 40 pp.  
[http://www.sararegistry.gc.ca/status/status\\_e.cfm](http://www.sararegistry.gc.ca/status/status_e.cfm).
- COSEWIC, 2006:  
COSEWIC assessment and update status report on the Red-shouldered Hawk *Buteo lineatus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp.  
[http://www.sararegistry.gc.ca/status/status\\_e.cfm](http://www.sararegistry.gc.ca/status/status_e.cfm).
- COSEWIC, 2008a:  
COSEWIC assessment and status report on the Canada Warbler *Wilsonia canadensis* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 35 pp.  
[http://www.sararegistry.gc.ca/status/status\\_e.cfm](http://www.sararegistry.gc.ca/status/status_e.cfm).
- COSEWIC, 2008b:  
COSEWIC assessment and update status report on the Short-eared Owl *Asio flammeus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp.  
[http://www.sararegistry.gc.ca/status/status\\_e.cfm](http://www.sararegistry.gc.ca/status/status_e.cfm).
- COSEWIC, 2008c:  
COSEWIC assessment and update status report on the Eastern Foxsnake *Elaphe gloydi*, Carolinian population and Great Lakes/St. Lawrence population, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 45 pp. ([www.sararegistry.gc.ca/status/status\\_e.cfm](http://www.sararegistry.gc.ca/status/status_e.cfm)).

COSEWIC, 2008d:

*COSEWIC assessment and status report on the Snapping Turtle Chelydra serpentina in Canada.* Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp. ([www.sararegistry.gc.ca/status/status\\_e.cfm](http://www.sararegistry.gc.ca/status/status_e.cfm)).

COSEWIC, 2012a:

*COSEWIC assessment and status report on the Wood Thrush Hylocichla mustelina in Canada.* Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 46 pp. ([www.registrelep-sararegistry.gc.ca/default\\_e.cfm](http://www.registrelep-sararegistry.gc.ca/default_e.cfm)).

COSEWIC, 2012b:

*COSEWIC assessment and status report on the Massasauga Sistrurus catenatus in Canada.* Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 84 pp. ([www.registrelep-sararegistry.gc.ca/default\\_e.cfm](http://www.registrelep-sararegistry.gc.ca/default_e.cfm)).

COSEWIC, 2012c:

*COSEWIC assessment and status report on the Eastern Musk Turtle Sternotherus odoratus in Canada.* Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 68 pp. ([www.registrelep-sararegistry.gc.ca/default\\_e.cfm](http://www.registrelep-sararegistry.gc.ca/default_e.cfm)).

COSEWIC, 2013:

*COSEWIC assessment and status report on the Little Brown Myotis Myotis lucifugus, Northern Myotis Myotis septentrionalis and Tri-colored Bat Perimyotis subflavus in Canada.* Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ([www.registrelep-sararegistry.gc.ca/default\\_e.cfm](http://www.registrelep-sararegistry.gc.ca/default_e.cfm)).

COSSARO, 2010:

*Candidate Species at Risk Evaluation Form for Bobolink (Dolichonyx oryzivorus).* Committee on the Status of Species at Risk in Ontario. June 2010.

Crins, William J., P. A. Gray, P.W.C. Uhlig, and M. C. Wester, 2009:

*The Ecosystems of Ontario, Part I: Ecozones and Ecoregions.* Ontario Ministry of Natural Resources, Peterborough Ontario, Inventory, Monitoring and Assessment, SIB TER IMA TR- 01, 71pp.

Dobbyn, J.S., 1994:

*Atlas of the Mammals of Ontario.* Federation of Ontario Naturalists.

Ecoplans, 2006:

*Highway 69 Four-Laning From North of Nobel to Highway 522 Natural Heritage Background Interim Report.* Prepare for the Ministry of Transportation.

Edge, C. B, B. D. Steinberg, R. J. Brooks, and J. D. Litzgus, 2010:

Habitat selection by Blanding's turtles (*Emydoidea blandingii*) in a relatively pristine landscape. *Ecoscience*. 17(1): 90-99.

Environment Canada, 2011a:

*Recovery Strategy for the Least Bittern (Ixobrychus exilis) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series.* Environment Canada. Ottawa.

Environment Canada, 2011b:

*Management Plan for the Cerulean Warbler (Dendroica cerulea) in Canada. Species at Risk Act Management Plan Series.* Environment Canada, Ottawa.



Environment Canada, 2012:

*Management Plan for the Louisiana Waterthrush (Seiurus motacilla) in Canada. Species at Risk Act Management Plan Series. Environment Canada, Ottawa.*

Environment Canada, 2013:

*Management Plan for the Yellow Rail (Coturnicops noveboracensis) in Canada. Species at Risk Act Management Plan Series. Environment Canada, Ottawa.*

Environment Canada, 2014a:

*Recovery Strategy for the Golden-winged Warbler (Vermivora chrysoptera) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa.*

Environment Canada, 2014b:

*Management Plan for the Rusty Blackbird (Euphagus carolinus) in Canada [Proposed]. Species at Risk Act Management Plan Series. Environment Canada, Ottawa.*

Environment Canada, 2014c:

*Recovery Strategy for the Five-lined Skink (Plestiodon fasciatus) – Carolinian Population in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa.*

Environment Canada, 2015a:

*Recovery Strategy for the Eastern Whip-poor-will (Antrostomus vociferus) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa.*

Environment Canada, 2015b:

*Recovery Strategy for the Loggerhead Shrike, migrans subspecies (Lanius ludovicianus migrans), in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa.*

Environment Canada, 2015c:

*Recovery Strategy for Canada Warbler (Wilsonia canadensis) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa.*

Environment Canada, 2015d:

*Recovery Strategy for the Common Nighthawk (Chordeiles minor) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa.*

Environment Canada, 2015e:

*Recovery Strategy for Olive-sided Flycatcher (Contopus cooperi) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa.*

Ernst, C.H., R.W. Barbour and J.E. Lovich, 1994:

*Turtles of the United States and Canada. Smithsonian Institution Press. Washington D.C.*

Gauthier, J. and Y. Aubry, 1996:

*Les oiseaux nicheurs du Québec: Atlas des oiseaux nicheurs du Québec méridional. Association québécoise des groupes d'ornithologues, Société québécoise de protection des oiseaux, Service Canadien de la faune, Environnement Canada, Montréal, xviii + 1295 p.*

Gillingwater, S.D. and R.J. Brooks, 2001:

*A selective herpetofaunal survey, inventory and biological research study of Rondeau Provincial Park. Report to the International Fund for Animal Welfare and Endangered Species Recovery Fund (World Wildlife Fund).*

- Government of Canada, 2002:  
*Species at Risk Act*, SC 2002, c 29
- Government of Canada, 2015:  
*Species Profile – Rusty Blackbird*. Species At Risk Public Registry.  
[http://www.sararegistry.gc.ca/species/speciesDetails\\_e.cfm?sid=907](http://www.sararegistry.gc.ca/species/speciesDetails_e.cfm?sid=907). [Accessed July 10, 2015]
- Government of Ontario, 2007:  
*Endangered Species Act*, 2007, S.O. 2007, c 6.
- Harding, J.H. 1997:  
*Amphibians and reptiles of the Great Lakes Region*. The University of Michigan Press, Ann Arbor. 378 pp.
- Harvey, D.S., 2008:  
*Bruce Peninsula National Park/Fathom Five National Marine Park Massasauga monitoring – Analysis and recommendations*. Report prepared for Parks Canada. December 2008. 50 pp
- Heagy, A., D. Badzinski, D. Bradley, M. Falconer, J. McCracken, R.A. Reid and K. Richardson, 2014:  
*Recovery Strategy for the Barn Swallow (Hirundo rustica) in Ontario*. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario.
- Herman, T.B., J.S. Boates, C. Drysdale, S. Eaton, J. McNeil, *et al.*, 2003:  
*National Recovery Plan for the Blanding's Turtle (Emydoidea blandingii) Nova Scotia Population*. January 2003. 63 pp.
- Lambert, J.D., and S.D. Faccio, 2005:  
*Canada Warbler population status, habitat use and stewardship guidelines for the northeastern forests*. VINS Technical Report 05-4. Vermont Institute of natural Sciences. Woodstock, Vermont.
- Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, *et al.*, 1998:  
*Ecological Land Classification for Southern Ontario: First Approximation and Its Application*. Ontario Ministry of Natural Resources, Southern Science Section, Science Development and Transfer Branch. SCSS Field Guide FG-02.
- McCracken, J.D., R.A. Reid, R.B. Renfrew, B. Frei, J.V. Jalava, *et al.*, 2013.  
*Recovery Strategy for the Bobolink (Dolichonyx oryzivorus) and Eastern Meadowlark (Sturnella magna) in Ontario*. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario.
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2000:  
*Significant Wildlife Habitat Technical Guide*. 151p.
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2005:  
*Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005*. Second Edition. Toronto: Queen's Printer for Ontario.
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2012a:  
*Significant Wildlife Habitat Ecoregion 5E Criterion Schedule*. DRAFT February 2012. 46 pp.
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2012b:  
*Habitat Protection Summaary for Eastern Foxsnake (Georgian Bay population)*.  
[http://files.ontario.ca/environment-and-energy/species-at-risk/stdprod\\_096829.pdf](http://files.ontario.ca/environment-and-energy/species-at-risk/stdprod_096829.pdf). [Accessed on July 10, 2015]

- MNRF (Ontario Ministry of Natural Resources and Forestry), 2013a:  
*General Habitat Description for the Blanding's Turtle* (*Emydoidea blandingii*).  
[http://files.ontario.ca/environment-and-energy/species-at-risk/mnr\\_sar\\_ghd\\_bln\\_trtl\\_en.pdf](http://files.ontario.ca/environment-and-energy/species-at-risk/mnr_sar_ghd_bln_trtl_en.pdf). [Accessed on July 6, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2013b:  
*General Habitat Description for the Eastern Whip-poor-will* (*Caprimulgus vociferous*).  
[http://files.ontario.ca/environment-and-energy/species-at-risk/mnr\\_sar\\_ghd\\_whp\\_pr\\_wll\\_en.pdf](http://files.ontario.ca/environment-and-energy/species-at-risk/mnr_sar_ghd_whp_pr_wll_en.pdf). [Accessed on July 8, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2013c:  
*General Habitat Description for the Loggerhead Shrike* (*Lanius ludovicianus*).  
[http://files.ontario.ca/environment-and-energy/species-at-risk/mnr\\_sar\\_ghd\\_lghd\\_shrk\\_en.pdf](http://files.ontario.ca/environment-and-energy/species-at-risk/mnr_sar_ghd_lghd_shrk_en.pdf). [Accessed on July 13, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2013d:  
*General Habitat Description for the Chimney Swift* (*Chaetura pelagica*). [http://files.ontario.ca/environment-and-energy/species-at-risk/mnr\\_sar\\_ghd\\_chmny\\_swft\\_en.pdf](http://files.ontario.ca/environment-and-energy/species-at-risk/mnr_sar_ghd_chmny_swft_en.pdf). [Accessed on July 8, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2013e:  
*General Habitat Description for the Massasauga* (*Sistrurus catenatus*). [http://files.ontario.ca/environment-and-energy/species-at-risk/mnr\\_sar\\_ghd\\_mssga\\_en.pdf](http://files.ontario.ca/environment-and-energy/species-at-risk/mnr_sar_ghd_mssga_en.pdf). [Accessed on July 6, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2014a:  
*Natural Resources and Values Information System (NRVIS) mapping*.
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2014b:  
*Crown Land Use Policy Atlas Online Tool*.  
<http://www.giscoeapp.lrc.gov.on.ca/web/MNR/NHLUPS/CLUPA/Viewer/Viewer.html>. [Accessed January 26, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2014c:  
*Mountain lion (Cougar)*. <http://www.ontario.ca/environment-and-energy/mountain-lion-cougar> [Accessed August 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2014d:  
*Ontario Wetland Evaluation System (OWES), Northern Manual*, 1<sup>st</sup> Edition, Version 1.3.
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2015a:  
*Make-a-Map: Natural Heritage Areas Online Tool*.  
<http://www.giscoeapp.lrc.gov.on.ca/web/MNR/NHLUPS/NaturalHeritage/Viewer/Viewer.html>. [Accessed January 22, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2015b:  
*Little Brown Bat*. <http://www.ontario.ca/environment-and-energy/little-brown-bat>. [Accessed February 17, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2015c:  
*Northern Long-eared Bat*. <http://www.ontario.ca/environment-and-energy/northern-long-eared-bat> [Accessed February 17, 2015]

- MNRF (Ontario Ministry of Natural Resources and Forestry), 2015d:  
*Eastern Small-footed Bat*. <http://www.ontario.ca/environment-and-energy/eastern-small-footed-bat>. [Accessed February 17, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2015e:  
*Loggerhead Shrike*. <http://www.ontario.ca/environment-and-energy/loggerhead-shrike>. [Accessed on January 22, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2015f:  
*Least Bittern*. <http://www.ontario.ca/environment-and-energy/least-bittern>. [Accessed on July 8, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2015g:  
*Bobolink*. <http://www.ontario.ca/environment-and-energy/bobolink>. [Accessed July 8, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2015h:  
*Eastern Meadowlark*. <http://www.ontario.ca/environment-and-energy/eastern-meadowlark>. [Accessed July 8, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2015i:  
*Chimney swift*. <http://www.ontario.ca/environment-and-energy/chimney-swift>. [Accessed July 8, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2015j:  
*Bank Swallow*. <http://www.ontario.ca/environment-and-energy/bank-swallow>. [Accessed July 7, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2015k:  
*Cerulean Warbler*. <http://www.ontario.ca/environment-and-energy/cerulean-warbler>. [Accessed July 8, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2015l:  
*Black Tern*. <http://www.ontario.ca/environment-and-energy/black-tern>. [Accessed on July 17, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2015m:  
*Canada Warbler*. <http://www.ontario.ca/environment-and-energy/canada-warbler/>. [Accessed July 10, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2015n:  
*Common Nighthawk*. <http://www.ontario.ca/environment-and-energy/common-nighthawk/>. [Accessed July 10, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2015o:  
*Eastern wood-pewee*. <http://www.ontario.ca/environment-and-energy/eastern-wood-pewee/>. [Accessed July 10, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2015p:  
*Golden-winged Warbler*. <http://www.ontario.ca/environment-and-energy/golden-winged-warbler/>. [Accessed July 10, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2015q:  
*Olive-sided Flycatcher*. <http://www.ontario.ca/environment-and-energy/olive-sided-flycatcher/>. [Accessed July 10, 2015]

- MNRF (Ontario Ministry of Natural Resources and Forestry), 2015r:  
*Louisiana Waterthrush*. <http://www.ontario.ca/environment-and-energy/louisiana-waterthrush/>. [Accessed July 10, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2015s:  
*Peregrine Falcon*. <http://www.ontario.ca/environment-and-energy/peregrine-falcon/>. [Accessed July 10, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2015t:  
*Red-headed Woodpecker*. <http://www.ontario.ca/environment-and-energy/red-headed-woodpecker/>. [Accessed July 10, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2015u:  
*Short-eared Owl*. <http://www.ontario.ca/environment-and-energy/short-eared-owl/>. [Accessed July 10, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2015v:  
*Wood Thrush*. <http://www.ontario.ca/environment-and-energy/wood-thrush/>. [Accessed July 10, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2015w:  
*Yellow Rail*. <http://www.ontario.ca/environment-and-energy/yellow-rail/>. [Accessed July 10, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2015x:  
*Eastern Foxsnake*. <http://www.ontario.ca/environment-and-energy/eastern-foxsnake>. [Accessed July 6, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2015y:  
*Milksnake*. <http://www.ontario.ca/environment-and-energy/milksnake>. [Accessed July 7, 2015]
- MNRF (Ontario Ministry of Natural Resources and Forestry), 2015z:  
*Eastern Musk Turtle*. <http://www.ontario.ca/environment-and-energy/eastern-musk-turtle-stinkpot>. [Accessed July 6, 2015]
- Neegan Burnside, 2011:  
*Nigig Power Corp/Henvey Inlet Wind Project Preliminary Environmental Constraints Analysis Report*. Prepared for IPR-GDF- SUEZ NA. Neegan Burnside Limited.
- NOAA (National Oceanic and Atmospheric Administration), Biogeography Branch, 2007:  
Sampling Design Tool for ArcGIS.  
<http://www.arcgis.com/home/item.html?id=ecbe1fc44f35465f9dea42ef9b63e785>
- Oldham, M.J., M.J. Austen, and P.J. Sorrill, 1999:  
*A review and evaluation of Eastern Massasauga observations in Ontario: applications for conservation and management*. Pp. 67-76 in B. Johnson and M. Wright (eds.), Second International Symposium and Workshop on the Conservation of the Massasauga Rattlesnake, *Sistrurus catenatus catenatus*: population and habitat management issues in urban, bog, prairie and forested ecosystems, 2-3 October, 1998, Toronto Zoo, Toronto, ON.
- Oldham, M.J., W.D. Bakowsky, and D.A. Sutherland, 1995:  
*Floristic Quality Assessment System for Southern Ontario*. Natural Heritage Information Center, Ontario Ministry of Natural Resources, Peterborough, Ontario. 70 p.



Ontario Herpetofaunal Summary, 2004:

*Natural Heritage Information Centre (NHIC) information database for sightings of Blanding's Turtle*, courtesy of Mike Oldham, Ontario Ministry of Natural Resources.

Ontario Nature, 2014:

*Ontario Reptile and Amphibian Atlas*.

[http://www.ontarionature.org/protect/species/reptiles\\_and\\_amphibians/index.php](http://www.ontarionature.org/protect/species/reptiles_and_amphibians/index.php). [Accessed January 27, 2015]

Ontario Nature, 2015a:

*Eastern Foxsnake* (*Pantherophis gloydi*).

[http://www.ontarionature.org/protect/species/reptiles\\_and\\_amphibians/eastern\\_foxsnake.php](http://www.ontarionature.org/protect/species/reptiles_and_amphibians/eastern_foxsnake.php). [Accessed July 7, 2015]

Ontario Nature, 2015b:

*Milksnake* (*Lampropeltis triangulum*).

[http://www.ontarionature.org/protect/species/reptiles\\_and\\_amphibians/milksnake.php](http://www.ontarionature.org/protect/species/reptiles_and_amphibians/milksnake.php). [Accessed July 7, 2015]

Ontario Nature, 2015c:

*Eastern Hog-nosed Snake* (*Heterodon platirhinos*).

[http://www.ontarionature.org/protect/species/reptiles\\_and\\_amphibians/eastern\\_hognosed\\_snake.php](http://www.ontarionature.org/protect/species/reptiles_and_amphibians/eastern_hognosed_snake.php).

[Accessed July 7, 2015]

Ontario Nature, 2015d: *Eastern Musk Turtle* (*Sternotherus odoratus*).

[http://www.ontarionature.org/protect/species/reptiles\\_and\\_amphibians/eastern\\_musk\\_turtle.php](http://www.ontarionature.org/protect/species/reptiles_and_amphibians/eastern_musk_turtle.php).

[Accessed July 7, 2015]

Ontario Nature, 2015e:

*Snapping Turtle* (*Chelydra serpentina*).

[http://www.ontarionature.org/protect/species/reptiles\\_and\\_amphibians/snapping\\_turtle.php](http://www.ontarionature.org/protect/species/reptiles_and_amphibians/snapping_turtle.php). [Accessed July 7, 2015]

Ontario Nature, 2015f:

*Five-lined Skink* (*Plestiodon fasciatus*).

[http://www.ontarionature.org/protect/species/reptiles\\_and\\_amphibians/five\\_lined\\_skink.php](http://www.ontarionature.org/protect/species/reptiles_and_amphibians/five_lined_skink.php). [Accessed July 8, 2015]

Ontario Peregrine Falcon Recovery Team (OPFRT), 2010:

*Recovery strategy for the Peregrine Falcon* (*Falco peregrinus*) *in Ontario*. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario.

ONTLA (Legislative Assembly of Ontario), 2001:

*Ontario's Living Legacy*. <http://www.ontla.on.ca/library/repository/mon/2000/10281337.pdf>. [Accessed February 11, 2015]

Parks Canada, 2013:

*Recovery Strategy for the Massasauga* (*Sistrurus catenatus*) *in Canada [Proposed]*. *Species at Risk Act* Recovery Strategy Series. Parks Canada Agency. Ottawa.

Poole, A.F., R.O. Bierregaard and M.S. Martell, 2002:

*Osprey* (*Pandion haliaetus*), *The Birds of North America Online* (A. Poole, Ed.). Ithaca: Cornell Laboratory of Ornithology; Retrieved from the Birds of North America Online:

<http://bna.birds.cornell.edu/bna/species/683 doi:10.2173/bna.683>

PPS (Provincial Policy Statement), 2014:

Provincial Policy Statement under the *Planning Act*. Approved by the Lieutenant Governor in Council, Order in Council No. 107/2014. Government of Ontario.

Rowe, J.S., 1972:

*Forest Regions of Canada*. Department of the Environment, Canadian Forestry Service. Publication No. 1300.

Ruben, C.S., R.E. Warner, J.L. Bouzat and K.N. Paige, 2001:

Population genetic structure of Blanding's Turtles (*Emydoidea blandingii*) in an urban landscape. *Biological Conservation*. 99: 323-330.

Seburn, D., 2008.

*Recovery Strategy for the Eastern Hog-nosed Snake (Heterodon platirhinos) in Canada*. *Species at Risk Act Recovery Strategy Series*. Parks Canada Agency, Ottawa.

Standing, K.L., T.B. Herman and I.P. Morrison, 1999:

Nesting ecology of Blanding's Turtle (*Emydoidea blandingii*) in Nova Scotia, the northeastern limit of the species range. *Canadian Journal of Zoology*. 77: 1609-1614.

Tiner, R.W., Jr., 1984:

*Wetlands of the United States: current status and recent trends*. National Wetlands Inventory, Washington, D.C.

Wilkem, E. *et al.*, NO DATE:

*Boreal Shield Ecozone*. <http://ecozones.ca/english/zone/BorealShield/further.html> [Accessed February 2015]

Wyshynski, S.A. and T.L. Pulfer, 2015:

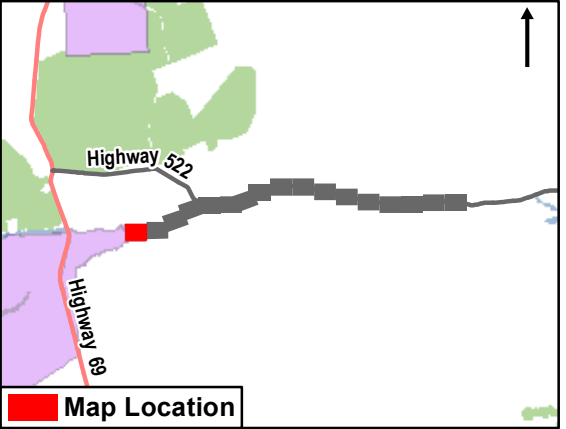
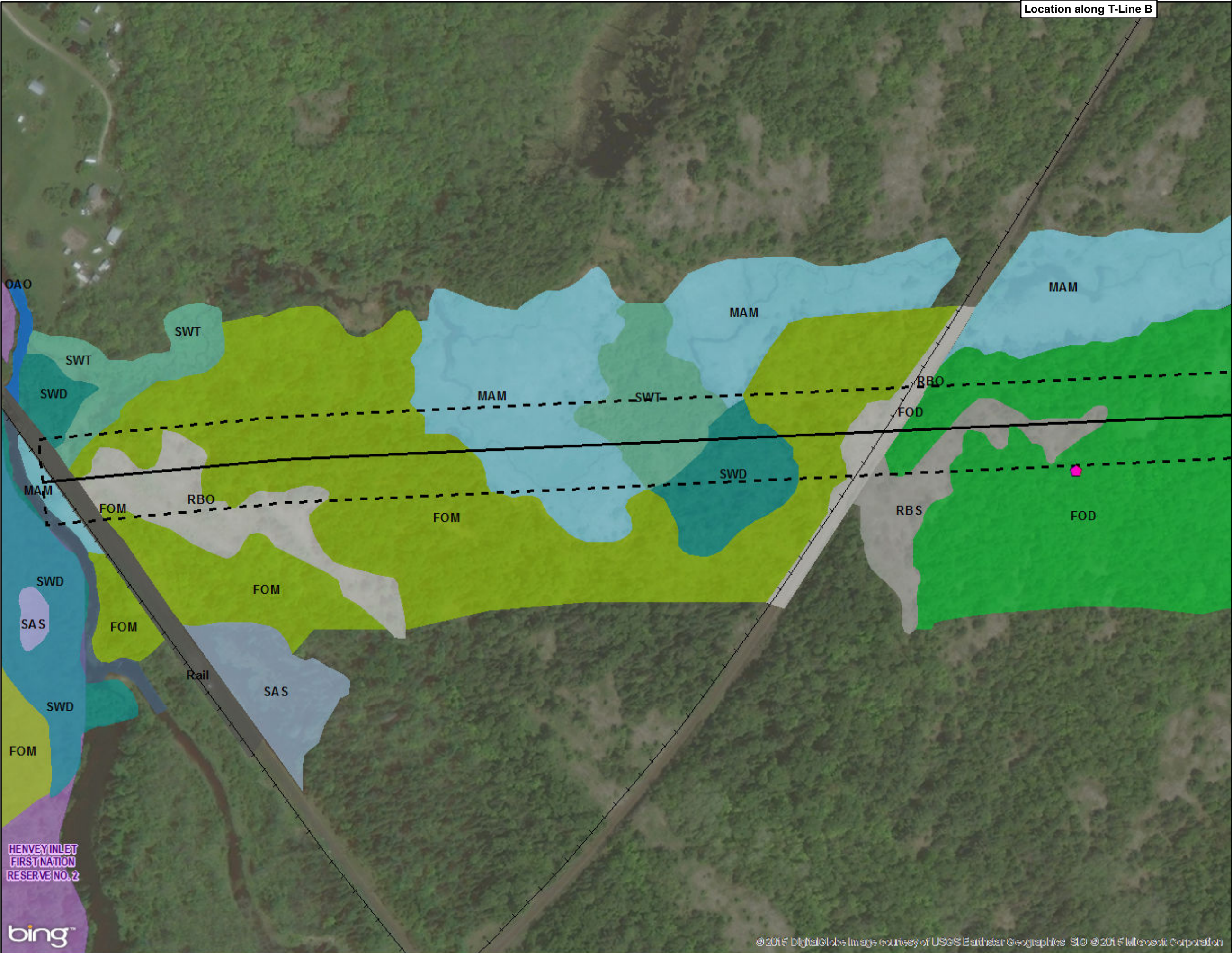
*Recovery Strategy for the Golden Eagle (Aquila chrysaetos) in Ontario*. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario.

# Appendix A

## Figures

- Figure 3-1: *Ecological Land Classification Vegetation Communities with S.A.R. Observations, Transmission Line Route A*
- Figure 3-2: *S.A.R. Wildlife Habitat Observations with Vegetation Communities, Transmission Line Route A*
- Figure 3-3: *Snag/Cavity Density Plot Survey Locations, Transmission Line Route A*
- Figure 3-4: *Bat and Crepuscular Acoustic Monitor Stations – Round 1, Transmission Line Route A*
- Figure 3-5: *Bat and Crepuscular Acoustic Monitor Stations – Round 2, Transmission Line Route A*
- Figure 3-6: *Bat and Crepuscular Acoustic Monitor Stations – Round 3, Transmission Line Route A*
- Figure 3-7: *Breeding Bird Survey, Transmission Line Route A*
- Figure 3-8: *Snake Survey Locations, Transmission Line Route A*
- Figure 3-9: *Turtle Basking Survey Locations, Transmission Line Route A*
- Figure 3-10: *Mammal Significant Species 2015 Observations, Transmission Line Route A*
- Figure 3-11: *Avifauna Significant Species 2015 Observations, Transmission Line Route A*
- Figure 3-12: *Reptile Significant Species 2015 Observation, Transmission Line Route A*
- Figure 3-13: *Environmentally Significant Area, Transmission Line Route A*
- Figure 3-14: *Crown Land, Transmission Line Route A*
- Figure 3-15: *Wetlands, Transmission Line Route A*
- Figure 3-16: *Spring Waterfowl Migration / Stopover / Staging, Transmission Line Route A*





**Ecological Land Classification Vegetation Communities**

Anthropogenic	MAM	RAIL
CUP	MAS	SA
FEO	OAo	SAS
FOC	RBO	SAM
FOD	RBS	SWD
FOM	RBT	SWM
		SWT

**S.A.R. Wildlife Observations**

- Eastern Hog-nosed Snake
- Blanding's Turtle

**Transmission Line Infrastructure**

- Transmission Line Route A
- Transmission Line Route A Study Area

**Base Layers**

Highway	HONI Corridor
Major Road	Proposed Hwy 69 Relocation
Trail	Aboriginal Land
Railway	

02550100Meters

N

Henvey Inlet Wind Energy Centre

Ecological Land Classification Vegetation Communities with S.A.R. Observations Transmission Line Route A

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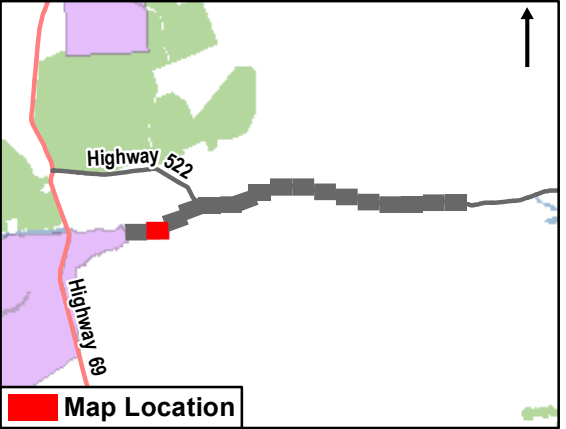
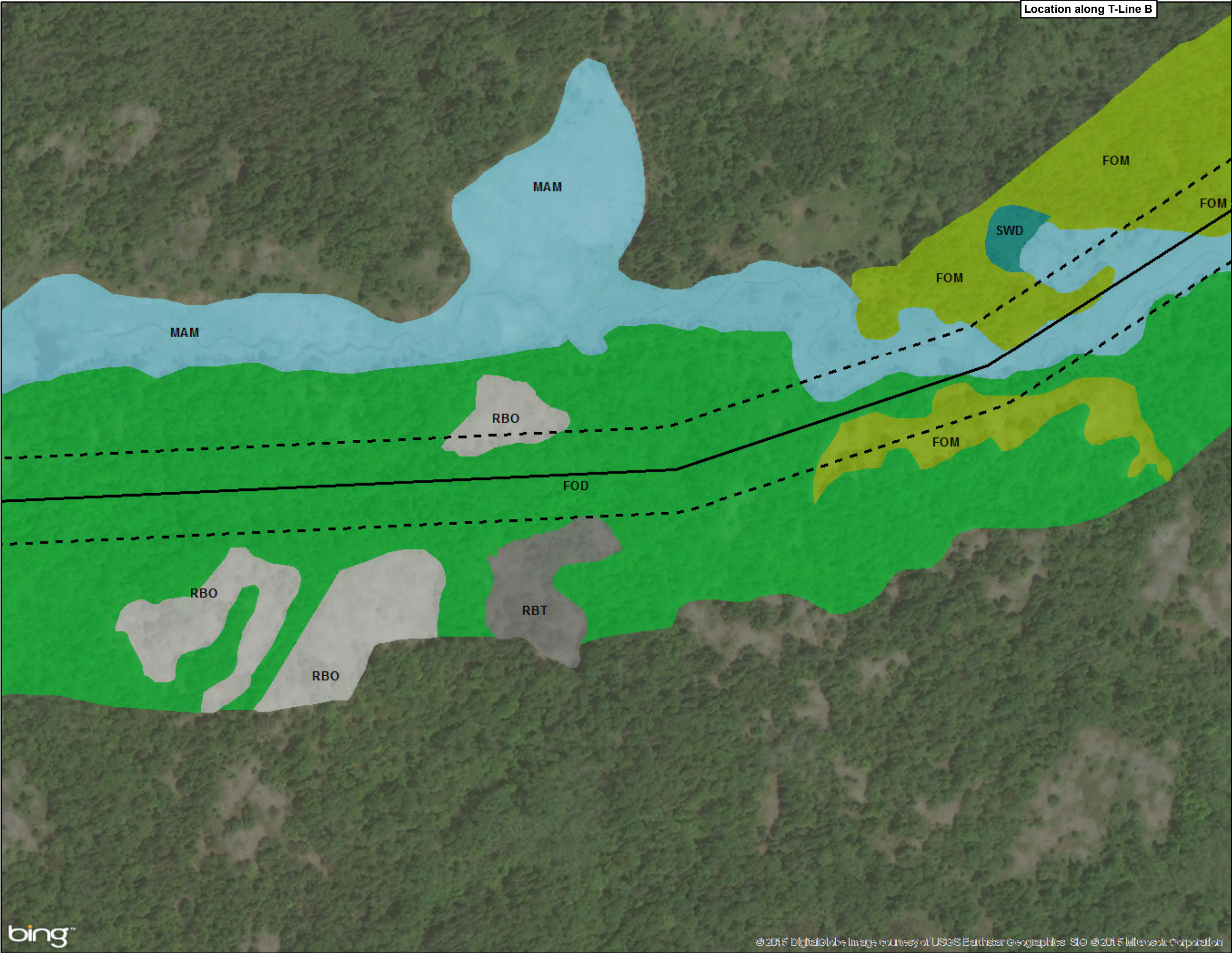
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Figure: 3-1.1

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**Ecological Land Classification Vegetation Communities**

Anthropogenic	MAM	RAIL
CUP	MAS	SA
FEO	OAQ	SAS
FOC	RBO	SAM
FOD	RBS	SWD
FOM	RBT	SWM
		SWT

**S.A.R. Wildlife Observations**

- Eastern Hog-nosed Snake
- Blanding's Turtle

**Transmission Line Infrastructure**

- Transmission Line Route A
- Transmission Line Route A Study Area

**Base Layers**

- Highway
- Major Road
- Trail
- Railway
- HONI Corridor
- Proposed Hwy 69 Relocation
- Aboriginal Land

0 25 50 100 Meters

N

Henvey Inlet Wind Energy Centre

Ecological Land Classification Vegetation Communities with S.A.R. Observations Transmission Line Route A

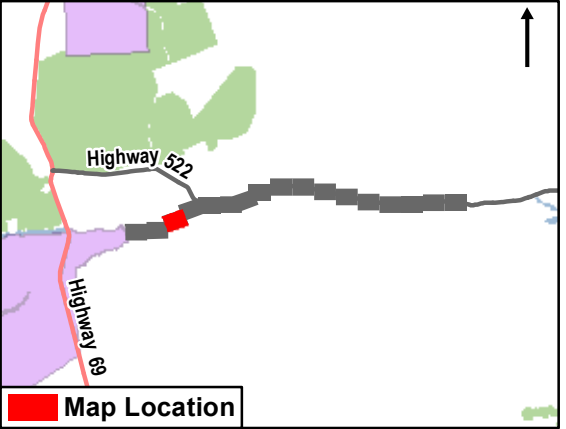
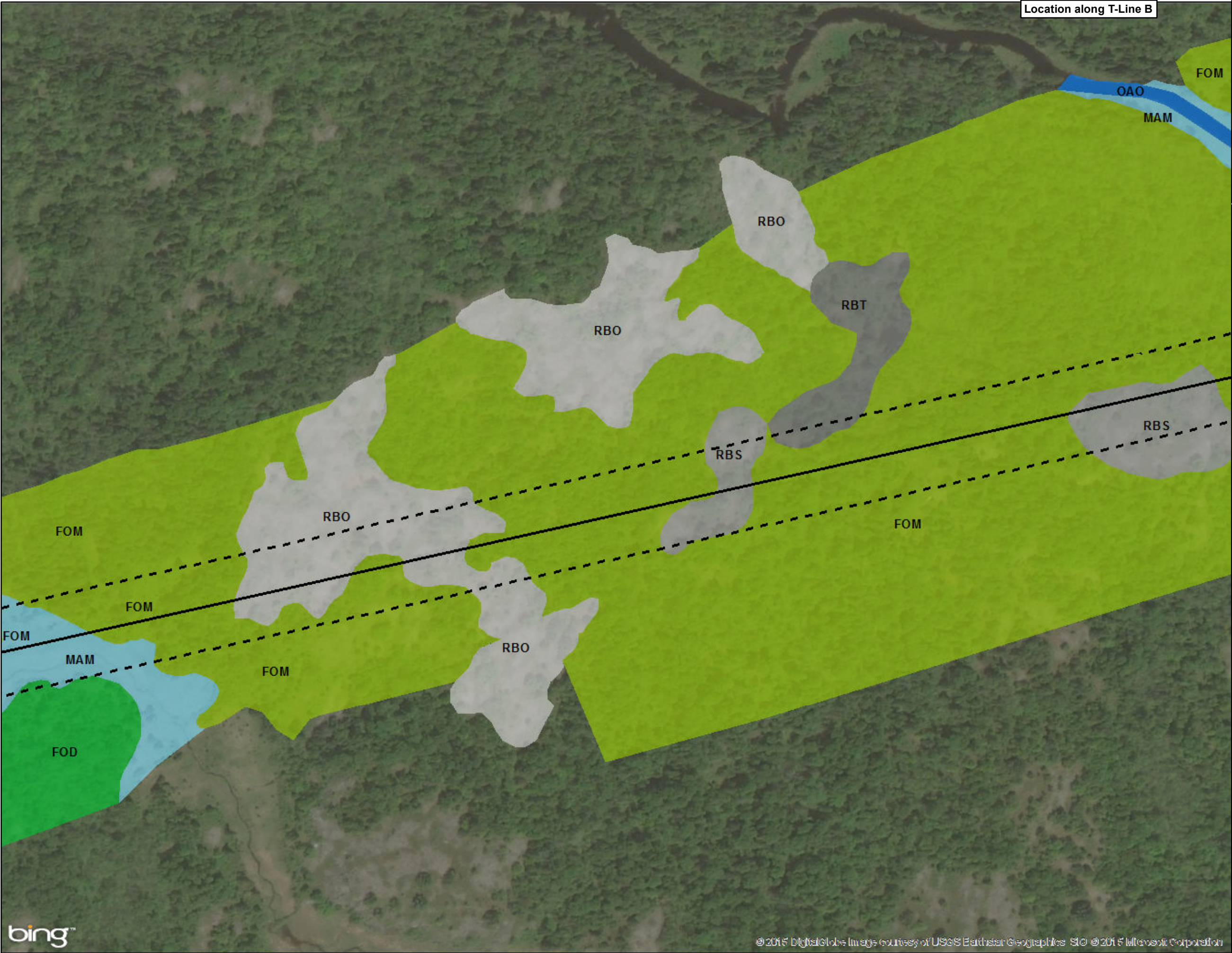
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Figure: 3-1.2

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**Ecological Land Classification Vegetation Communities**

Anthropogenic	MAM	RAIL
CUP	MAS	SA
FEO	OAO	SAS
FOC	RBO	SAM
FOD	RBS	SWD
FOM	RBT	SWM
		SWT

**S.A.R. Wildlife Observations**

- Eastern Hog-nosed Snake
- Blanding's Turtle

**Transmission Line Infrastructure**

- Transmission Line Route A
- Transmission Line Route A Study Area

**Base Layers**

- Highway
- Major Road
- Trail
- Railway
- HONI Corridor
- Proposed Hwy 69 Relocation
- Aboriginal Land

0 25 50 100 Meters

N

Henvey Inlet Wind Energy Centre

Ecological Land Classification Vegetation Communities with S.A.R. Observations Transmission Line Route A

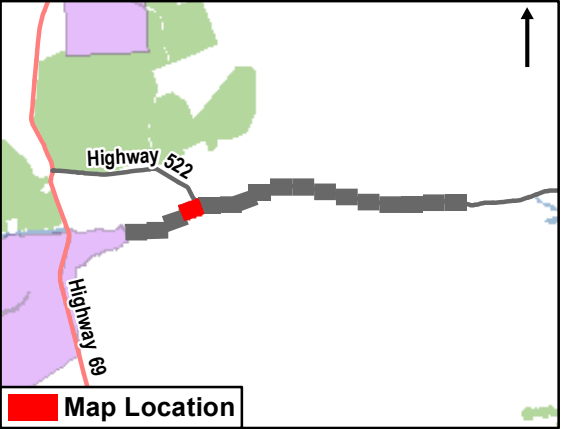
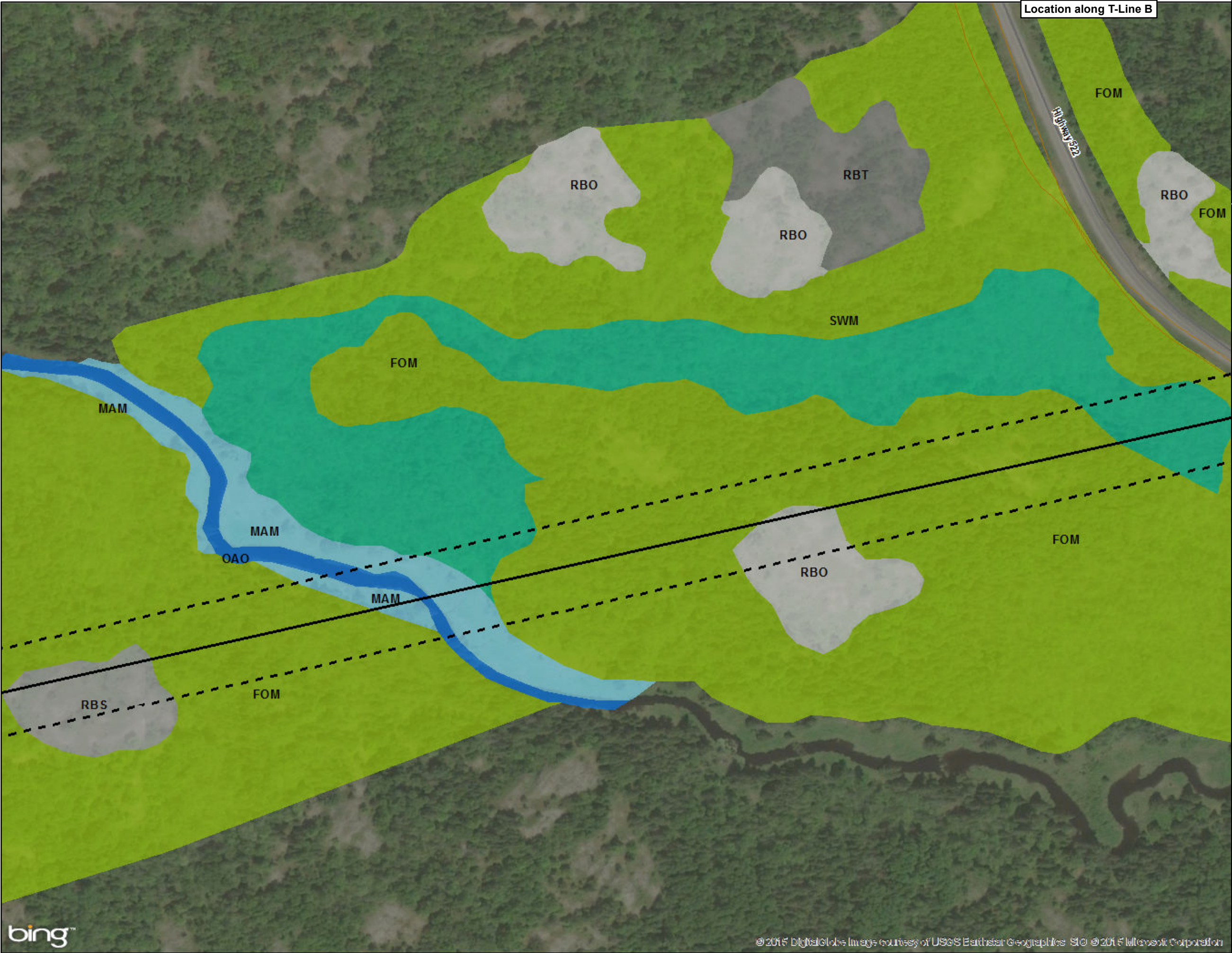
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**Figure: 3-1.3**

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**Ecological Land Classification Vegetation Communities**

Anthropogenic	MAM	RAIL
CUP	MAS	SA
FEO	OAO	SAS
FOC	RBO	SAM
FOD	RBS	SWD
FOM	RBT	SWM
		SWT

**S.A.R. Wildlife Observations**

- Eastern Hog-nosed Snake
- Blanding's Turtle

**Transmission Line Infrastructure**

- Transmission Line Route A
- Transmission Line Route A Study Area

**Base Layers**

- Highway
- Major Road
- Trail
- Railway
- HONI Corridor
- Proposed Hwy 69 Relocation
- Aboriginal Land

0 25 50 100 Meters

N

Henvey Inlet Wind Energy Centre

Ecological Land Classification Vegetation Communities with S.A.R. Observations Transmission Line Route A

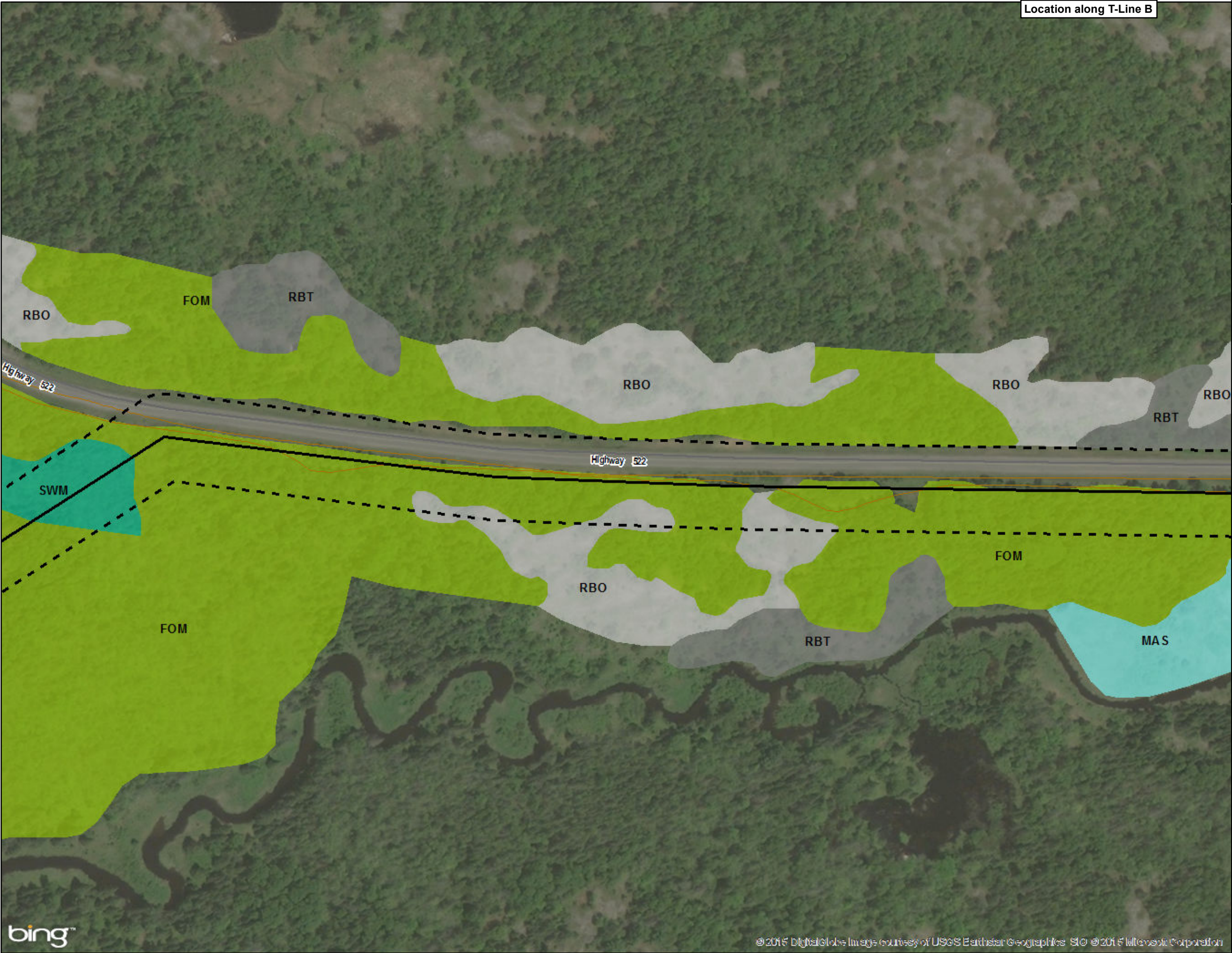
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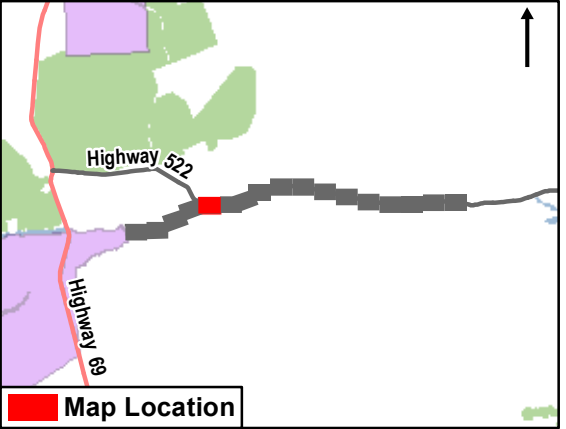
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Location along T-Line B



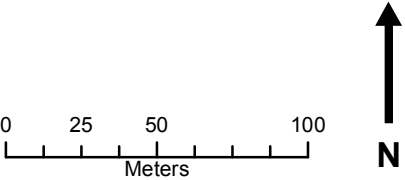
Map Location

- Ecological Land Classification Vegetation Communities**
- |               |     |      |
|---------------|-----|------|
| Anthropogenic | MAM | RAIL |
| CUP           | MAS | SA   |
| FEO           | OAQ | SAS  |
| FOC           | RBO | SAM  |
| FOD           | RBS | SWD  |
| FOM           | RBT | SWM  |
|               |     | SWT  |

- S.A.R. Wildlife Observations**
- Eastern Hog-nosed Snake
  - Blanding's Turtle

- Transmission Line Infrastructure**
- Transmission Line Route A
  - Transmission Line Route A Study Area

- Base Layers**
- Highway
  - Major Road
  - Trail
  - Railway
  - HONI Corridor
  - Proposed Hwy 69 Relocation
  - Aboriginal Land



## Henvey Inlet Wind Energy Centre

### Ecological Land Classification Vegetation Communities with S.A.R. Observations Transmission Line Route A

August 2015 1:2,500 Datum: NAD 83, Zone 17 Source: Stantec, OBM, LIO

P#: 60341251

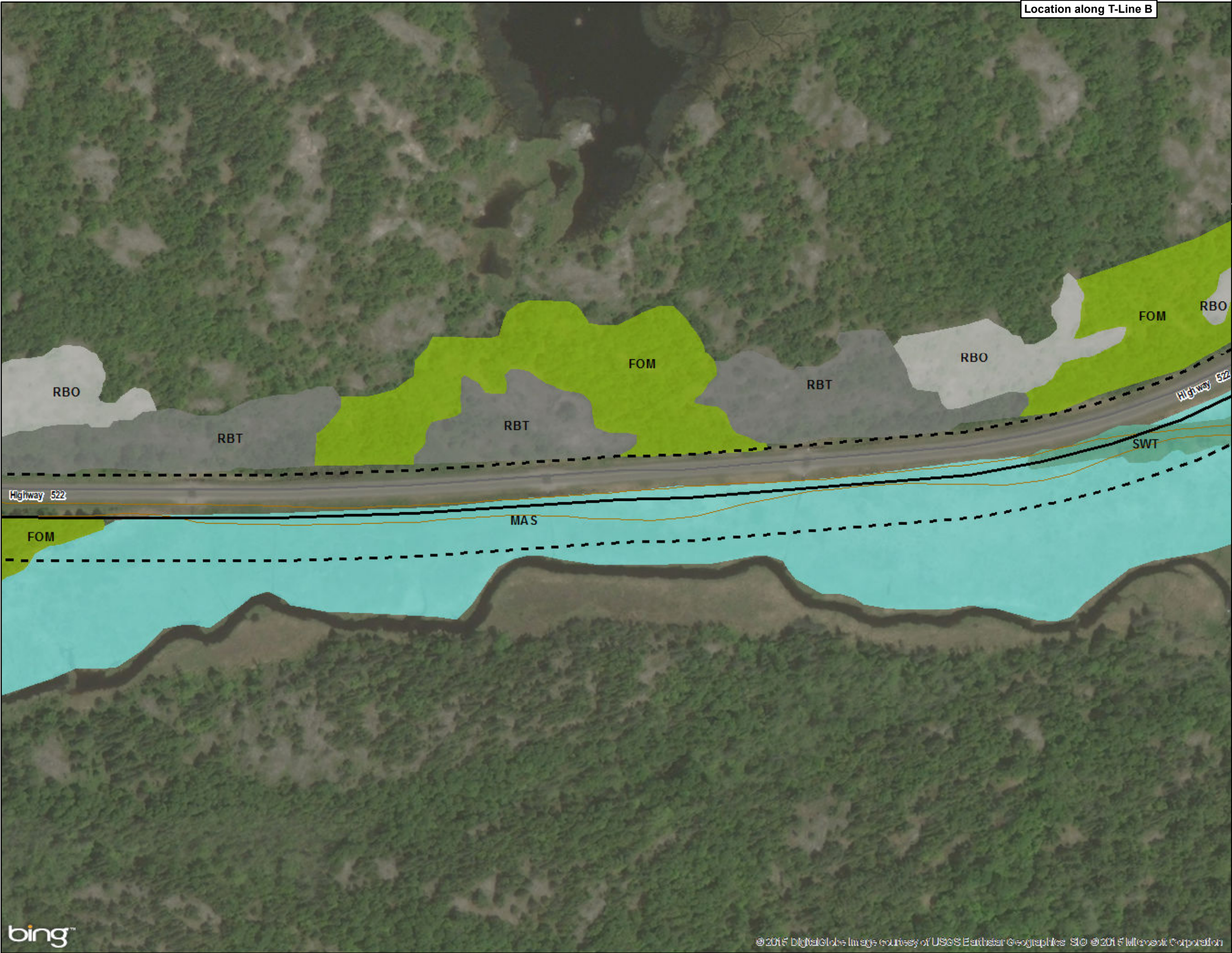
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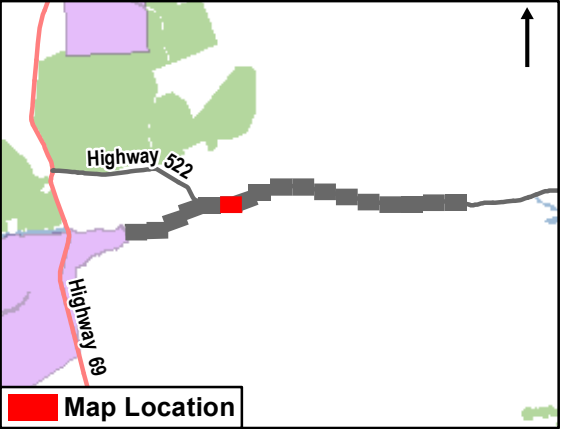


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Location along T-Line B

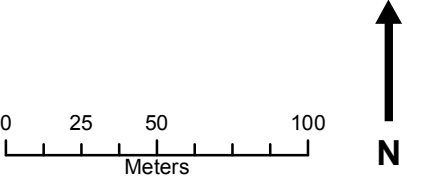


- Ecological Land Classification Vegetation Communities**
- |               |     |      |
|---------------|-----|------|
| Anthropogenic | MAM | RAIL |
| CUP           | MAS | SA   |
| FEO           | OAQ | SAS  |
| FOC           | RBO | SAM  |
| FOD           | RBS | SWD  |
| FOM           | RBT | SWM  |
|               |     | SWT  |

- S.A.R. Wildlife Observations**
- Eastern Hog-nosed Snake
  - Blanding's Turtle


- Transmission Line Infrastructure**
- Transmission Line Route A
  - Transmission Line Route A Study Area

- Base Layers**
- Highway
  - Major Road
  - Trail
  - Railway
  - HONI Corridor
  - Proposed Hwy 69 Relocation
  - Aboriginal Land



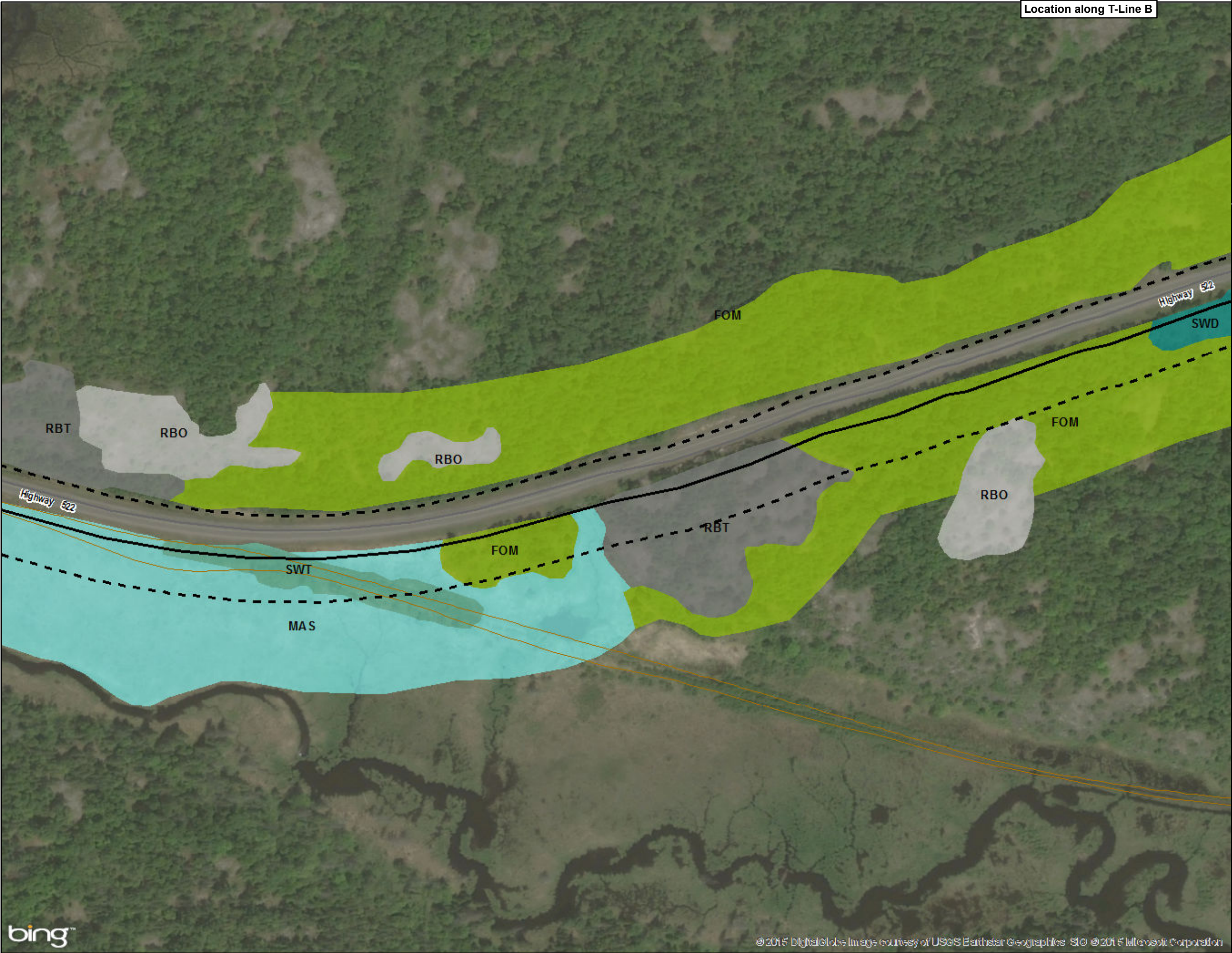
Henvey Inlet Wind Energy Centre

Ecological Land Classification Vegetation Communities with S.A.R. Observations Transmission Line Route A

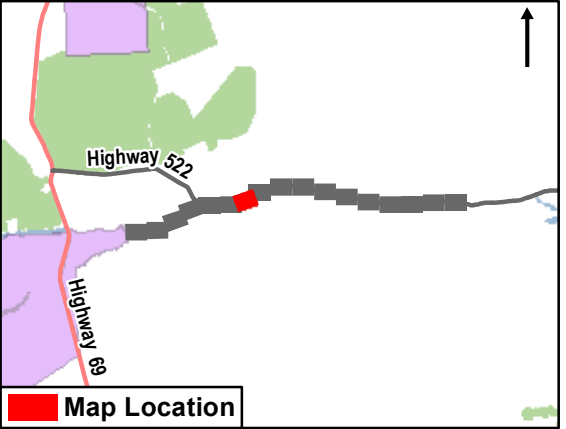
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P#: 60341251	V#: 001	
<b>Figure: 3-1.6</b>		

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Location along T-Line B

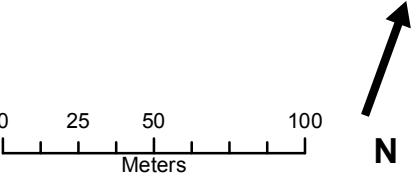


Ecological Land Classification Vegetation Communities					
Anthropogenic	MAM	RAIL			
CUP	MAS	SA			
FEO	OAQ	SAS			
FOC	RBO	SAM			
FOD	RBS	SWD			
FOM	RBT	SWM			
		SWT			

S.A.R. Wildlife Observations	
	Eastern Hog-nosed Snake
	Blanding's Turtle

Transmission Line Infrastructure	
	Transmission Line Route A
	Transmission Line Route A Study Area

Base Layers	
	Highway
	Major Road
	Trail
	Railway
	HONI Corridor
	Proposed Hwy 69 Relocation
	Aboriginal Land



## Henvey Inlet Wind Energy Centre

### Ecological Land Classification Vegetation Communities with S.A.R. Observations Transmission Line Route A

August 2015	1:2,500	Datum: NAD 83, Zone 17 Source: Stantec, OBM, LIO
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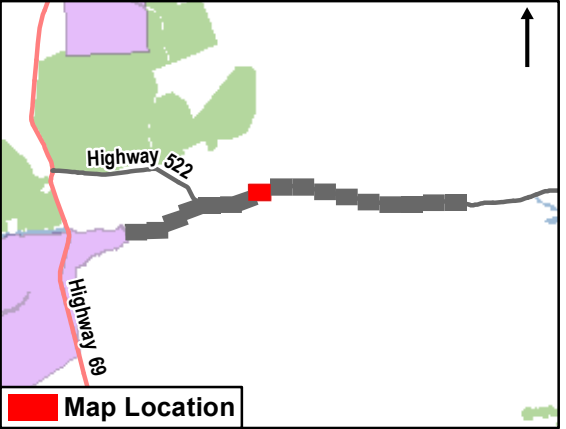
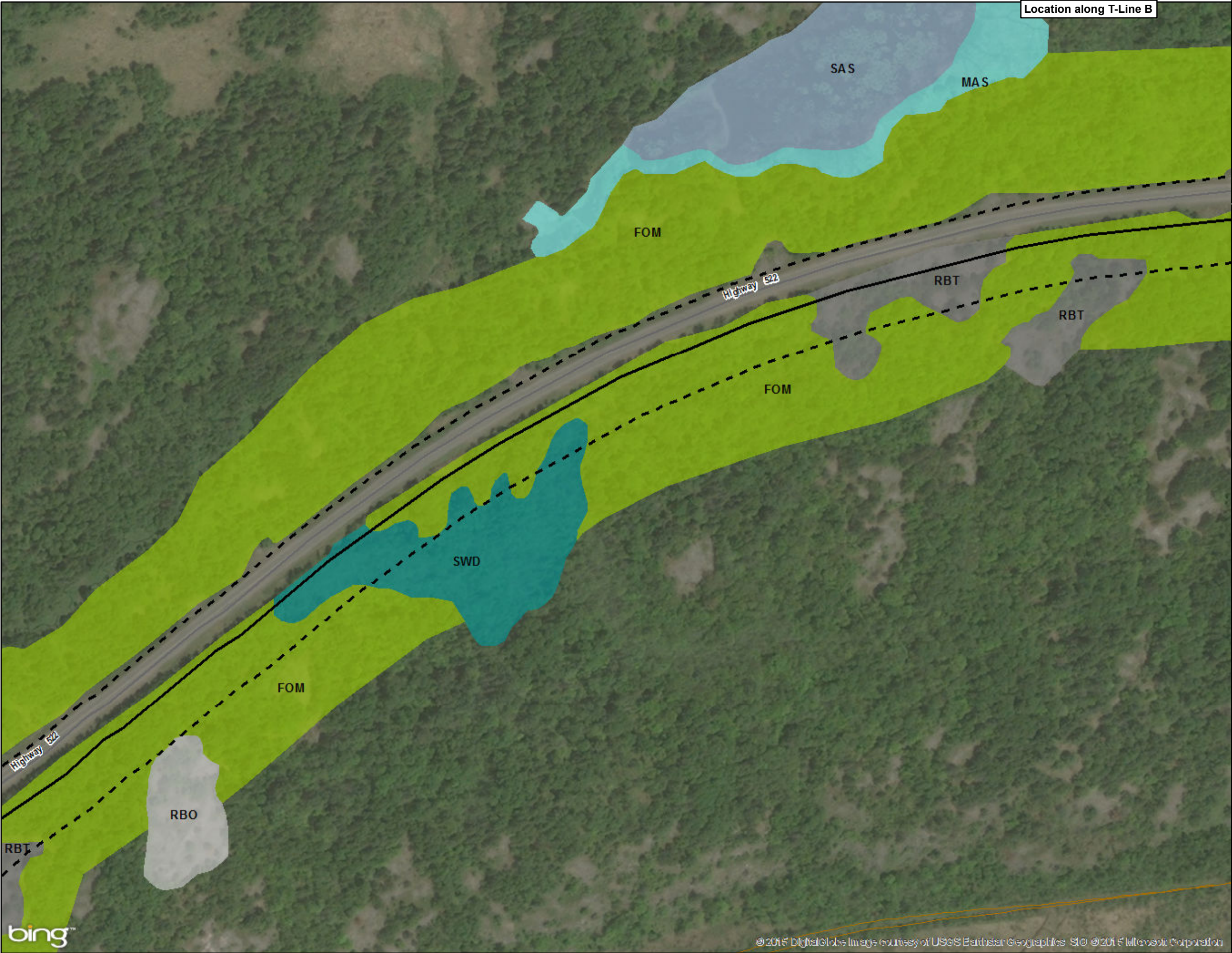
P#: 60341251	V#: 001
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Figure: 3-1.7

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Date Saved: 2015/09/04 12:02:46 PM





**Map Location**

**Ecological Land Classification Vegetation Communities**

Anthropogenic	MAM	RAIL
CUP	MAS	SA
FEO	MAO	SAS
FOC	RBO	SAM
FOD	RBS	SWD
FOM	RBT	SWM
		SWT

**S.A.R. Wildlife Observations**

- Eastern Hog-nosed Snake
- Blanding's Turtle

**Transmission Line Infrastructure**

- Transmission Line Route A
- Transmission Line Route A Study Area

**Base Layers**

- Highway
- Major Road
- Trail
- Railway
- HONI Corridor
- Proposed Hwy 69 Relocation
- Aboriginal Land

0 25 50 100 Meters

N

Henvey Inlet Wind Energy Centre

Ecological Land Classification Vegetation Communities with S.A.R. Observations Transmission Line Route A

August 2015	1:2,500	Datum: NAD 83, Zone 17 Source: Stantec, OBM, LIO
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P#: 60341251	V#: 001
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**Figure: 3-1.8**

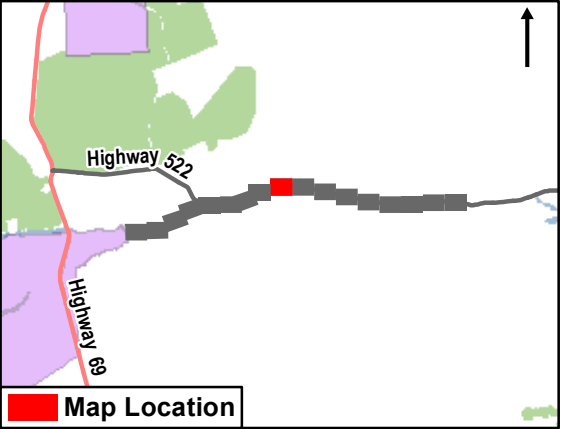
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Map location: H:\60341251\_Henvey02\_Maps\Draft\0341251\_Fig3\_1\_TLineA\_ELC\_Mitrook\_L3page.mxd  
Date Saved: 2015/09/04 12:02:46 PM





Location along T-Line B



Map Location

- Ecological Land Classification Vegetation Communities**
- |               |     |      |
|---------------|-----|------|
| Anthropogenic | MAM | RAIL |
| CUP           | MAS | SA   |
| FEO           | OAQ | SAS  |
| FOC           | RBO | SAM  |
| FOD           | RBS | SWD  |
| FOM           | RBT | SWM  |
|               |     | SWT  |

**S.A.R. Wildlife Observations**

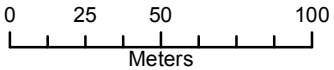
- Eastern Hog-nosed Snake
- Blanding's Turtle

**Transmission Line Infrastructure**

- Transmission Line Route A
- Transmission Line Route A Study Area

**Base Layers**

- Highway
- Major Road
- Trail
- Railway
- HONI Corridor
- Proposed Hwy 69 Relocation
- Aboriginal Land



Henvey Inlet Wind Energy Centre

Ecological Land Classification Vegetation Communities with S.A.R. Observations Transmission Line Route A

August 2015 1:2,500 Datum: NAD 83, Zone 17 Source: Stantec, OBM, LIO

P#: 60341251 V#: 001

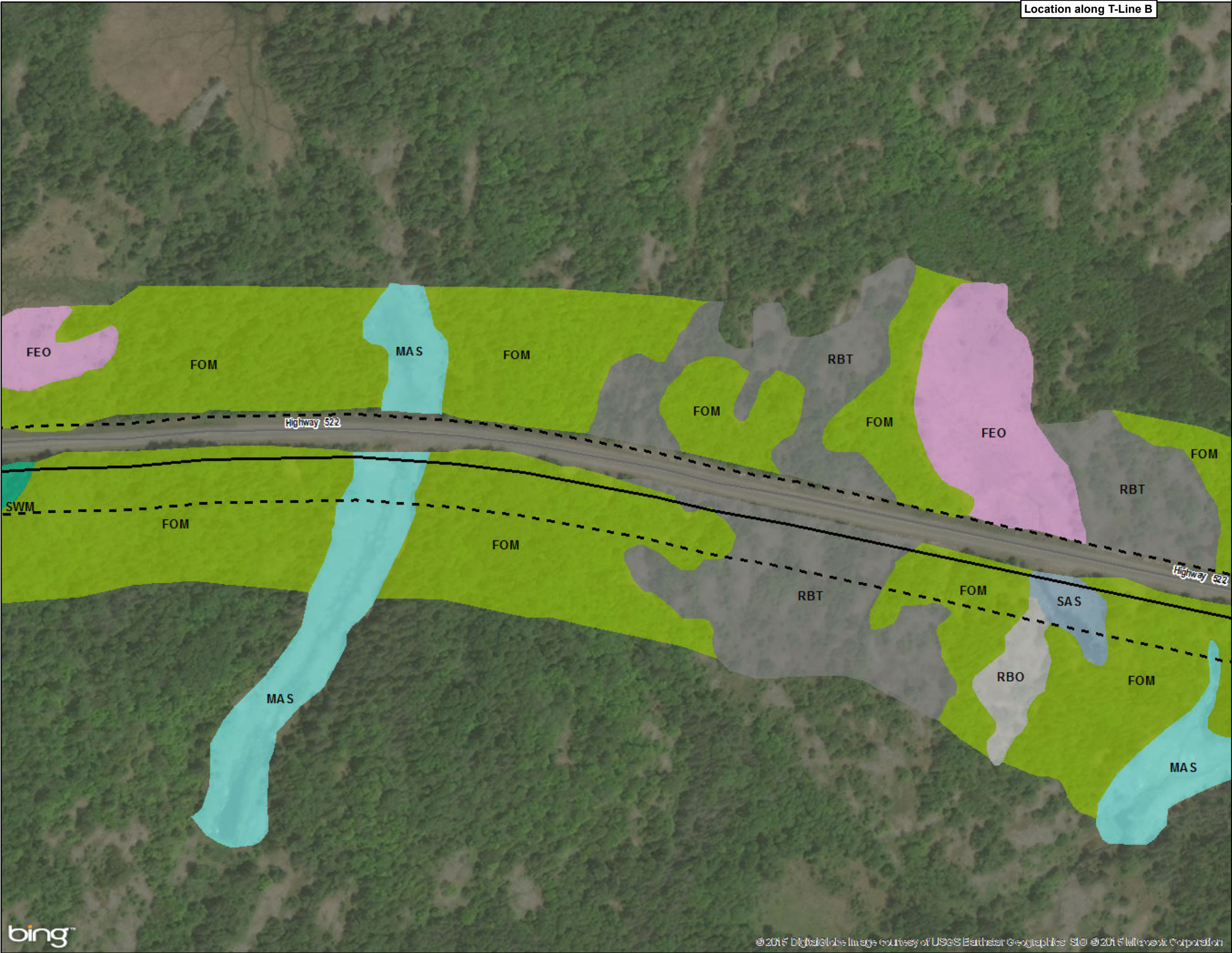
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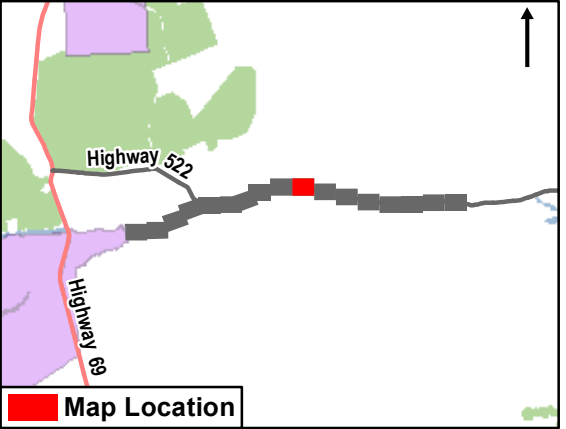
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Location along T-Line B

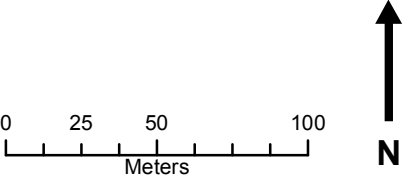


- Ecological Land Classification Vegetation Communities**
- |               |     |      |
|---------------|-----|------|
| Anthropogenic | MAM | RAIL |
| CUP           | MAS | SA   |
| FEO           | OA  | SAS  |
| FOC           | RBO | SAM  |
| FOD           | RBS | SWD  |
| FOM           | RBT | SWM  |
|               |     | SWT  |

- S.A.R. Wildlife Observations**
- Eastern Hog-nosed Snake
  - Blanding's Turtle

- Transmission Line Infrastructure**
- Transmission Line Route A
  - Transmission Line Route A Study Area

- Base Layers**
- Highway
  - Major Road
  - Trail
  - Railway
  - HONI Corridor
  - Proposed Hwy 69 Relocation
  - Aboriginal Land



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Ecological Land Classification Vegetation Communities with S.A.R. Observations Transmission Line Route A

August 2015 1:2,500 Datum: NAD 83, Zone 17 Source: Stantec, OBM, LIO

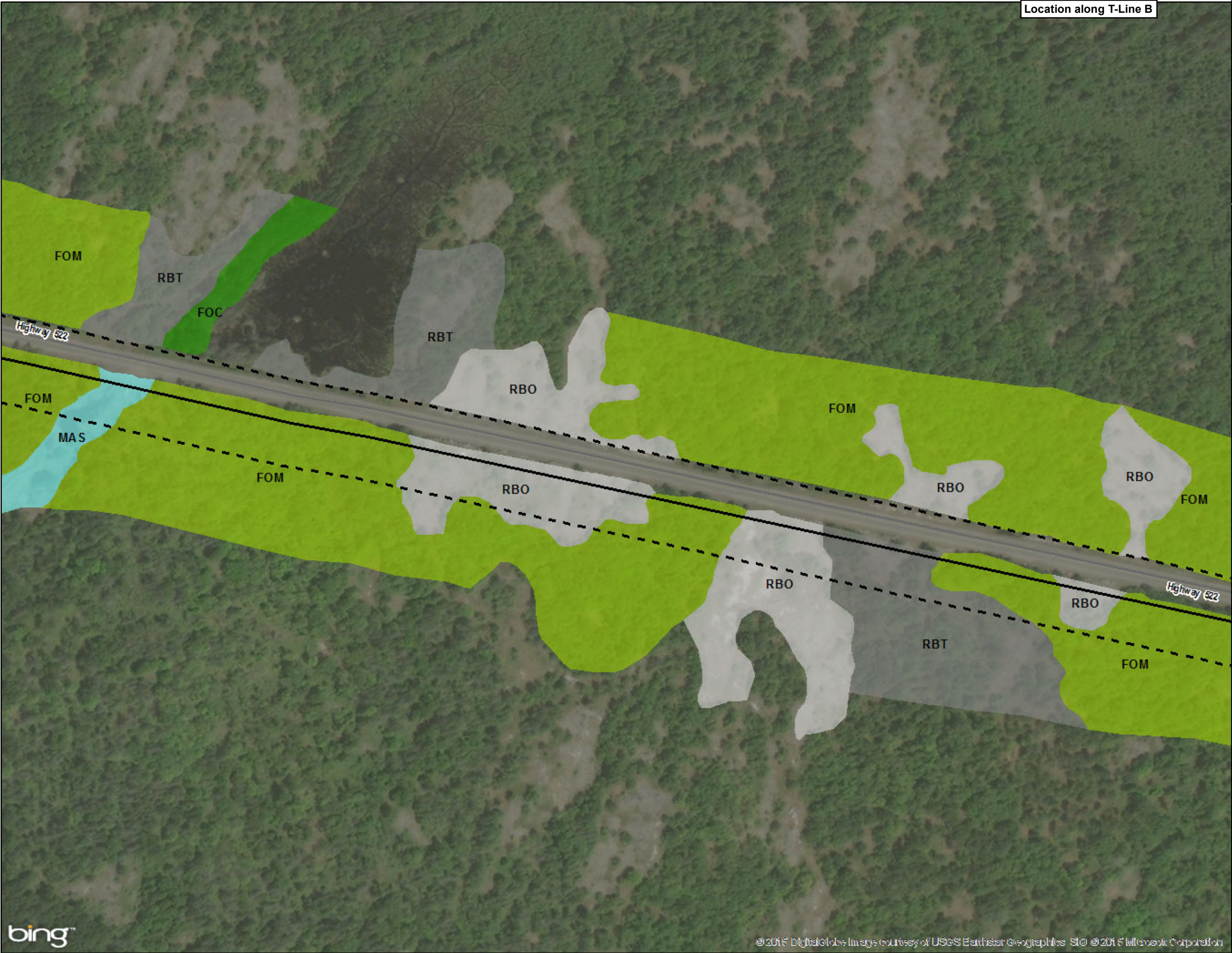
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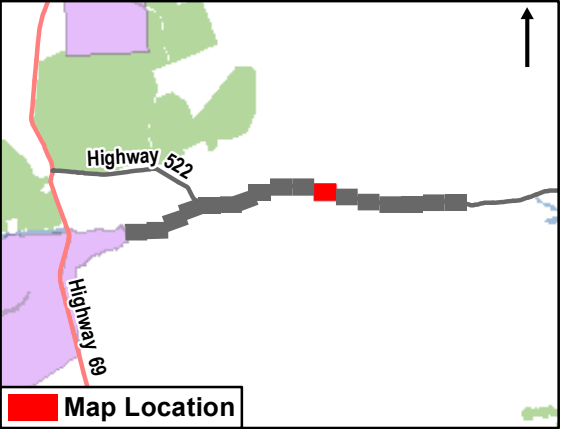


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Location along T-Line B



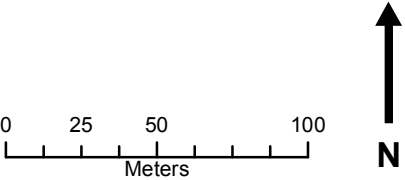
Map Location

- Ecological Land Classification Vegetation Communities**
- |               |     |      |
|---------------|-----|------|
| Anthropogenic | MAM | RAIL |
| CUP           | MAS | SA   |
| FEO           | OAQ | SAS  |
| FOC           | RBO | SAM  |
| FOD           | RBS | SWD  |
| FOM           | RBT | SWM  |
|               |     | SWT  |

- S.A.R. Wildlife Observations**
- Eastern Hog-nosed Snake
  - Blanding's Turtle

- Transmission Line Infrastructure**
- Transmission Line Route A
  - Transmission Line Route A Study Area

- Base Layers**
- Highway
  - Major Road
  - Trail
  - Railway
  - HONI Corridor
  - Proposed Hwy 69 Relocation
  - Aboriginal Land



Henvey Inlet Wind Energy Centre

Ecological Land Classification Vegetation Communities with S.A.R. Observations  
Transmission Line Route A

August 2015 | 1:2,500 | Datum: NAD 83, Zone 17  
Source: Stantec, OBM, LIO

P#: 60341251

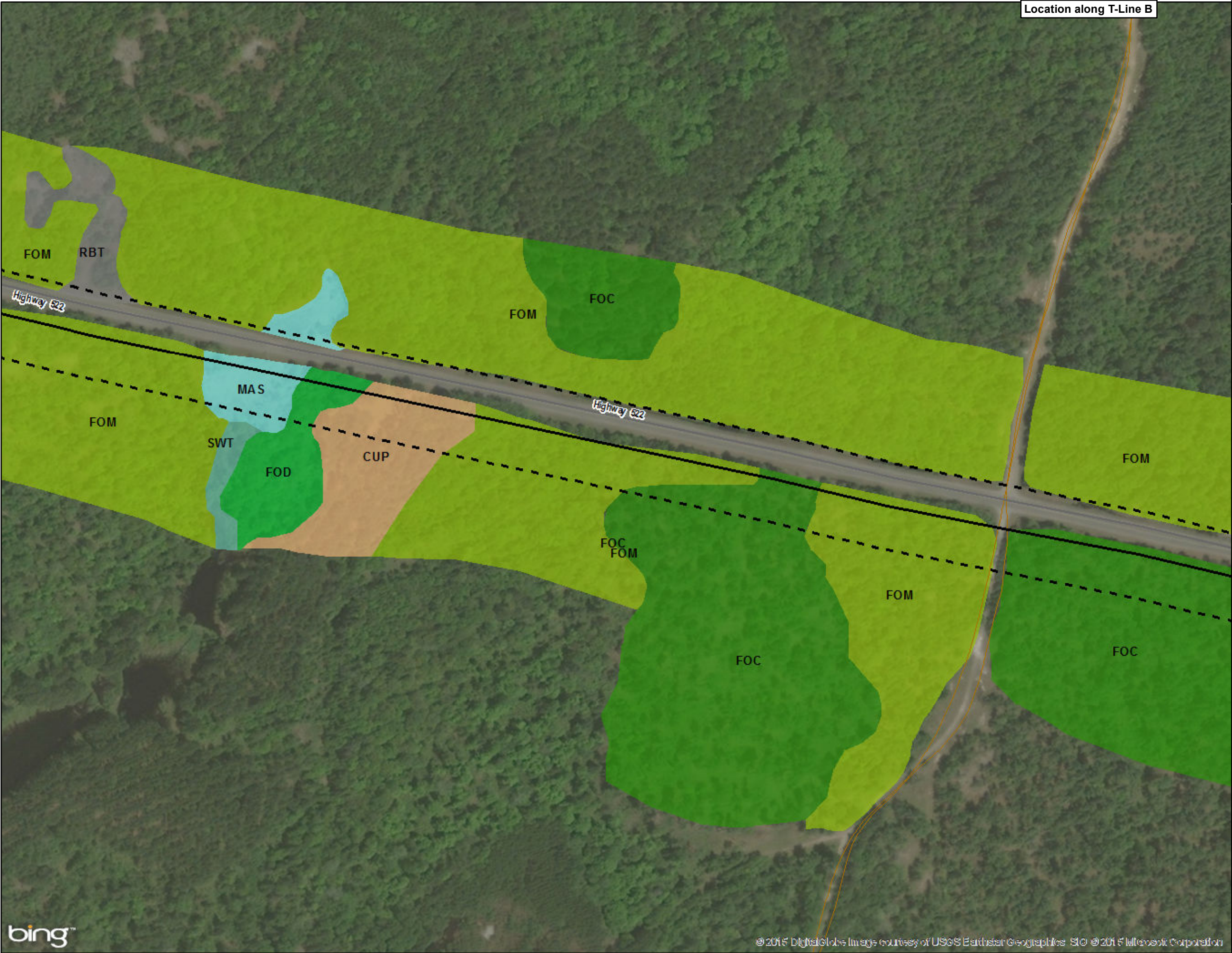
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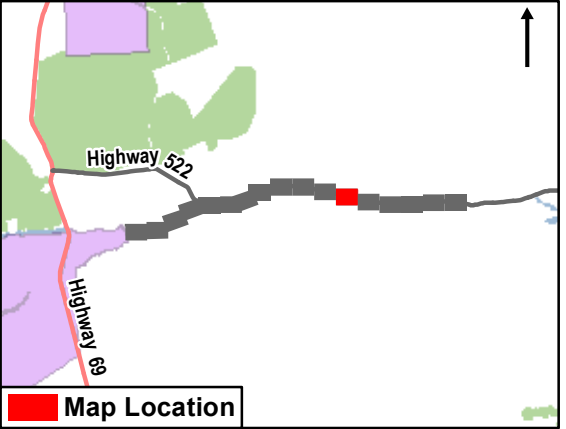


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Location along T-Line B

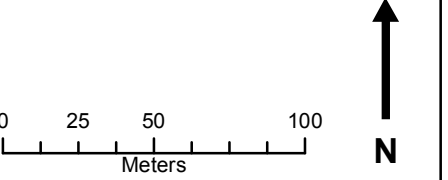


- Ecological Land Classification Vegetation Communities**
- |               |     |      |
|---------------|-----|------|
| Anthropogenic | MAM | RAIL |
| CUP           | MAS | SA   |
| FEO           | OAQ | SAS  |
| FOC           | RBO | SAM  |
| FOD           | RBS | SWD  |
| FOM           | RBT | SWM  |
|               |     | SWT  |

- S.A.R. Wildlife Observations**
- Eastern Hog-nosed Snake
  - Blanding's Turtle

- Transmission Line Infrastructure**
- Transmission Line Route A
  - Transmission Line Route A Study Area

- Base Layers**
- |            |                            |
|------------|----------------------------|
| Highway    | HONI Corridor              |
| Major Road | Proposed Hwy 69 Relocation |
| Trail      | Aboriginal Land            |
| Railway    |                            |



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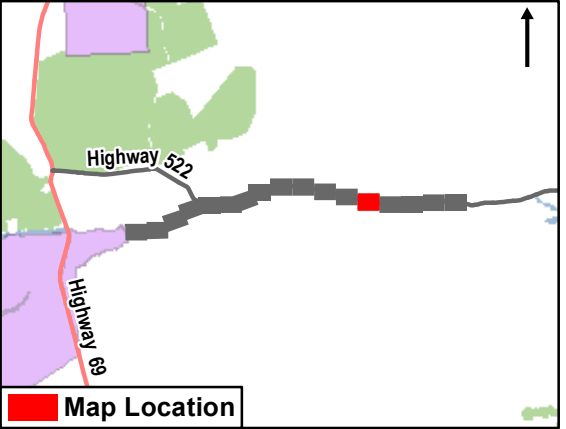
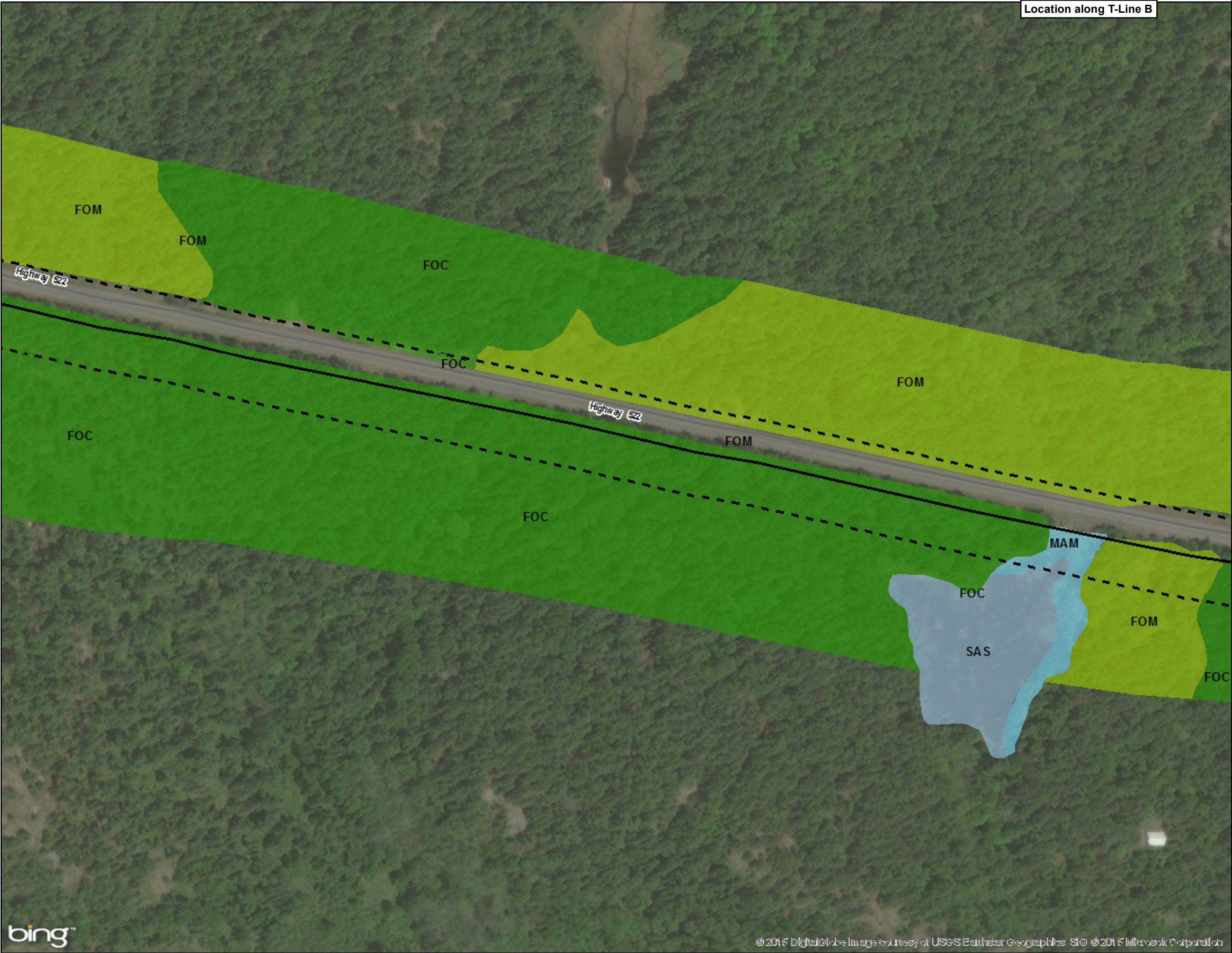
Ecological Land Classification Vegetation Communities with S.A.R. Observations  
Transmission Line Route A

August 2015	1:2,500	Datum: NAD 83, Zone 17 Source: Stantec, OBM, LIO
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P#: 60341251	V#: 001	
<b>Figure: 3-1.12</b>		

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**Ecological Land Classification**  
**Vegetation Communities**

Anthropogenic	MAM	RAIL
CUP	MAS	SA
FEO	OAQ	SAS
FOC	RBO	SAM
FOD	RBS	SWD
FOM	RBT	SWM
		SWT

**S.A.R. Wildlife Observations**

- Eastern Hog-nosed Snake
- Blanding's Turtle

**Transmission Line Infrastructure**

- Transmission Line Route A
- Transmission Line Route A Study Area

**Base Layers**

Highway	HONI Corridor
Major Road	Proposed Hwy 69 Relocation
Trail	Aboriginal Land
Railway	

02550100Meters

N

Henvey Inlet Wind Energy Centre

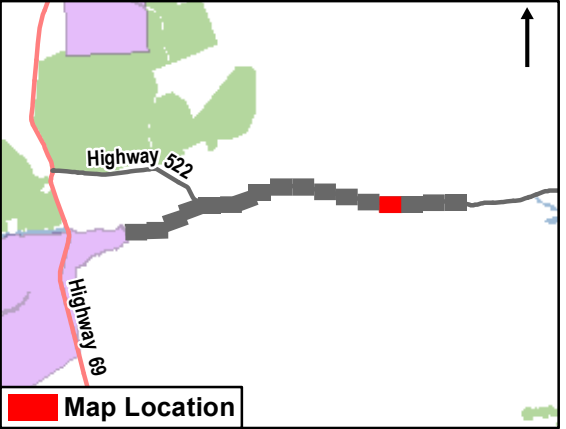
Ecological Land Classification Vegetation Communities with S.A.R. Observations Transmission Line Route A

August 2015	1:2,500	Datum: NAD 83, Zone 17 Source: Stantec, OBM, LIO
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Figure: 3-1.13

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**Ecological Land Classification Vegetation Communities**

Anthropic	MAM	RAIL
CUP	MAS	SA
FEO	OAQ	SAS
FOC	RBO	SAM
FOD	RBS	SWD
FOM	RBT	SWM
		SWT

**S.A.R. Wildlife Observations**

- Eastern Hog-nosed Snake
- Blanding's Turtle

**Transmission Line Infrastructure**

- Transmission Line Route A
- Transmission Line Route A Study Area

**Base Layers**

- Highway
- Major Road
- Trail
- Railway
- HONI Corridor
- Proposed Hwy 69 Relocation
- Aboriginal Land

0 25 50 100 Meters

N

Henvey Inlet Wind Energy Centre

Ecological Land Classification Vegetation Communities with S.A.R. Observations Transmission Line Route A

August 2015	1:2,500	Datum: NAD 83, Zone 17 Source: Stantec, OBM, LIO
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P#: 60341251	V#: 001
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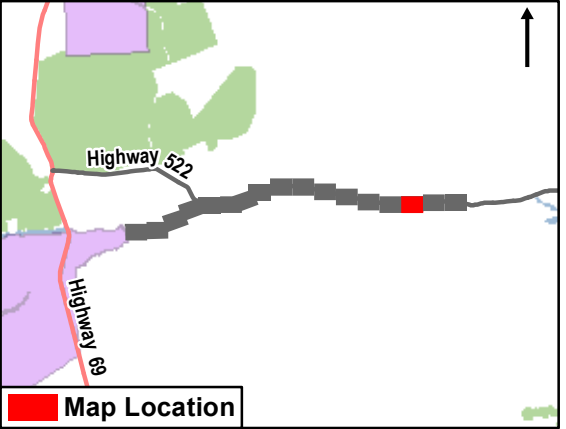
**Figure: 3-1.14**

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Location along T-Line B



Map Location

- Ecological Land Classification Vegetation Communities**
- |               |     |      |
|---------------|-----|------|
| Anthropogenic | MAM | RAIL |
| CUP           | MAS | SA   |
| FEO           | OA  | SAS  |
| FOC           | RBO | SAM  |
| FOD           | RBS | SWD  |
| FOM           | RBT | SWM  |
|               |     | SWT  |

**S.A.R. Wildlife Observations**

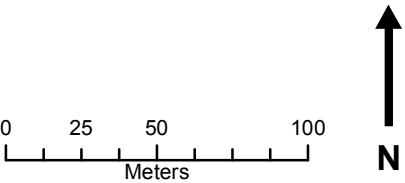
- Eastern Hog-nosed Snake
- Blanding's Turtle

**Transmission Line Infrastructure**

- Transmission Line Route A
- Transmission Line Route A Study Area

**Base Layers**

- Highway
- Major Road
- Trail
- Railway
- HONI Corridor
- Proposed Hwy 69 Relocation
- Aboriginal Land



Henvey Inlet Wind Energy Centre

Ecological Land Classification Vegetation Communities with S.A.R. Observations  
Transmission Line Route A

August 2015 1:2,500 Datum: NAD 83, Zone 17  
Source: Stantec, OBM, LIO

P#: 60341251

V#: 001

Figure: 3-1.15



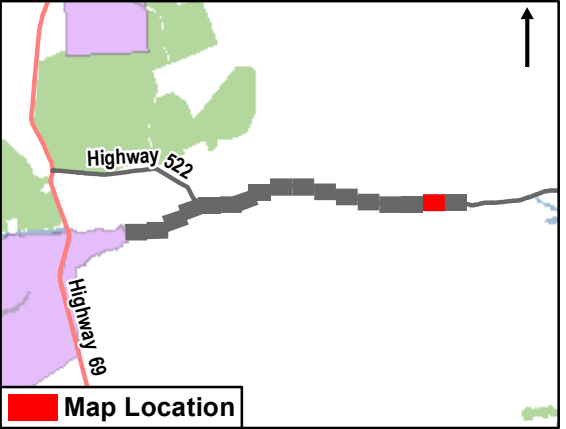
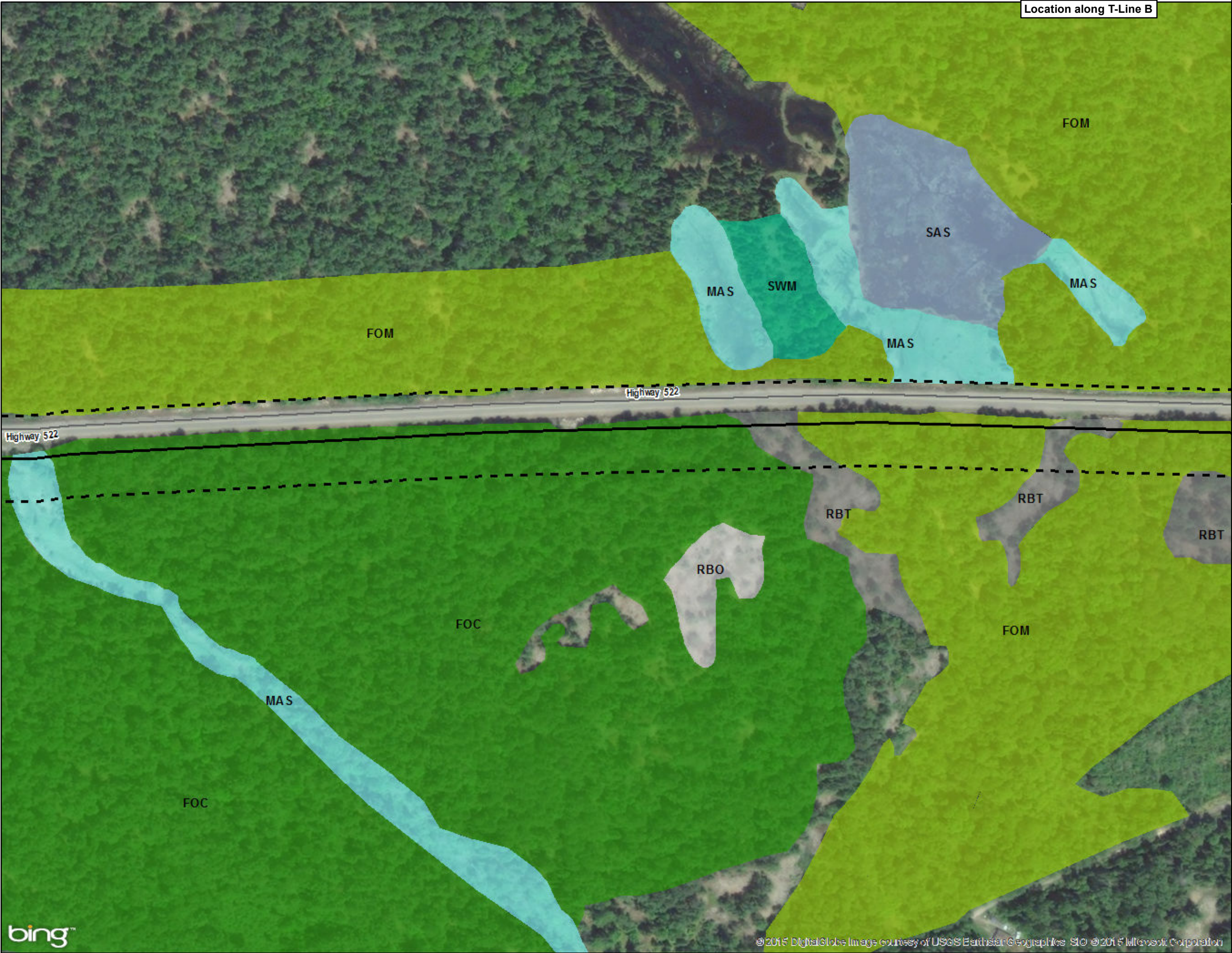
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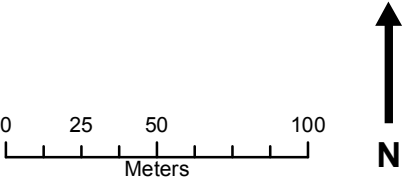


- Ecological Land Classification Vegetation Communities**
- |               |     |      |
|---------------|-----|------|
| Anthropogenic | MAM | RAIL |
| CUP           | MAS | SA   |
| FEO           | MAO | SAS  |
| FOC           | RBO | SAM  |
| FOD           | RBS | SWD  |
| FOM           | RBT | SWM  |
|               |     | SWT  |

- S.A.R. Wildlife Observations**
- Eastern Hog-nosed Snake
  - Blanding's Turtle


- Transmission Line Infrastructure**
- Transmission Line Route A
  - Transmission Line Route A Study Area

- Base Layers**
- Highway
  - Major Road
  - Trail
  - Railway
  - HONI Corridor
  - Proposed Hwy 69 Relocation
  - Aboriginal Land



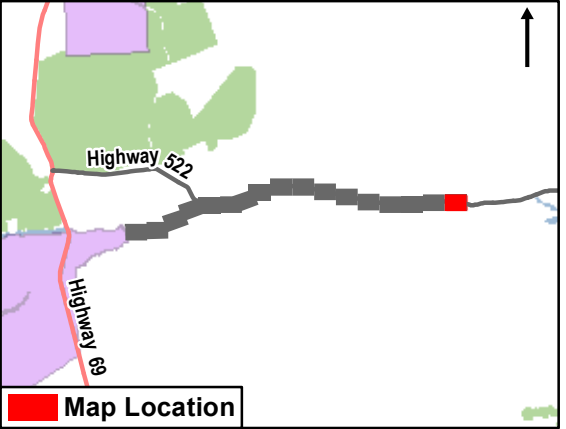
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Ecological Land Classification Vegetation Communities with S.A.R. Observations Transmission Line Route A

August 2015	1:2,500	Datum: NAD 83, Zone 17 Source: Stantec, OBM, LIO
P#: 60341251	V#: 001	
<b>Figure: 3-1.16</b>		

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**Ecological Land Classification Vegetation Communities**

Anthropogenic	MAM	RAIL
CUP	MAS	SA
FEO	OAQ	SAS
FOC	RBO	SAM
FOD	RBS	SWD
FOM	RBT	SWM
		SWT

**S.A.R. Wildlife Observations**

- Eastern Hog-nosed Snake
- Blanding's Turtle

**Transmission Line Infrastructure**

- Transmission Line Route A
- Transmission Line Route A Study Area

**Base Layers**

- Highway
- Major Road
- Trail
- Railway
- HONI Corridor
- Proposed Hwy 69 Relocation
- Aboriginal Land

0 25 50 100 Meters

N

Henvey Inlet Wind Energy Centre

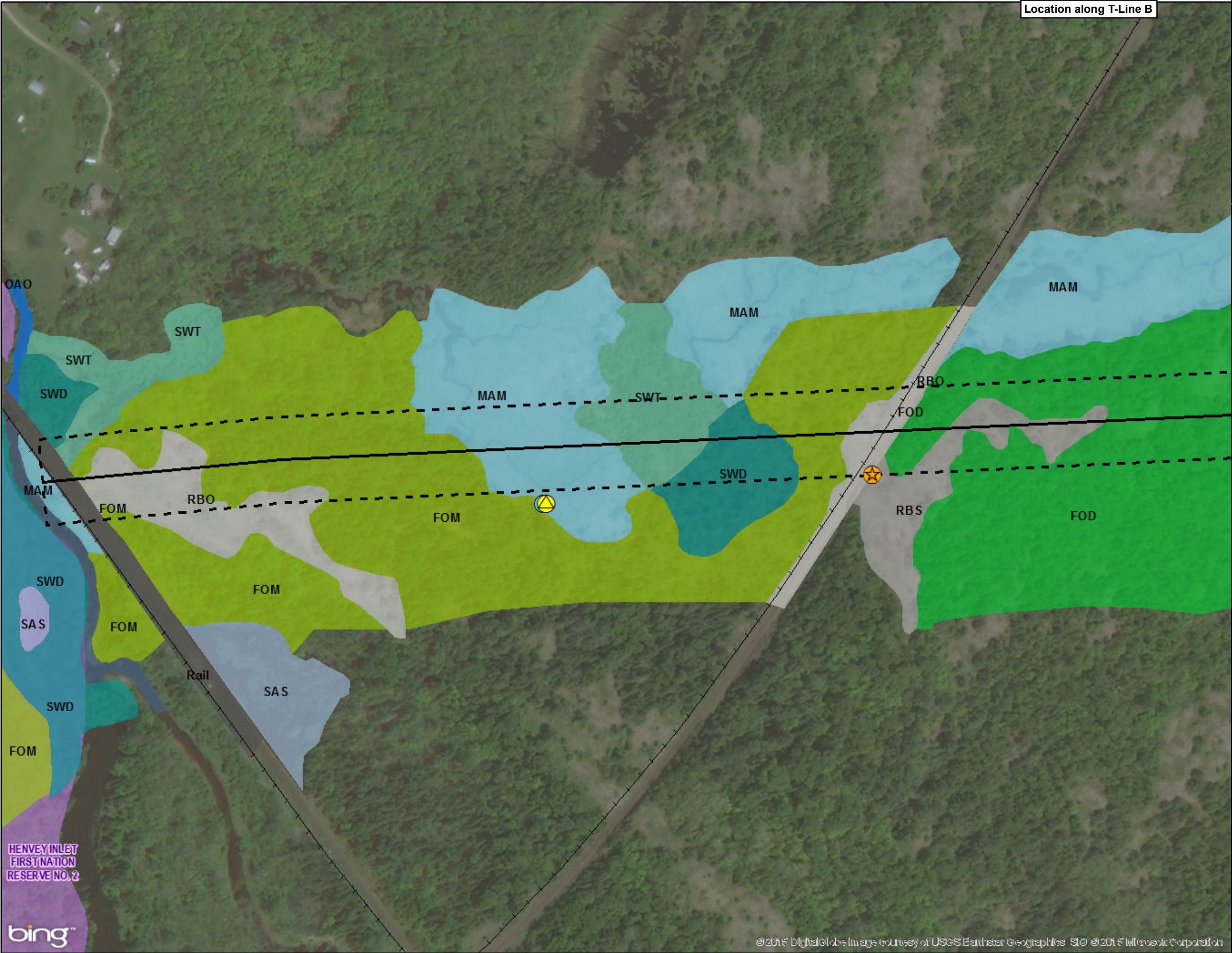
Ecological Land Classification Vegetation Communities with S.A.R. Observations Transmission Line Route A

August 2015	1:2,500	Datum: NAD 83, Zone 17 Source: Stantec, OBM, LIO
P#: 60341251	V#: 001	
<b>Figure: 3-1.17</b>		

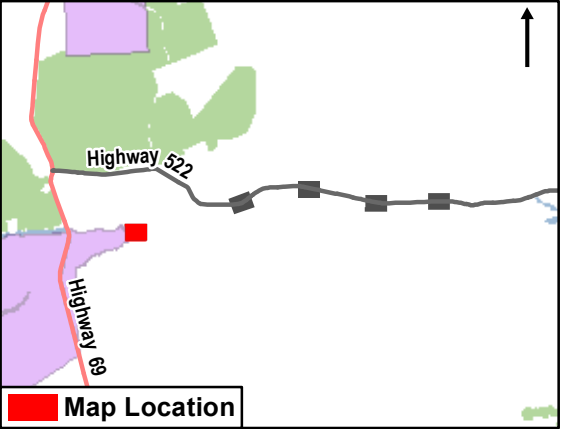
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Date Saved: 2015/09/04 12:02:46 PM





Location along T-Line B



**Ecological Land Classification**

**Vegetation Communities**

Anthropic	MAM	RAIL
CUP	MAS	SA
FEO	OAO	SAS
FOC	RBO	SAM
FOD	RBS	SWD
FOM	RBT	SWM
		SWT

**S.A.R. Wildlife Habitat Observations**

Amphibian Breeding Habitat(Wetland)	Reptile Hibernacula
Amphibian Breeding Habitat(Woodland)	Turtle and Lizard Nesting Areas
Marsh Bird Breeding Habitat	Woodland Raptor Nesting Habitat

**Transmission Line Infrastructure**

Transmission Line Route A
Transmission Line Route A Study Area

**Base Layers**

Highway	HONI Corridor
Major Road	Proposed Hwy 69 Relocation
Trail	Aboriginal Land
Railway	

0 25 50 100 Meters

N

## Henvey Inlet Wind Energy Centre

### S.A.R. Wildlife Habitat Observations with Vegetation Communities Transmission Line Route A

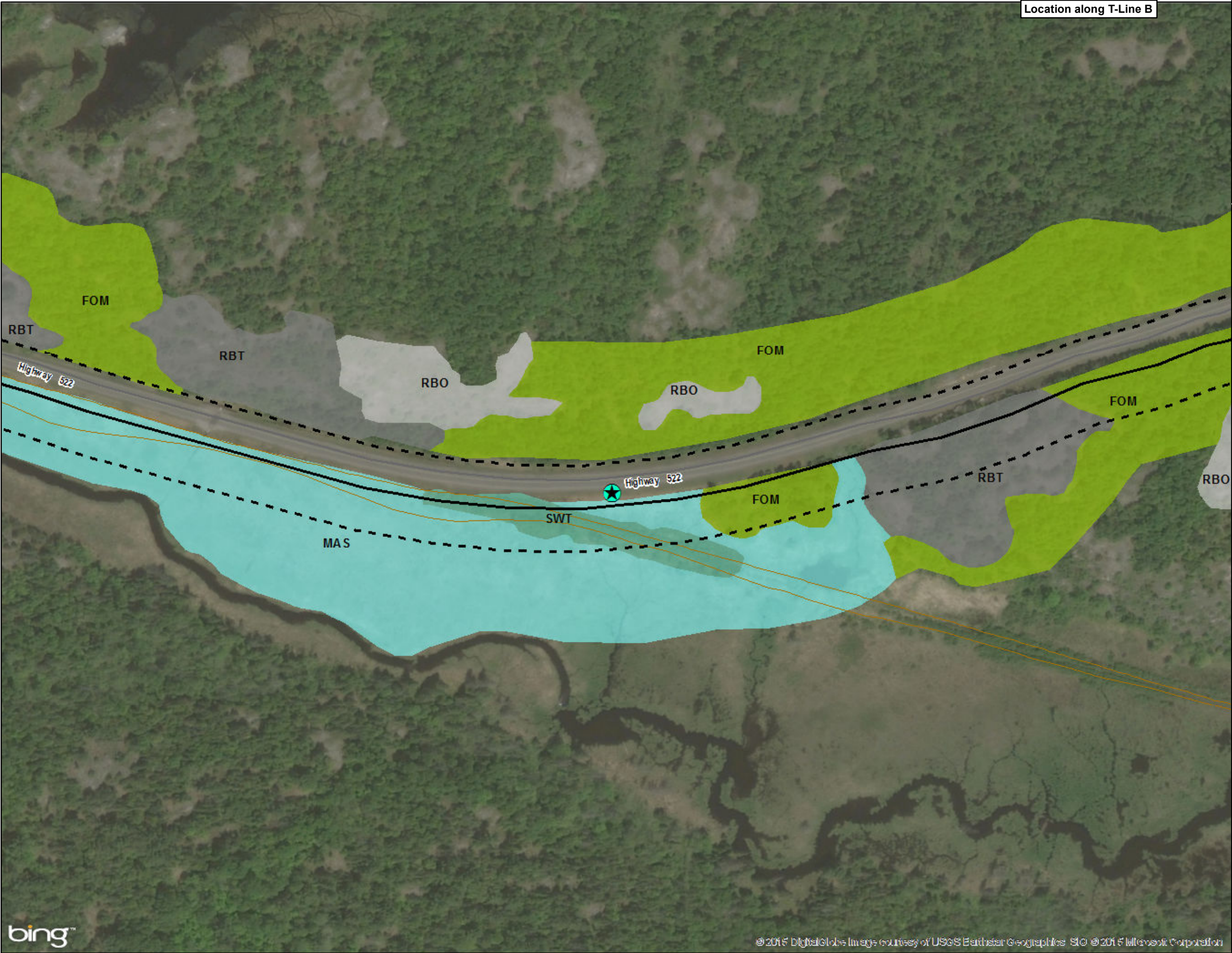
August 2015	1:2,500	Datum: NAD 83, Zone 17 Source: Stantec, OBM, LIO
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P#: 60341251	V#: 001	
<b>Figure: 3-2.1</b>		

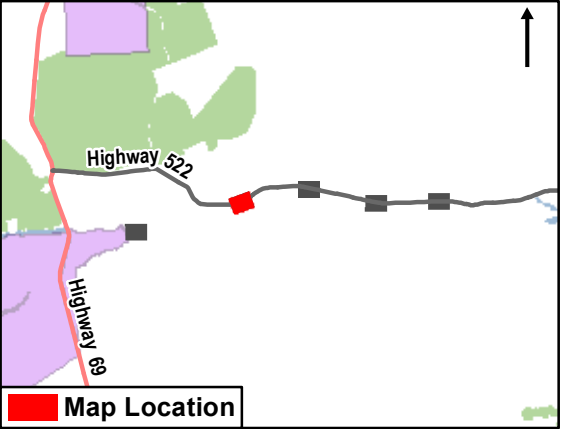
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Date Saved: 2015/09/04 11:28:37 AM





Location along T-Line B



**Ecological Land Classification**

**Vegetation Communities**

Anthropogenic	MAM	RAIL
CUP	MAS	SA
FEO	OAQ	SAS
FOC	RBO	SAM
FOD	RBS	SWD
FOM	RBT	SWM
		SWT

**S.A.R. Wildlife Habitat Observations**

Amphibian Breeding Habitat(Wetland)	Reptile Hibernacula
Amphibian Breeding Habitat(Woodland)	Turtle and Lizard Nesting Areas
Marsh Bird Breeding Habitat	Woodland Raptor Nesting Habitat

**Transmission Line Infrastructure**

Transmission Line Route A
Transmission Line Route A Study Area

**Base Layers**

Highway	HONI Corridor
Major Road	Proposed Hwy 69 Relocation
Trail	Aboriginal Land
Railway	

0 25 50 100 Meters

N

## Henvey Inlet Wind Energy Centre

### S.A.R. Wildlife Habitat Observations with Vegetation Communities Transmission Line Route A

August 2015	1:2,500	Datum: NAD 83, Zone 17 Source: Stantec, OBM, LIO
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P#: 60341251 V#: 001

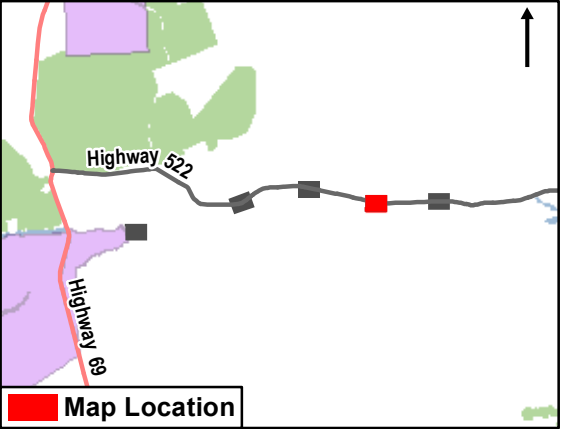
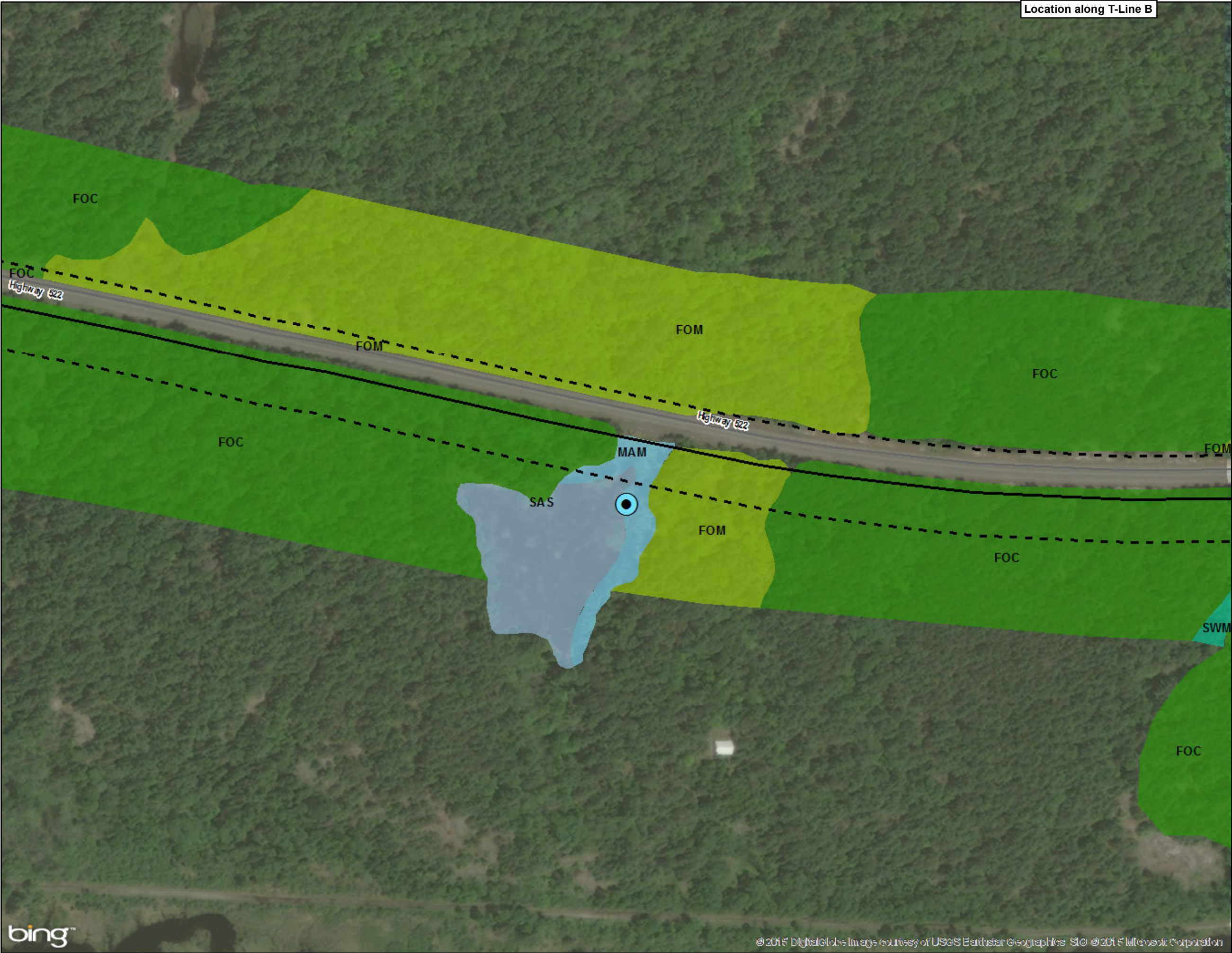
**Figure: 3-2.5**

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**Ecological Land Classification**

**Vegetation Communities**

Anthropogenic	MAM	RAIL
CUP	MAS	SA
FEO	OAO	SAS
FOC	RBO	SAM
FOD	RBS	SWD
FOM	RBT	SWM
		SWT

**S.A.R. Wildlife Habitat Observations**

Amphibian Breeding Habitat(Wetland)	Reptile Hibernacula
Amphibian Breeding Habitat(Woodland)	Turtle and Lizard Nesting Areas
Marsh Bird Breeding Habitat	Woodland Raptor Nesting Habitat

**Transmission Line Infrastructure**

Transmission Line Route A
Transmission Line Route A Study Area

**Base Layers**

Highway	HONI Corridor
Major Road	Proposed Hwy 69 Relocation
Trail	Aboriginal Land
Railway	

0 25 50 100 Meters

N

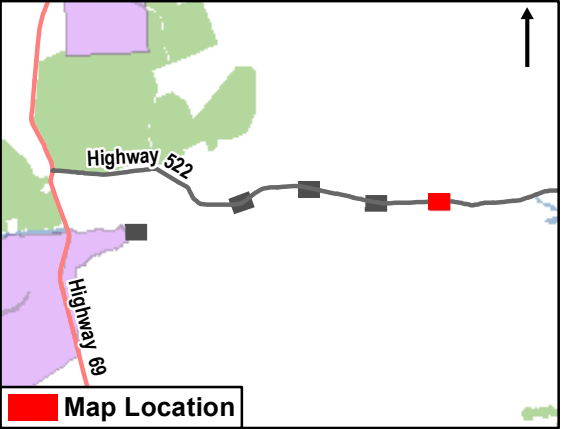
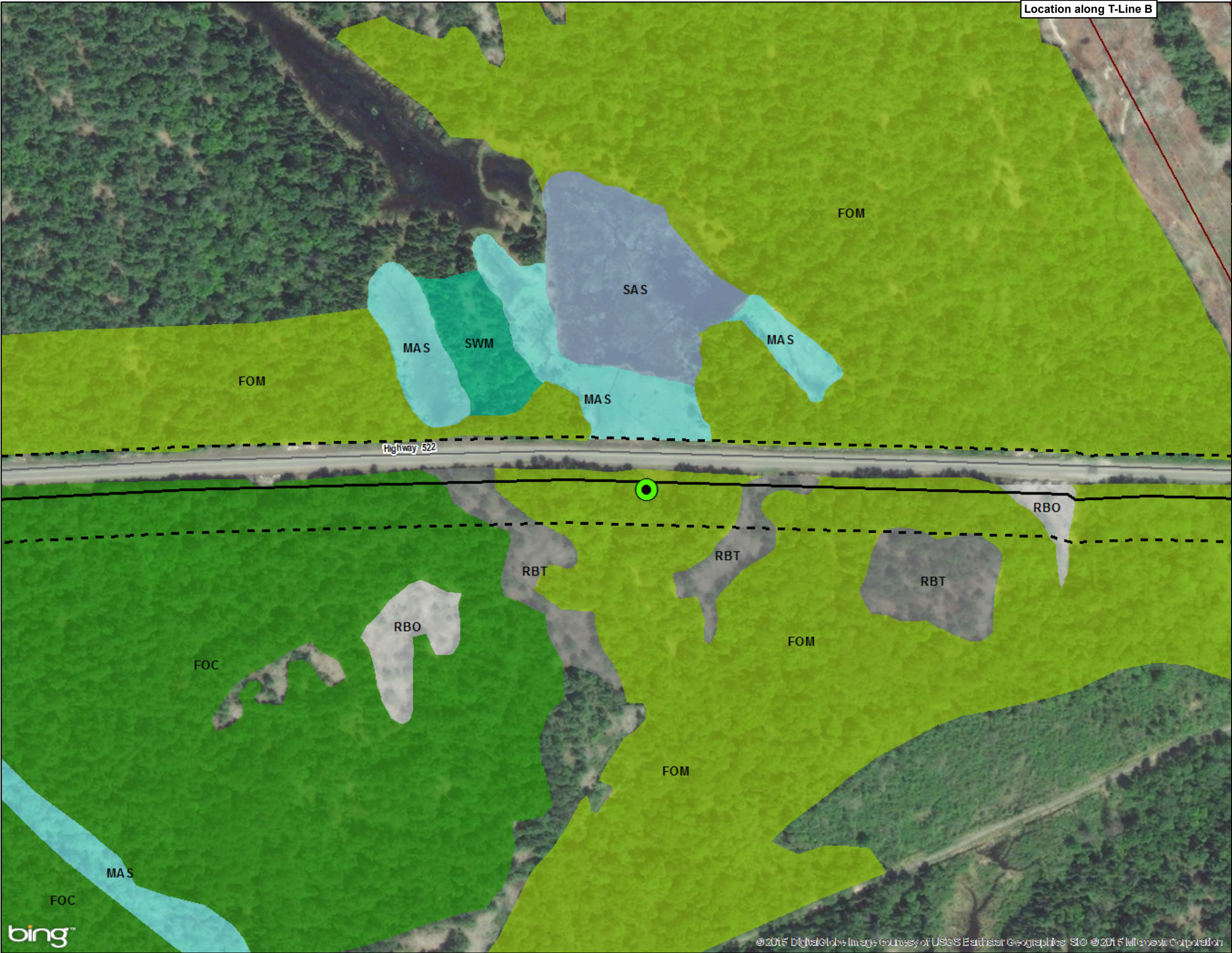
Henvey Inlet Wind Energy Centre

S.A.R. Wildlife Habitat Observations with Vegetation Communities Transmission Line Route A

August 2015	1:2,500	Datum: NAD 83, Zone 17 Source: Stantec, OBM, LIO
P#: 60341251	V#: 001	
<b>Figure: 3-2.3</b>		

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**Ecological Land Classification**

**Vegetation Communities**

Anthropogenic	MAM	RAIL
CUP	MAS	SA
FEO	OA	SAS
FOC	RBO	SAM
FOD	RBS	SWD
FOM	RBT	SWM
		SWT

**S.A.R. Wildlife Habitat Observations**

Amphibian Breeding Habitat(Wetland)	Reptile Hibernacula
Amphibian Breeding Habitat(Woodland)	Turtle and Lizard Nesting Areas
Marsh Bird Breeding Habitat	Woodland Raptor Nesting Habitat

**Transmission Line Infrastructure**

Transmission Line Route A
Transmission Line Route A Study Area

**Base Layers**

Highway	HONI Corridor
Major Road	Proposed Hwy 69 Relocation
Trail	Aboriginal Land
Railway	

0 25 50 100 Meters

N

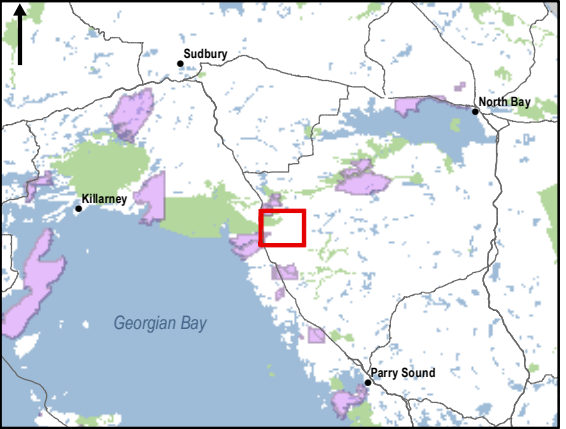
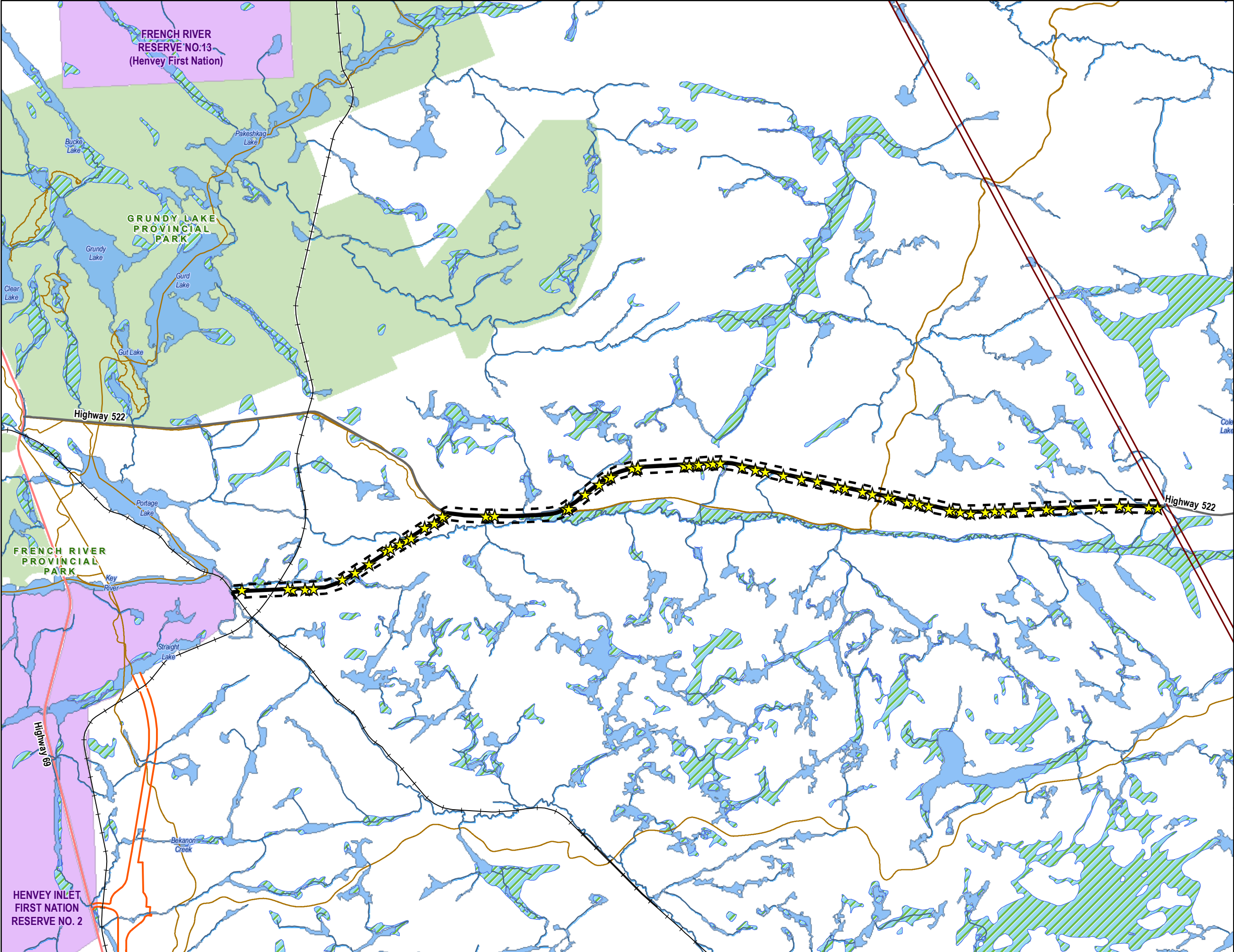
Henvey Inlet Wind Energy Centre

S.A.R. Wildlife Habitat Observations with Vegetation Communities Transmission Line Route A

August 2015	1:2,500	Datum: NAD 83, Zone 17 Source: Stantec, OBM, LIO
P#: 60341251	V#: 001	
<b>Figure: 3-2.4</b>		

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**Density Plot Survey Locations**

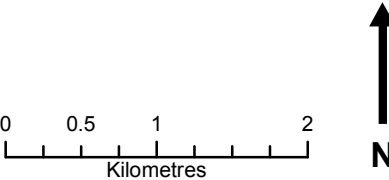
★ Snag/Cavity Bat Plot Location

**Transmission Line Infrastructure**

— Transmission Line Route A  
- - - Transmission Line Route A Study Area


**Base Layers**

— Highway  
— Major Road  
— Trail  
+ — Railway  
— HONI Corridor  
— Proposed Hwy 69 Relocation  
— Aboriginal Land  
— Wetland  
— Waterbody  
— Provincial Park



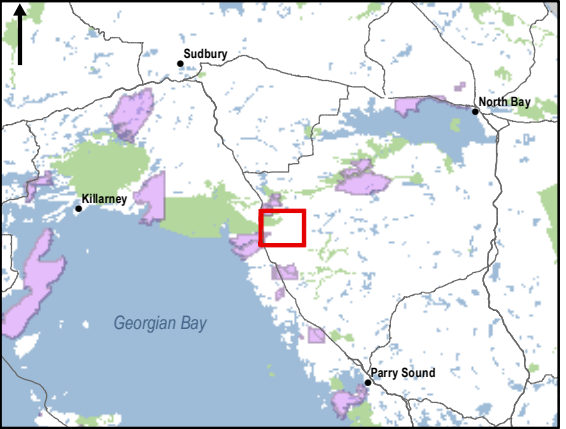
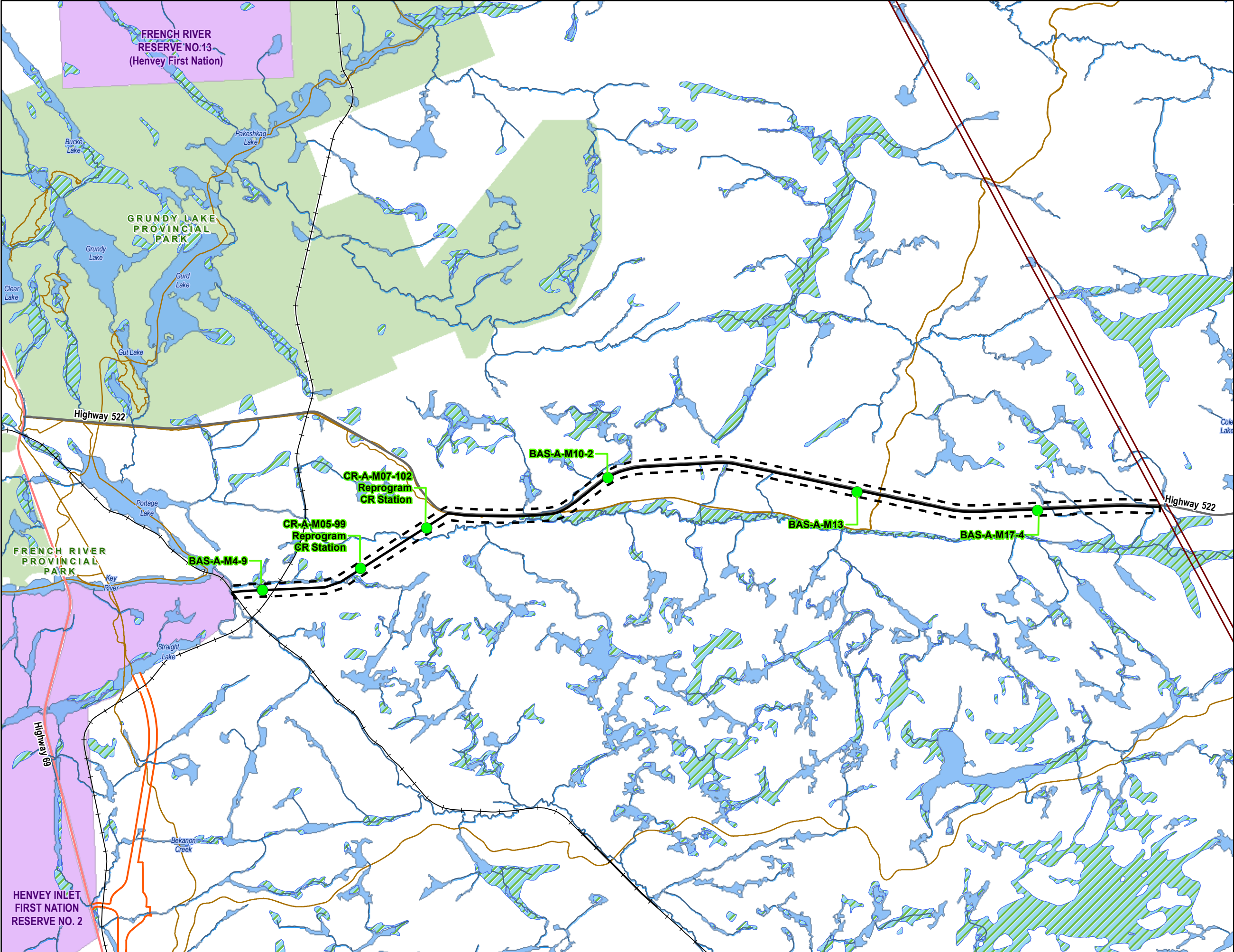
**Henvey Inlet Wind Energy Centre**

**Snag/Cavity Density Plot Survey Locations  
Transmission Line Route A**

August 2015	1:50,000	Datum: NAD 83, Zone 17 Source: Stantec, OBM, LIO
P#: 60341251	V#: 001	
<b>Figure: 3-3</b>		
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Map location: H:\60341251\_Henvey\02\_Maps\Draft\0341251\_Fig\_3\_3\_LineA\_SnagCavityPlotSurLoc.mxd  
Date Saved: 2015/09/04 11:33:23 AM





**Bat and Crepuscular Acoustic Monitoring Station Survey Locations for Round 1**

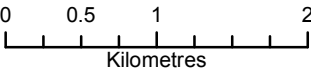
● Station Locations

**Transmission Line Infrastructure**

- Transmission Line Route A
- - - Transmission Line Route A Study Area

**Base Layers**

- Highway
- Major Road
- Trail
- Railway
- HONI Corridor
- Proposed Hwy 69 Relocation
- Aboriginal Land
- Wetland
- Waterbody
- Provincial Park



**Henvey Inlet Wind Energy Centre**

**Bat and Crepuscular Acoustic Monitor Stations - Round 1  
Transmission Line Route A**

August 2015

1:50,000

Datum: NAD 83, Zone 17  
Source: Stantec, OBM, LIO

P#: 60341251

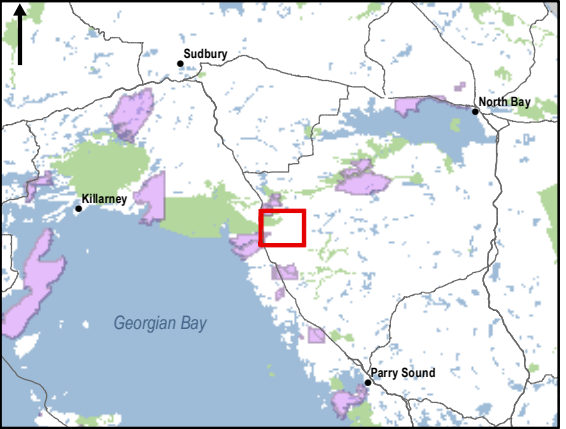
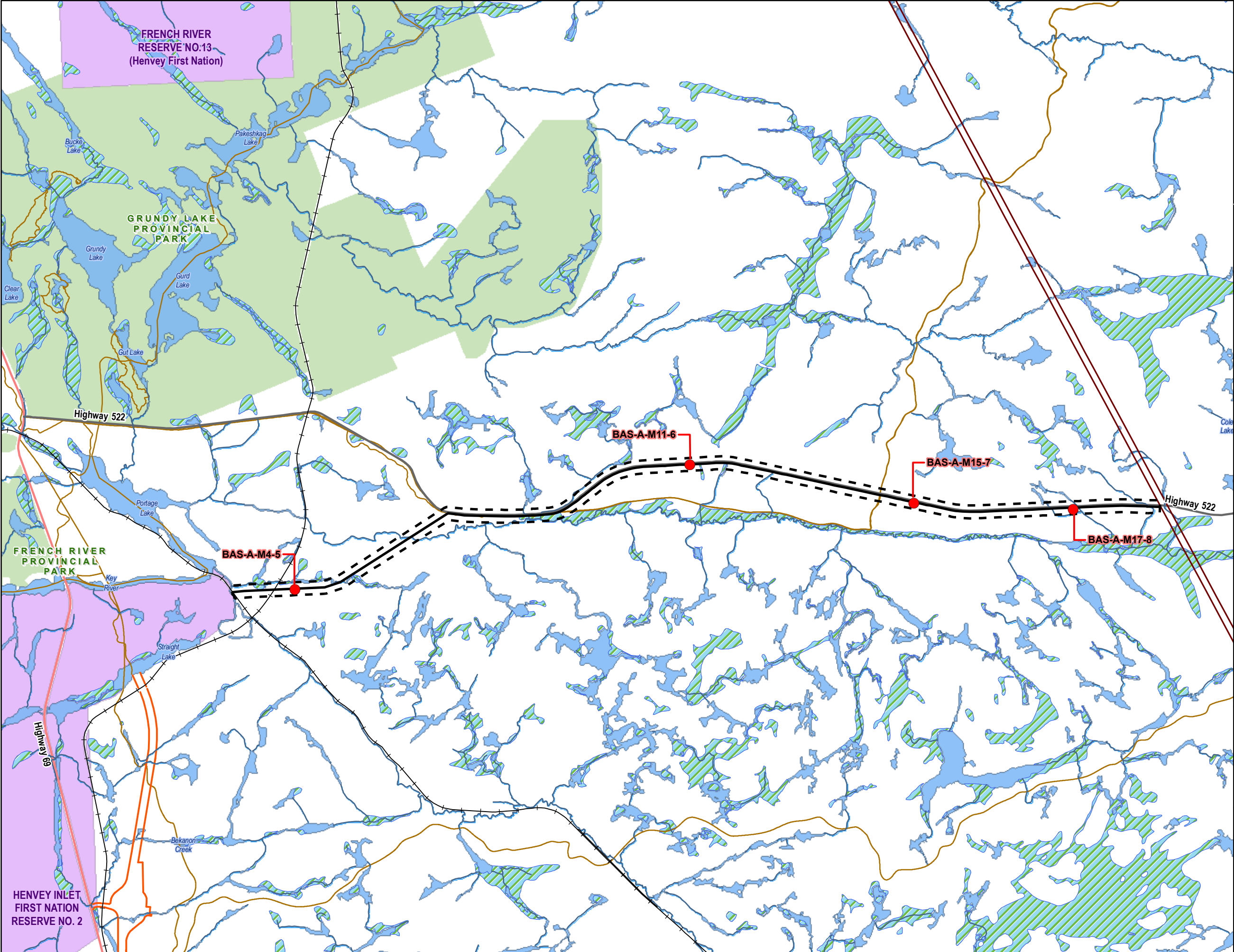
V#: 001

**Figure: 3-4**



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**Bat and Crepuscular Acoustic Monitoring Station Survey Locations for Round 2**

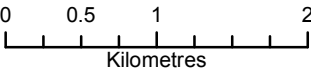
● Station Locations

**Transmission Line Infrastructure**

- Transmission Line Route A
- - - Transmission Line Route A Study Area

**Base Layers**

- Highway
- Major Road
- Trail
- Railway
- HONI Corridor
- Proposed Hwy 69 Relocation
- Aboriginal Land
- Wetland
- Waterbody
- Provincial Park



**Henvey Inlet Wind Energy Centre**

**Bat and Crepuscular Acoustic Monitor Stations - Round 2  
Transmission Line Route A**

August 2015

1:50,000

Datum: NAD 83, Zone 17  
Source: Stantec, OBM, LIO

P#: 60341251

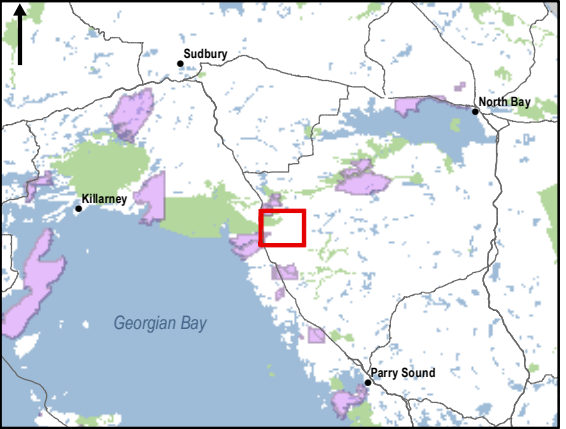
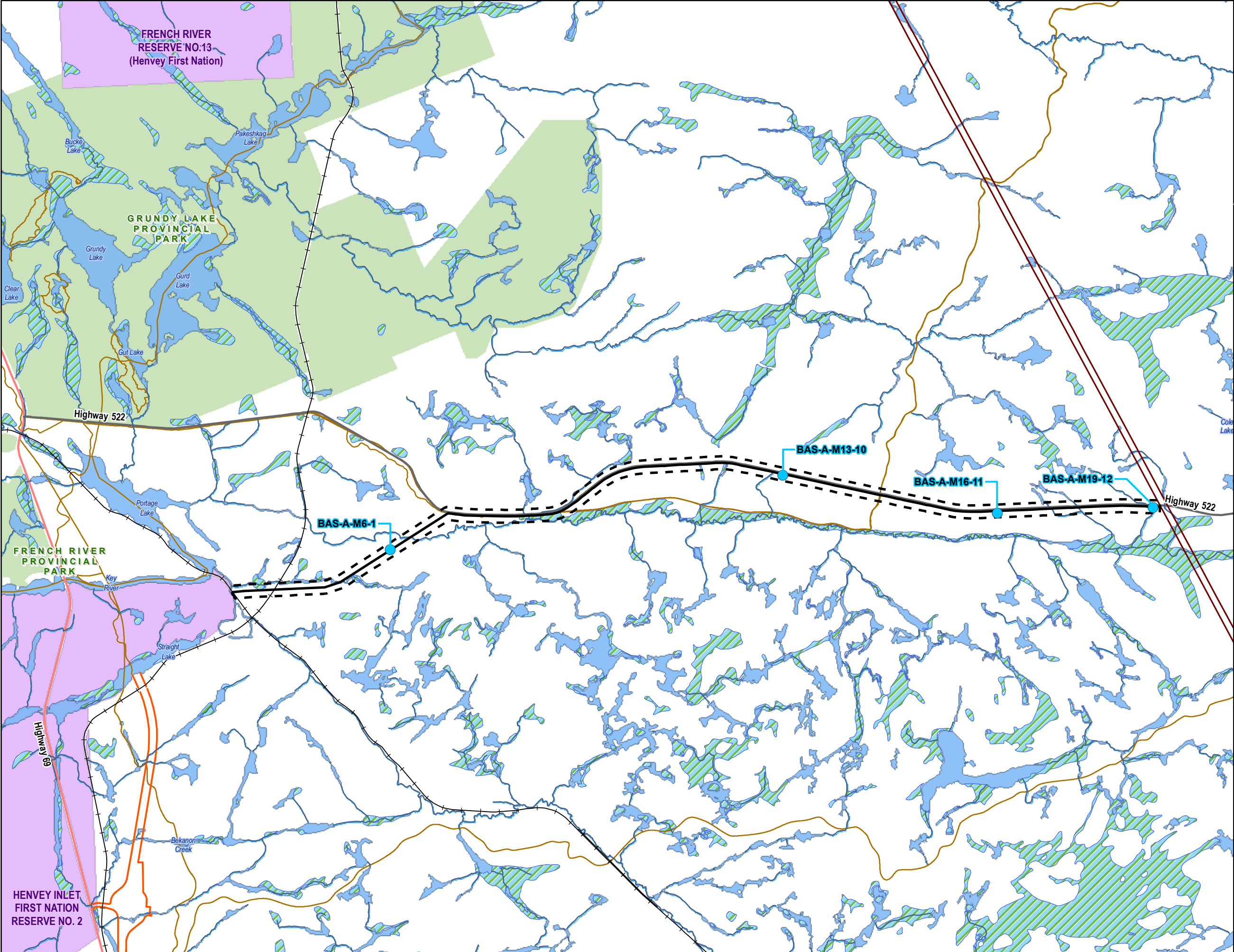
V#: 001

**Figure: 3-5**



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**Bat and Crepuscular Acoustic Monitoring Station Survey Locations for Round 3**

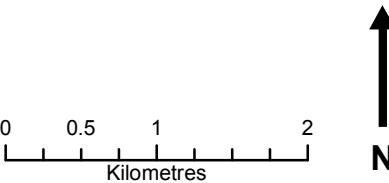
● Station Locations

**Transmission Line Infrastructure**

— Transmission Line Route A  
- - - Transmission Line Route A Study Area

**Base Layers**

— Highway  
— Major Road  
— Trail  
— Railway  
— HONI Corridor  
— Proposed Hwy 69 Relocation  
— Aboriginal Land  
— Wetland  
— Waterbody  
— Provincial Park



**Henvey Inlet Wind Energy Centre**

**Bat and Crepuscular Acoustic Monitor Stations - Round 3  
Transmission Line Route A**

August 2015	1:50,000	Datum: NAD 83, Zone 17 Source: Stantec, OBM, LIO
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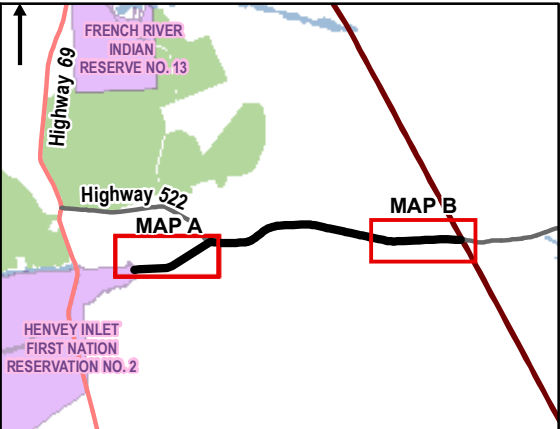
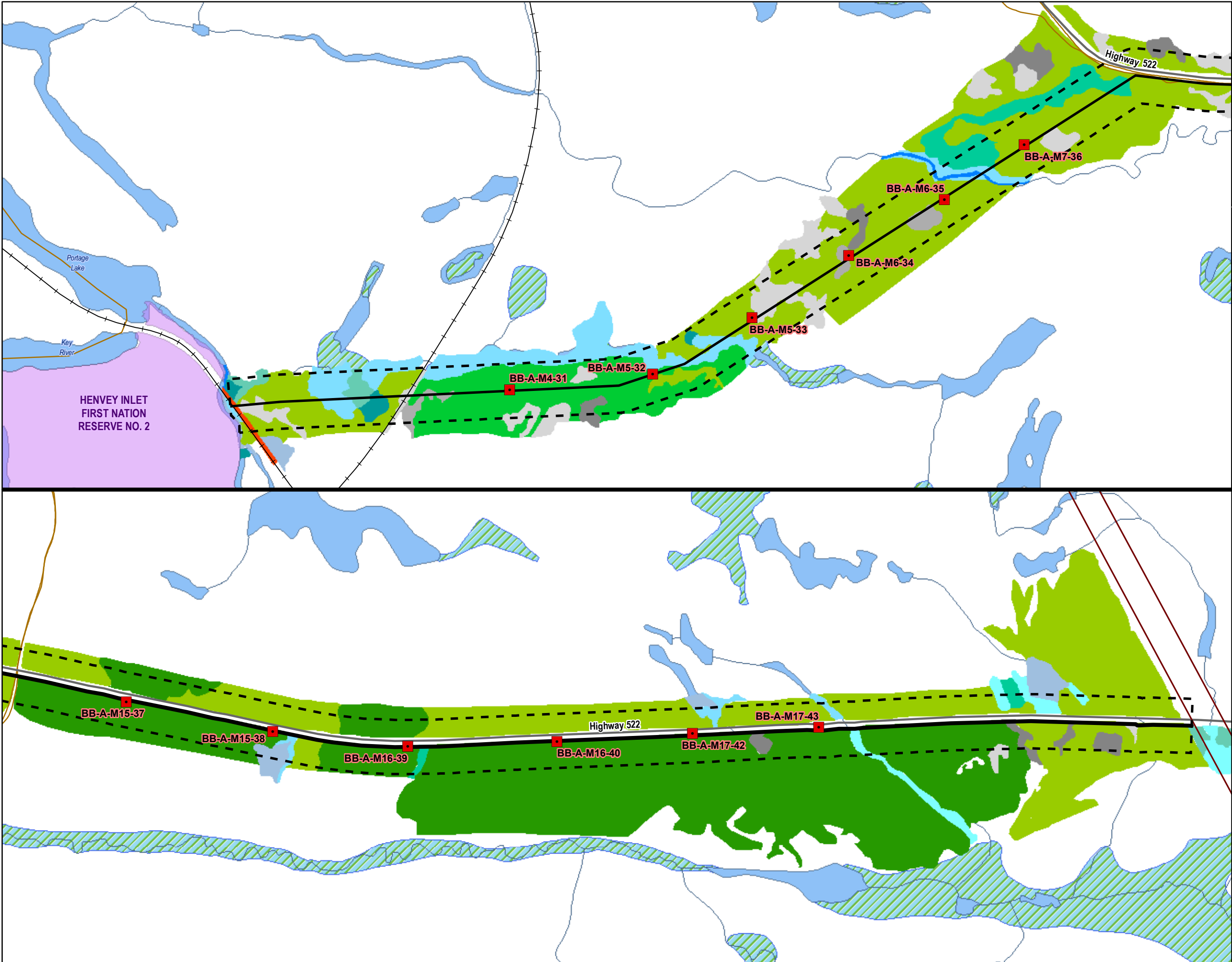
P#: 60341251 V#: 001

**Figure: 3-6**



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**Breeding Bird Surveys**

- Breeding Bird Survey Stations

**Environmental Land Classification**

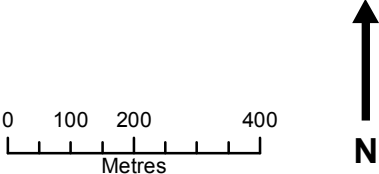
- |     |     |      |     |
|-----|-----|------|-----|
| CUP | MAM | RBS  | SWD |
| FOC | MAS | RBT  | SWM |
| FOD | OAO | Rail | SWT |
| FOM | RBO | SAS  |     |

**Transmission Line Infrastructure**

- Transmission Line Route A
- - - Transmission Line Route A Study Area

**Base Layers**

- Major Road
- Trail
- Railway
- HONI Corridor
- Aboriginal Land
- Wetland
- Waterbody



**Henvey Inlet Wind Energy Centre**

**Breeding Bird Survey  
Transmission Line Route A**

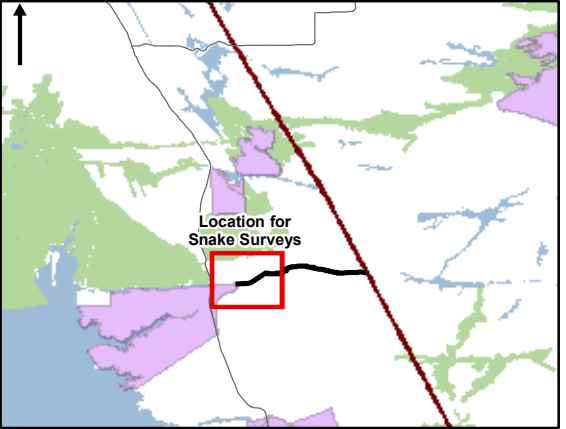
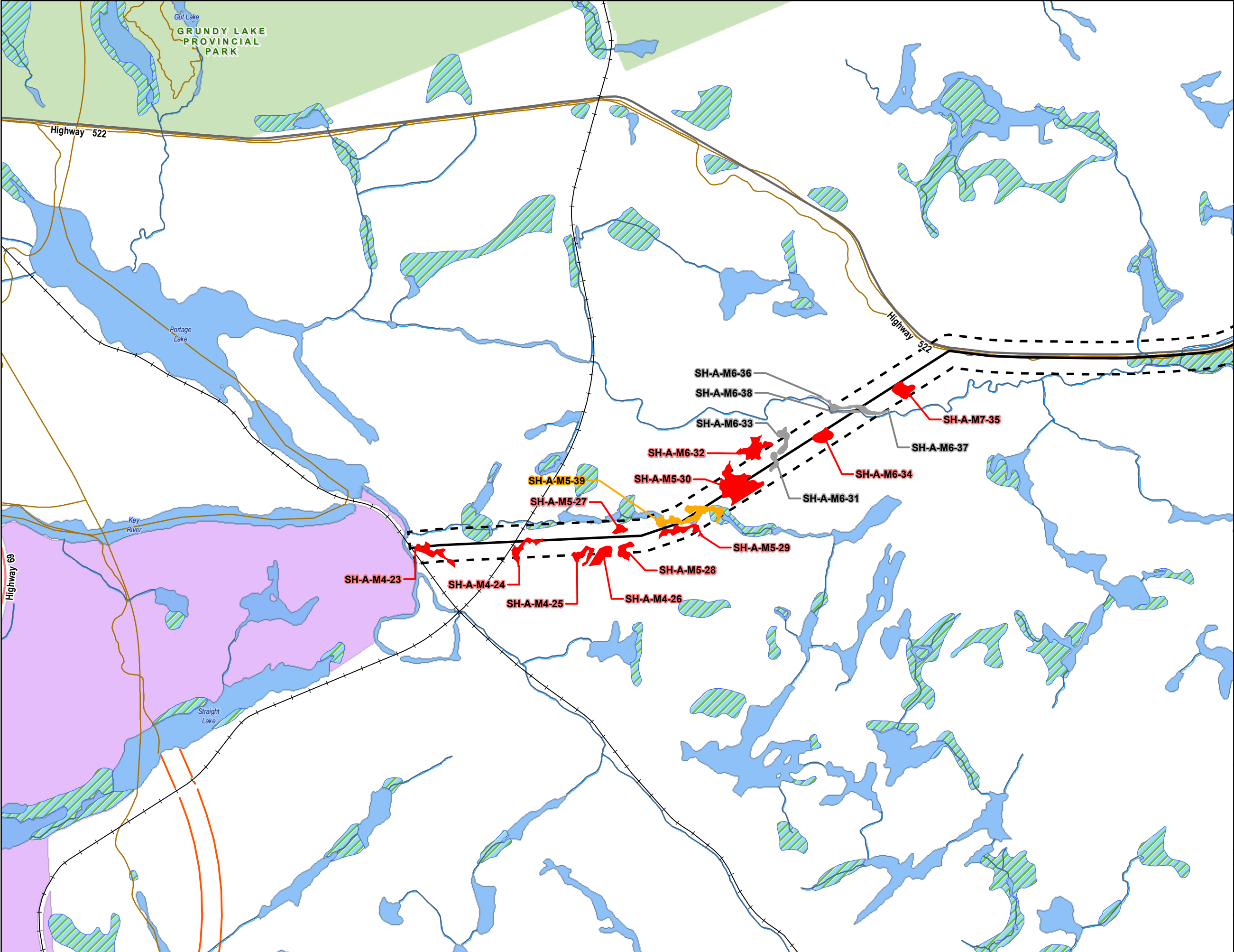
August 2015	1:12,000	Datum: NAD 83, Zone 17 Source: Stantec, OBM, LIO
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P#: 60341251 V#: 001

**Figure: 3-7**



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**Snake Survey - 2015**

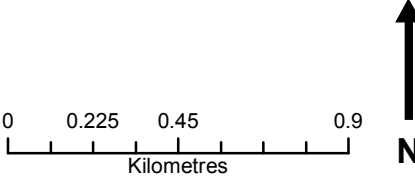
- Gestation
- Hibernaculum
- Not Suitable Habitat

**Transmission Line Infrastructure**

- Transmission Line Route A
- - - Transmission Line Route A Study Area

**Base Layers**

- Highway
- Major Road
- Trail
- + — Railway
- HONI Corridor
- Proposed Hwy 69 Relocation
- Aboriginal Land
- ▨ Wetland
- Waterbody
- Provincial Park



**Henvey Inlet Wind Energy Centre**

**Snake Survey Locations  
Transmission Line Route A**

August 2015	1:20,000	Datum: NAD 83, Zone 17 Source: Stantec, OBM, LIO
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P#: 60341251 V#: 001

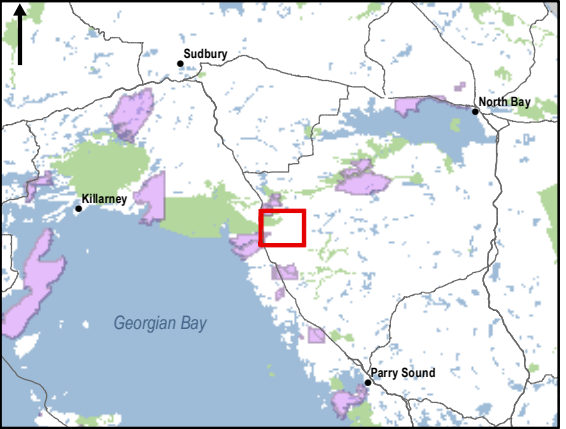
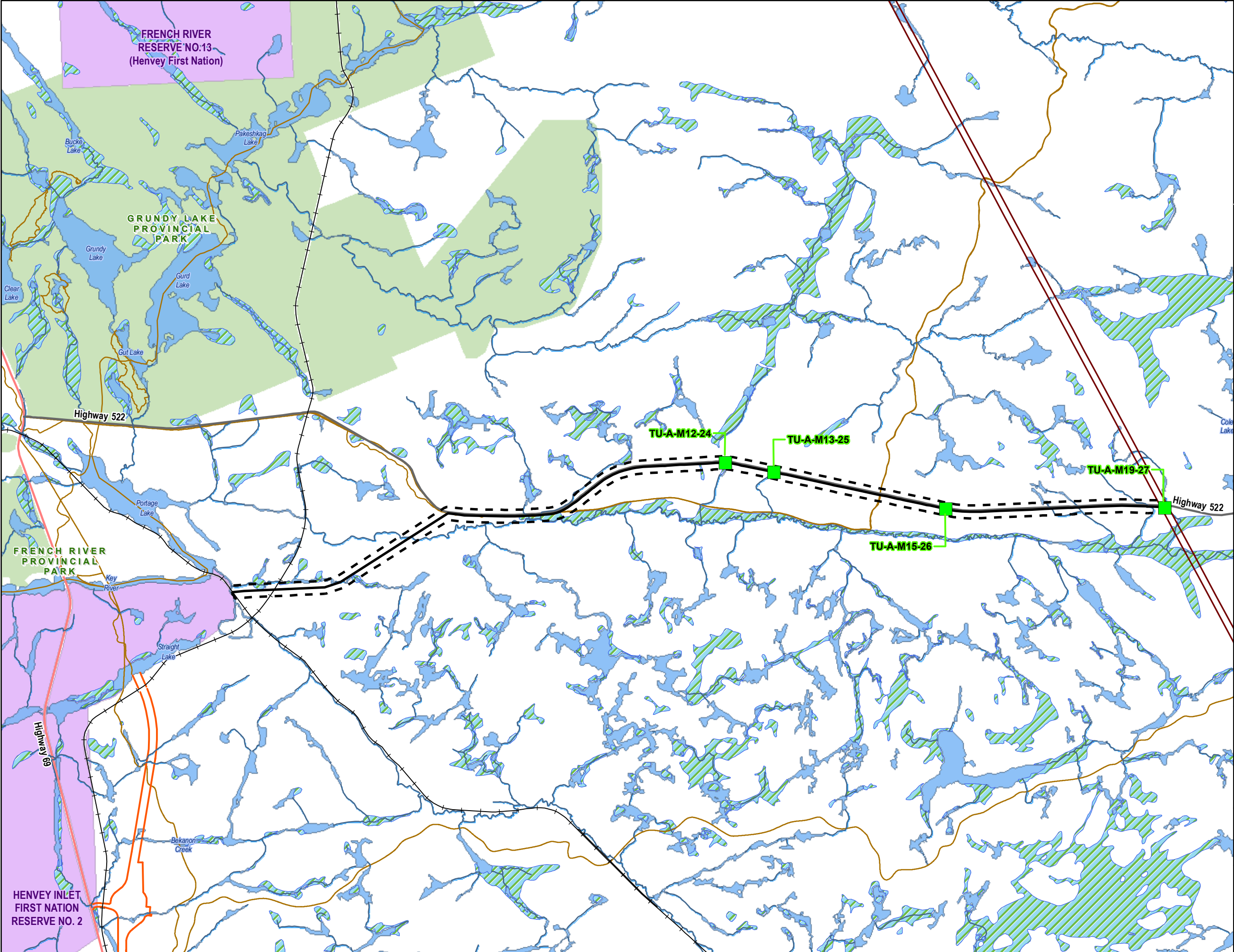
**Figure: 3-8**



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Map location: H:\60341251\_Henvey02\_Maps\Draft\0341251\_Fig\_3\_8\_LineA\_SnakeSurveyLocations.mxd  
Date Saved: 2015/09/04 11:37:47 AM





**Turtle Basking Survey Locations**

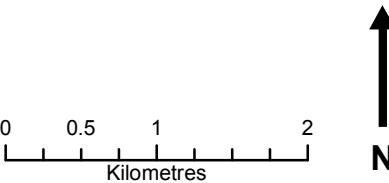
■ Turtle Survey Locations

**Transmission Line Infrastructure**

- Transmission Line Route A
- - - Transmission Line Route A Study Area

**Base Layers**

- Highway
- Major Road
- Trail
- Railway
- HONI Corridor
- Proposed Hwy 69 Relocation
- Aboriginal Land
- Wetland
- Waterbody
- Provincial Park



**Henvey Inlet Wind Energy Centre**

**Turtle Basking Survey Locations  
Transmission Line Route A**

August 2015	1:50,000	Datum: NAD 83, Zone 17 Source: Stantec, OBM, LIO
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P#: 60341251 V#: 001

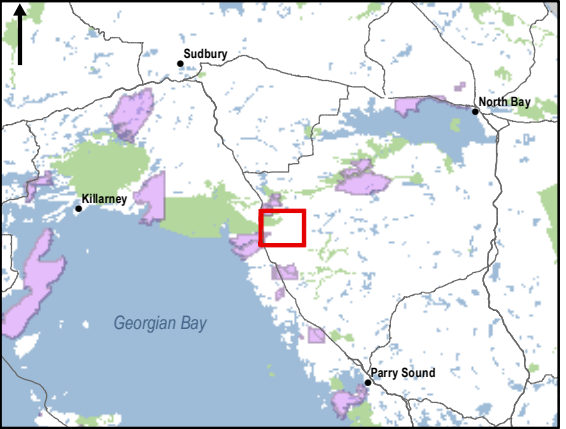
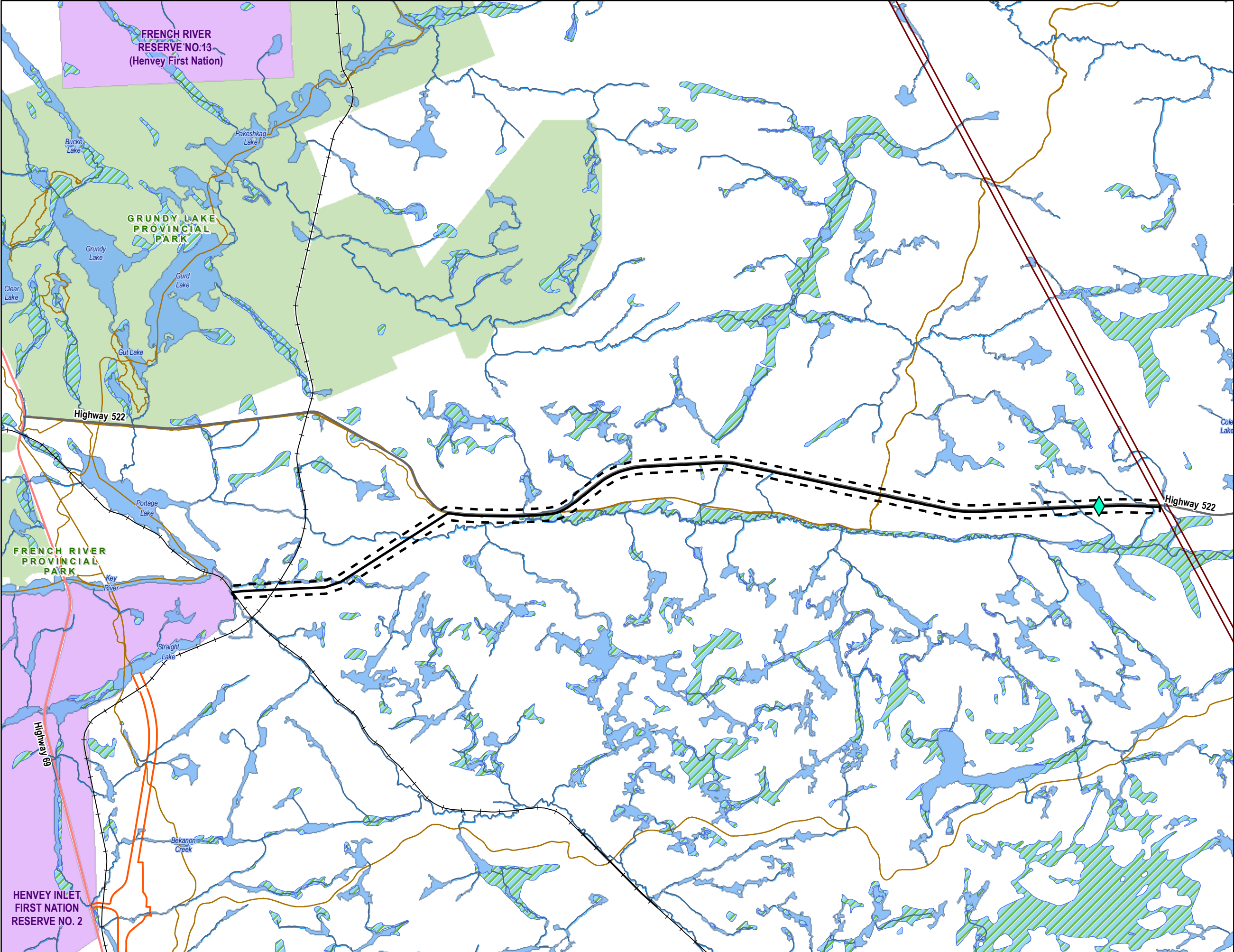
**Figure: 3-9**



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Map location: H:\60341251\_Henvey\02\_Maps\Draft\60341251\_Fig3\_9\_TLineA\_TurtleBaskingSurveyLocations.mxd  
Date Saved: 2015/09/04 11:30:25 AM





**Mammal Significant Species  
2015 Observations**

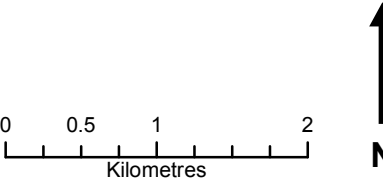
Eastern Wolf

**Transmission Line Infrastructure**

Transmission Line Route A  
 Transmission Line Route A Study Area

**Base Layers**

Highway  
 Major Road  
 Trail  
 Railway  
 HONI Corridor  
 Proposed Hwy 69 Relocation  
 Aboriginal Land  
 Wetland  
 Waterbody  
 Provincial Park



**Henvey Inlet Wind Energy Centre**

**Mammal Significant Species  
2015 Observations  
Transmission Line Route A**

August  
2015

1:50,000

Datum: NAD 83, Zone 17  
Source: Stantec, OBM, LIO

P#: 60341251

V#: 001

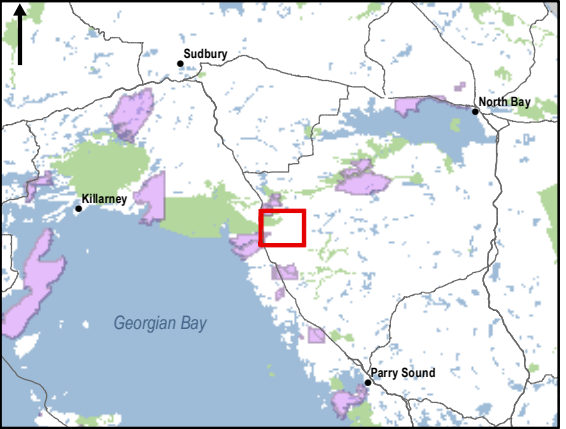
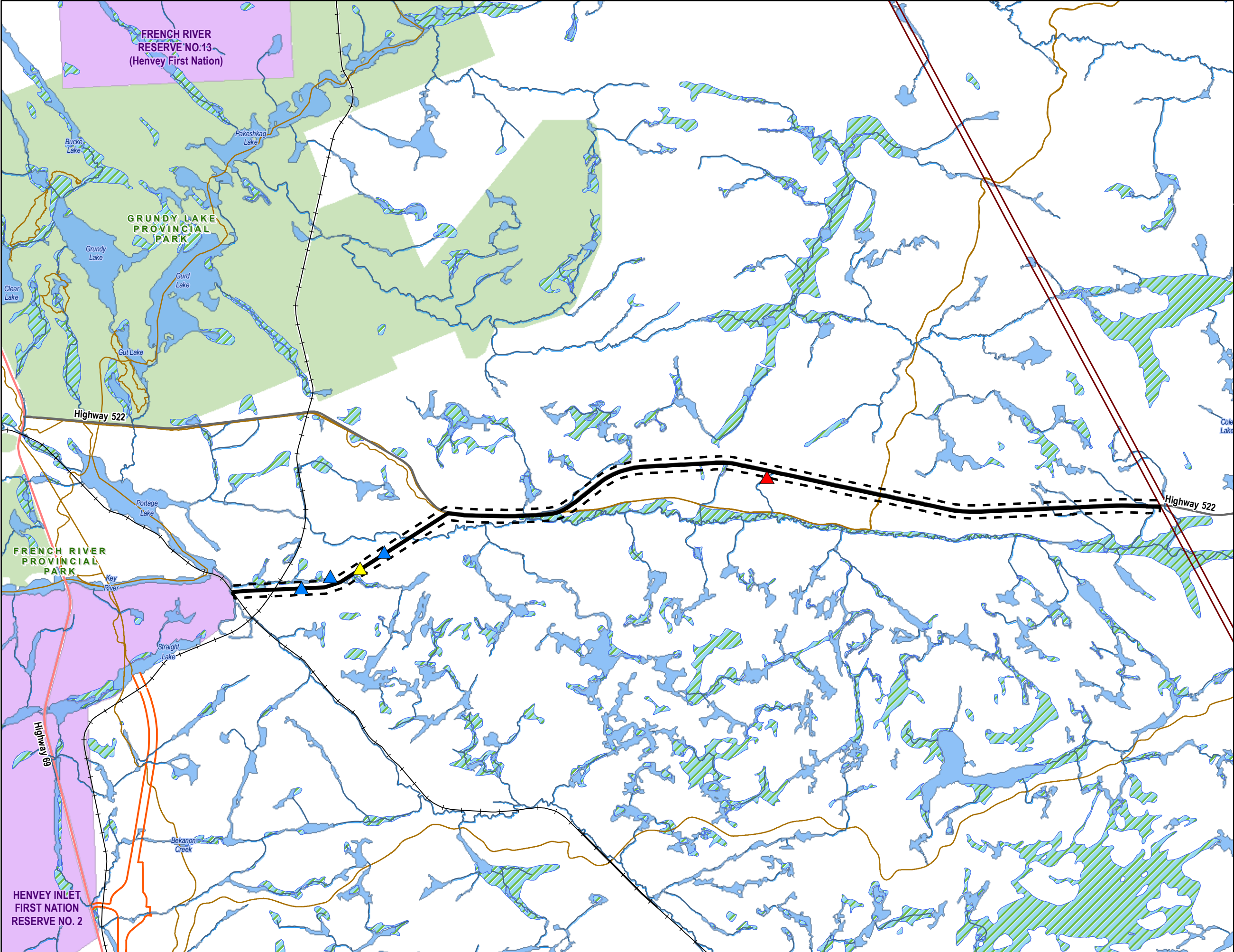
**Figure: 3-10**



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Map location: H:\60341251\_Henvey\02\_Maps\Draft\60341251\_Fig\_3\_10\_MammalSignificantSpecies2015Observations.mxd  
Date Saved: 2015/09/04 11:39:24 AM





**Avifauna Significant Species  
2015 Observations**

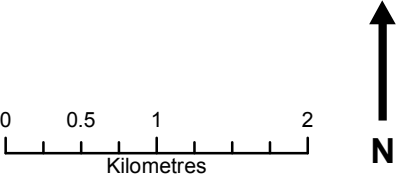
- Bald Eagle
- Canada Warbler
- Eastern Wood-Pewee

**Transmission Line Infrastructure**

- Transmission Line Route A
- Transmission Line Route A Study Area


**Base Layers**

- Highway
- Major Road
- Trail
- Railway
- HONI Corridor
- Proposed Hwy 69 Relocation
- Aboriginal Land
- Wetland
- Waterbody
- Provincial Park



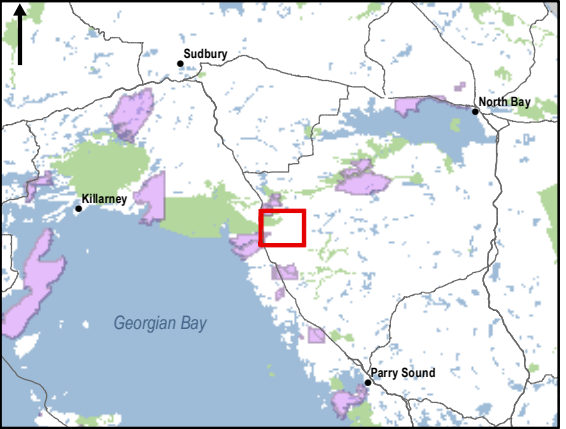
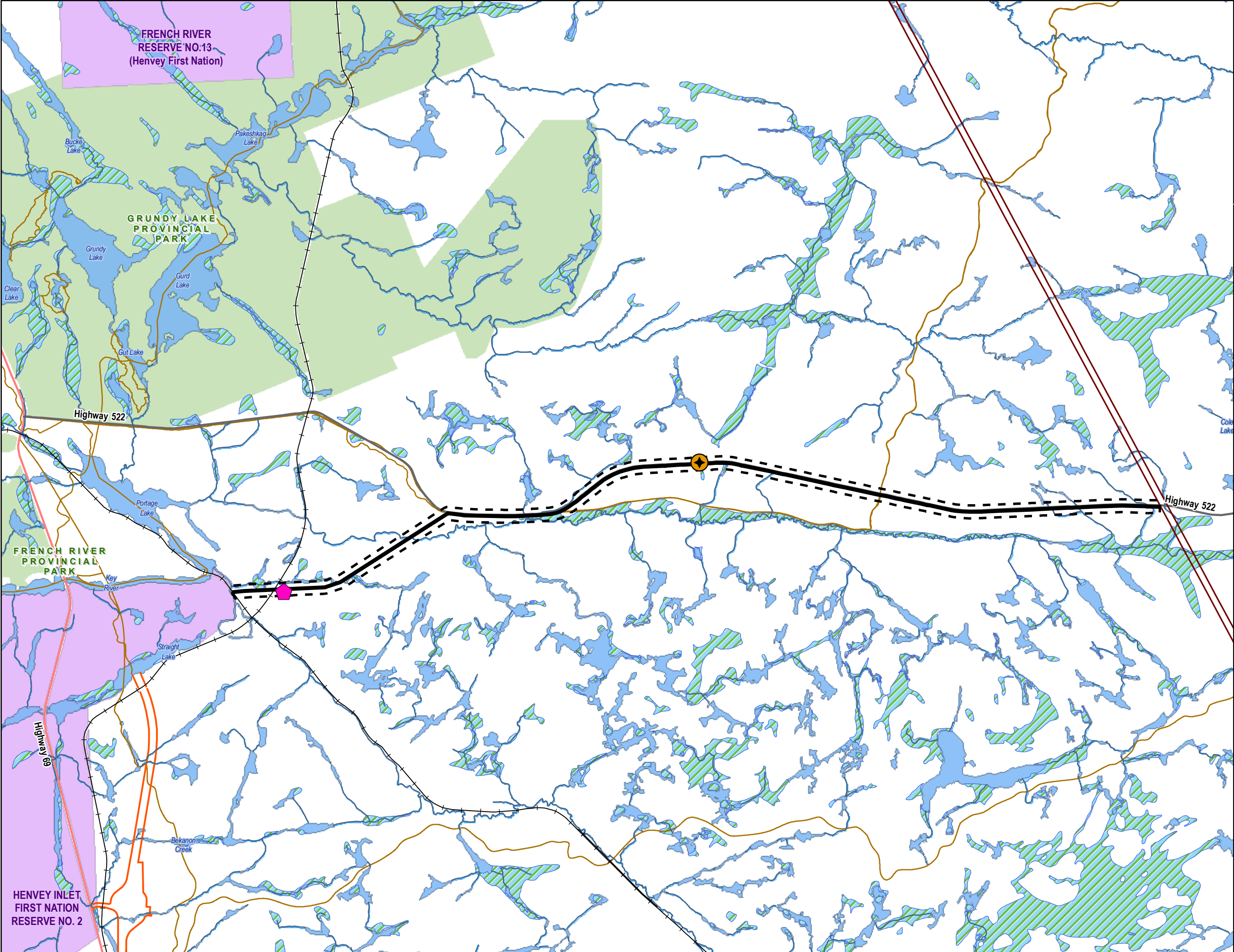
**Henvey Inlet Wind Energy Centre**

**Avifauna Significant Species  
2015 Observations  
Transmission Line Route A**

August 2015	1:50,000	Datum: NAD 83, Zone 17 Source: Stantec, OBM, LIO
P#: 60341251	V#: 001	
<b>Figure: 3-11</b>		
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Map Location: H:\60341251\_Henvey\02\_Maps\Draft\0341251\_Fig3\_11\_LineA\_AvifaunaSignificantSpecies2015Observations.mxd  
Date Saved: 2015/09/04 11:40:42 AM





**Reptile Significant Species and Habitat 2015 Observations**

- Blanding's Turtle
- Eastern Hog-nosed Snake

**Transmission Line Infrastructure**

- Transmission Line Route A
- Transmission Line Route A Study Area

**Base Layers**

- Highway
- Major Road
- Trail
- Railway
- HONI Corridor
- Proposed Hwy 69 Relocation
- Aboriginal Land
- Wetland
- Waterbody
- Provincial Park

**Henvey Inlet Wind Energy Centre**

**Reptile Significant Species  
2015 Observation  
Transmission Line Route A**

August 2015	1:50,000	Datum: NAD 83, Zone 17 Source: Stantec, OBM, LIO
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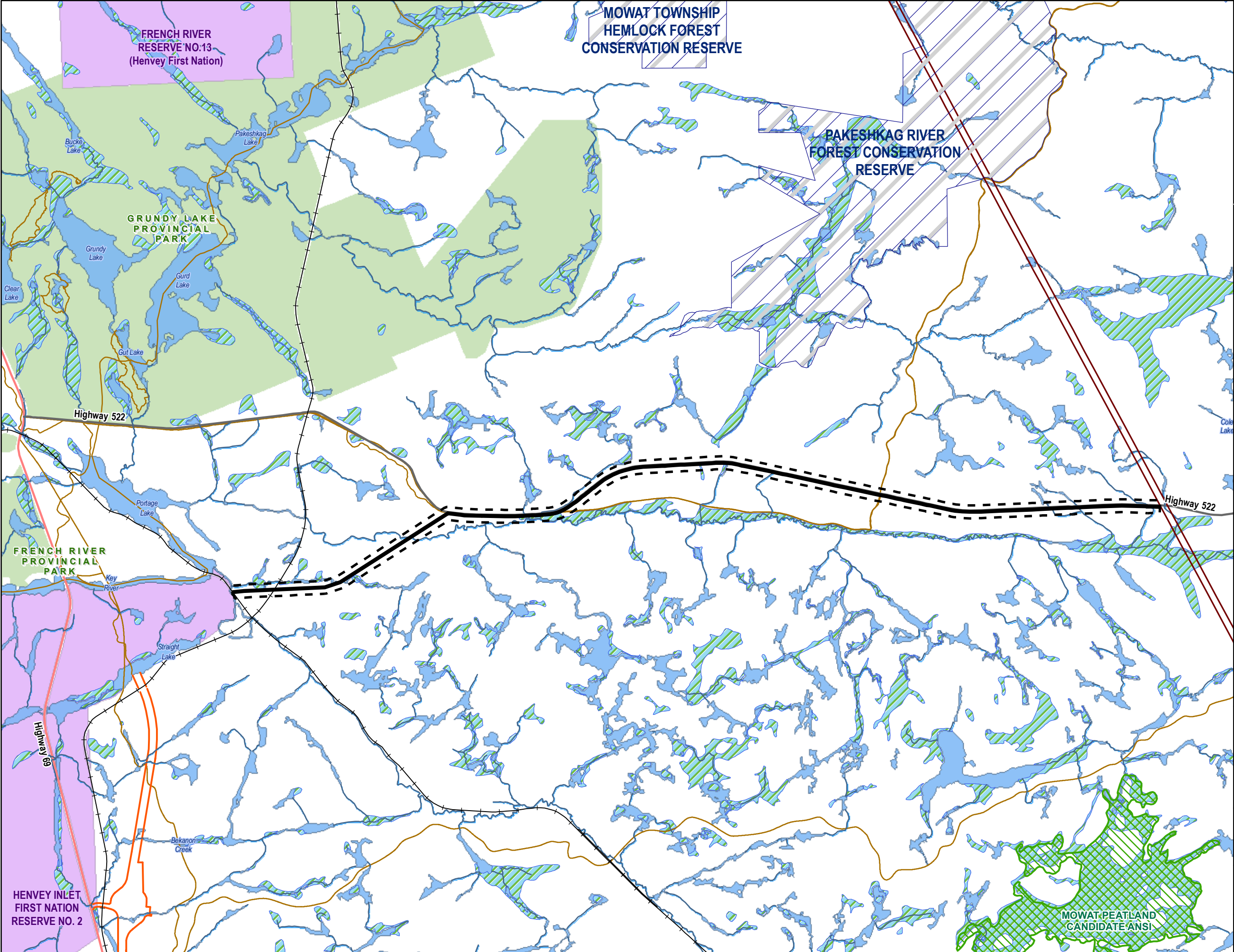
P#: 60341251	V#: 001
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**Figure: 3-12**

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Map Location: H:\60341251\_Henvey\02\_Maps\Draft\60341251\_Fig\_3\_12\_LineA\_ReptileSignificantSpecies2015Observations.mxd  
Date Saved: 2015/09/04 11:41:22 AM





**Environmentally Significant Areas**

Conservation Reserves

**Areas of Natural or Scientific Importance**

Regional Candidate - Life Science

**Transmission Line Infrastructure**

Transmission Line Route A

Transmission Line Route A Study Area

**Base Layers**

Highway

Major Road

Trail

Railway

HONI Corridor

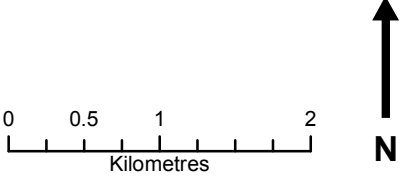
Proposed Hwy 69 Relocation

Aboriginal Land

Wetland

Waterbody

Provincial Park



**Henvey Inlet Wind Energy Centre**

**Environmentally Significant Area  
Transmission Line Route A**

August  
2015

1:50,000

Datum: NAD 83, Zone 17  
Source: Stantec, OBM, LIO

P#: 60341251

V#: 001

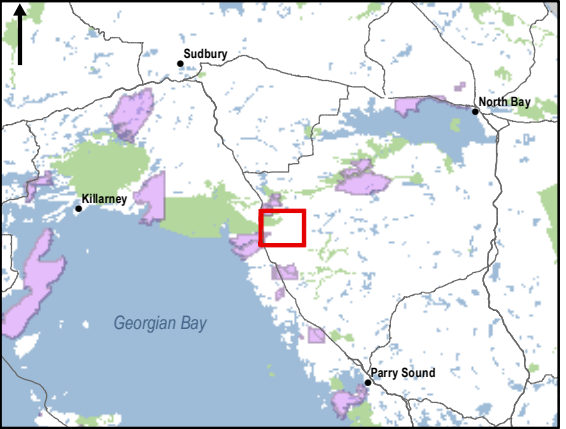
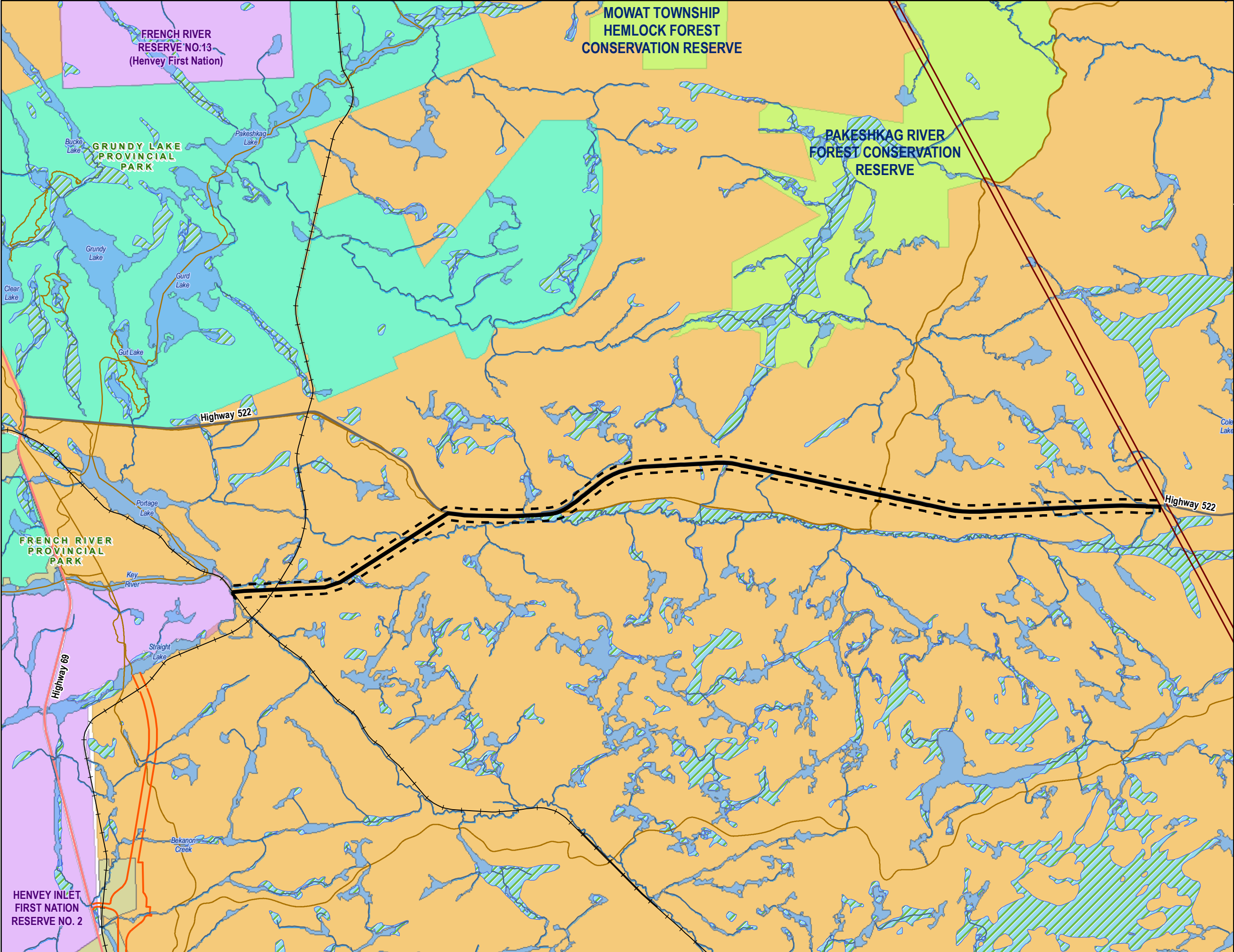
**Figure: 3-13**



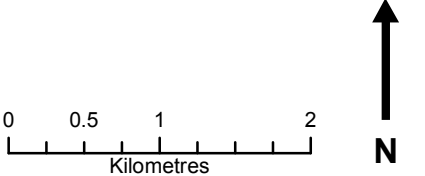
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Map Location: H:\60341251\_Henvey\02\_Maps\Draft\60341251\_Fig\_13\_LineA\_EnvironmentallySignificantAreas.mxd  
Date Saved: 2015/09/04 11:42:09 AM





- Crown Lands**
- Conservation Reserve
  - Enhanced Management Area
  - General Use Area
  - Provincial Park
- Transmission Line Infrastructure**
- Transmission Line Route A
  - Transmission Line Route A Study Area
- Base Layers**
- Highway
  - Major Road
  - Trail
  - Railway
  - HONI Corridor
  - Proposed Hwy 69 Relocation
  - Wetland
  - Waterbody



Henvey Inlet Wind Energy Centre

Crown Land  
Transmission Line Route A

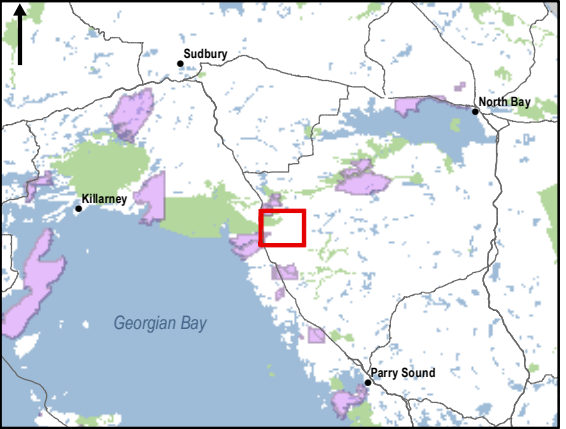
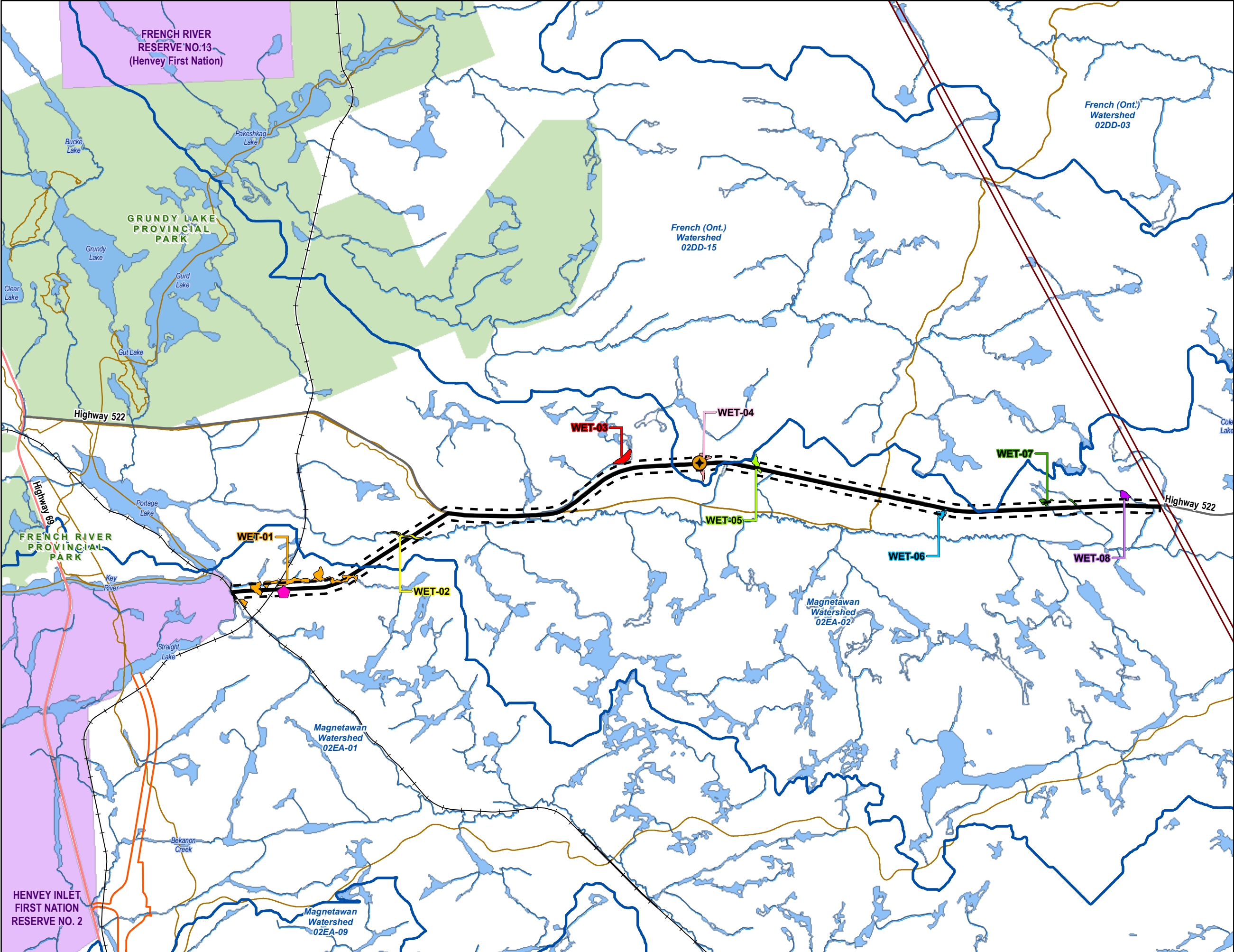
August 2015	1:50,000	Datum: NAD 83, Zone 17 Source: Stantec, OBM, LIO
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P#: 60341251	V#: 001
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Figure: 3-14

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**Watersheds**  
Quaternary Watershed Boundary

**Field Identified Wetland Complexes**  
WET-01 WET-04 WET-07  
WET-02 WET-05 WET-08  
WET-03 WET-06

**Species at Risk Identified in Field**  
Blanding's Turtle  
Eastern Hog-nosed Snake

**Transmission Line Infrastructure**  
Transmission Line A  
Transmission Line Route A Study Area

**Base Layers**  
Highway Major Road Trail Railway  
HONI Corridor Proposed Hwy 69 Relocation  
Aboriginal Land Waterbody Provincial Park

0 0.5 1 2  
Kilometres

N

Henvey Inlet Wind Energy Centre

Wetlands  
Transmission Line Route A

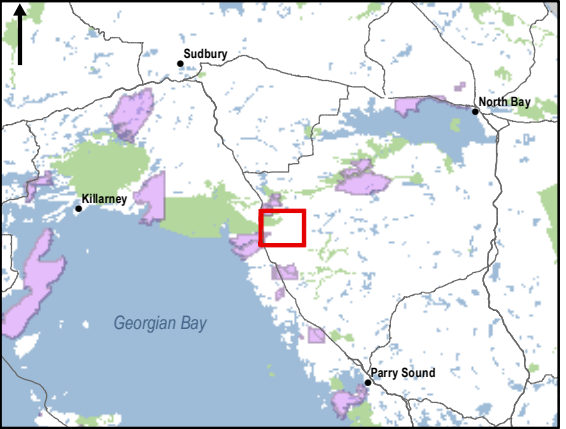
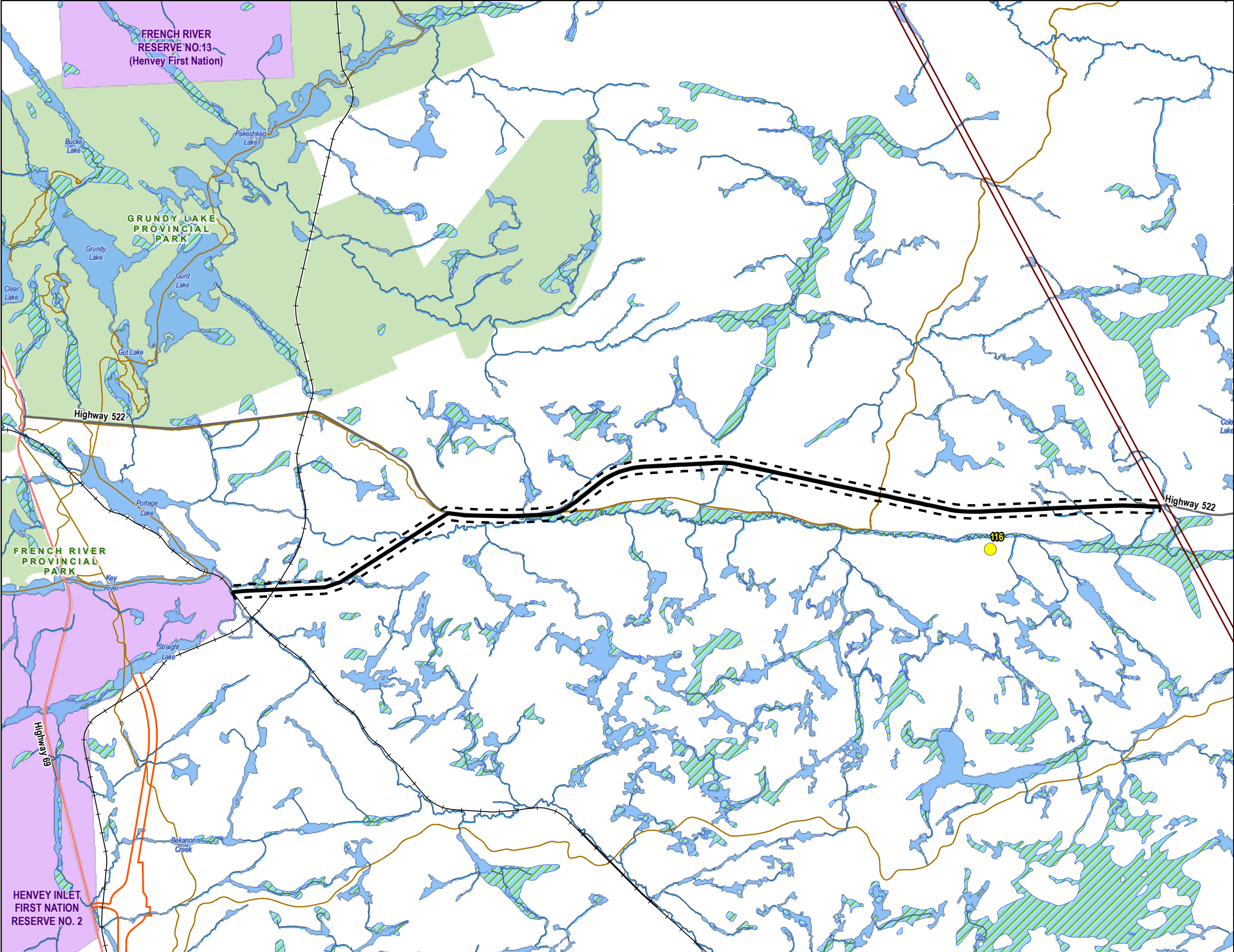
August 2015	1:50,000	Datum: NAD 83, Zone 17 Source: Stantec, OBM, LIO
P#: 60341251	V#: 001	

Figure: 3-15

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Map Location: H:\60341251\_Henvey\02\_Maps\Draft\0341251\_Fig3\_15\_LineA\_Wetlands.mxd  
Date Saved: 2015/09/04 11:49:36 AM





**Waterfowl Migration/Stopover/Staging  
Observation Locations Spring 2015**  
**April 2015 - Species Observed  
at Location**

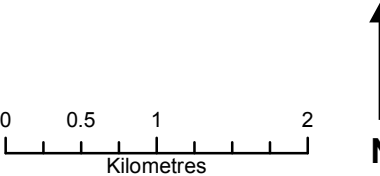
- Yellow dot: Yes
- Purple dot: No

**Transmission Line Infrastructure**

- Thick solid black line: Transmission Line Route A
- Dashed black line: Transmission Line Route A Study Area

**Base Layers**

- Red line: Highway
- Grey line: Major Road
- Orange line: Trail
- Black line with cross-ticks: Railway
- Red line: HONI Corridor
- Orange line: Proposed Hwy 69 Relocation
- Purple area: Aboriginal Land
- Green hatched area: Wetland
- Blue area: Waterbody
- Light green area: Provincial Park



Henvey Inlet Wind Energy Centre

Spring Waterfowl Migration/Stopover/Staging  
Transmission Line Route A

August 2015	1:50,000	Datum: NAD 83, Zone 17 Source: Stantec, OBM, LIO
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P#: 60341251 V#: 001

Figure: 3-16



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# Appendix B

## Plant List

Species	Common Name	Coefficient of Conservatism	Wetness Index	Weediness Index	Provincial Status	Global Status	OMNR Status	SARA Status	Plant Presence
<b><u>PTERIDOPHYTES</u></b>	<b><u>FERNS &amp; ALLIES</u></b>								
<b>Dennstaedtiaceae</b>	<b>Bracken Fern Family</b>								
<i>Pteridium aquilinum</i> var. <i>latiusculum</i>	Eastern Bracken-fern	2	3	0	S5	G5T			X
<b>Dryopteridaceae</b>	<b>Wood Fern Family</b>								
<i>Athyrium filix-femina</i>	Lady Fern								X
<i>Athyrium filix-femina</i> var. <i>angustum</i>	Northern Lady Fern	4	0	0	S5	G5T5			X
<i>Dryopteris carthusiana</i>	Spinulose Wood Fern	5	-2	0	S5	G5			X
<i>Dryopteris cristata</i>	Crested Wood Fern	7	-5	0	S5	G5			X
<i>Dryopteris marginalis</i>	Marginal Wood Fern	5	3	0	S5	G5			X
<i>Dryopteris</i> sp.	Wood Fern								X
<i>Gymnocarpium dryopteris</i>	Oak Fern	7	0	0	S5	G5			X
<i>Matteuccia struthiopteris</i>	Ostrich Fern	5	-3	0	S5	G5			X
<i>Onoclea sensibilis</i>	Sensitive Fern	4	-3	0	S5	G5			X
<b>Equisetaceae</b>	<b>Horsetail Family</b>								
<i>Equisetum arvense</i>	Field Horsetail	0	0	0	S5	G5			X
<i>Equisetum fluviatile</i>	Water Horsetail	7	-5	0	S5	G5			X
<i>Equisetum</i> sp.	Horsetail								X
<i>Equisetum sylvaticum</i>	Wood Horsetail	7	-3	0	S5	G5			X
<b>Lycopodiaceae</b>	<b>Clubmoss Family</b>								
<i>Huperzia lucidula</i>	Shining Fir-moss	7	-1	0	S5	G5			X
<i>Lycopodium annotinum</i>	Bristly Club-moss	7	0	0	S5	G5			X
<i>Lycopodium clavatum</i>	Running Club-moss	6	0	0	S5	G5			X
<i>Lycopodium dendroideum</i>	Prickly Tree Club-moss	7	0	0	S5	G5			X
<b>Osmundaceae</b>	<b>Royal Fern Family</b>								
<i>Osmunda cinnamomea</i>	Cinnamon Fern	7	-3	0	S5	G5			X
<i>Osmunda claytoniana</i>	Interrupted Fern	7	-1	0	S5	G5			X
<b>Polypodiaceae</b>	<b>Polypody Family</b>								
<i>Polypodium virginianum</i>	Rock Polypody Fern	6	5	0	S5	G5			X
<b>Thelypteridaceae</b>	<b>Marsh Fern Family</b>								
<i>Phegopteris connectilis</i>	Northern Beech Fern	8	5	0	S5	G5			X
<i>Thelypteris palustris</i> var. <i>pubescens</i>	Marsh Fern	5	-4	0	S5	G5T?			X
<b><u>GYMNOSPERMS</u></b>	<b><u>CONIFERS</u></b>								
<b>Cupressaceae</b>	<b>Cedar Family</b>								
<i>Juniperus communis</i>	Common Juniper	4	3	0	S5	G5			X
<i>Thuja occidentalis</i>	Eastern White Cedar	4	-3	0	S5	G5			X
<b>Pinaceae</b>	<b>Pine Family</b>								
<i>Abies balsamea</i>	Balsam Fir	5	-3	0	S5	G5			X
<i>Larix laricina</i>	Tamarack	7	-3	0	S5	G5			X
<i>Picea glauca</i>	White Spruce	6	3	0	S5	G5			X
<i>Picea mariana</i>	Black Spruce	8	-3	0	S5	G5			X
<i>Pinus banksiana</i>	Jack Pine	9	3	0	S5	G5			X
<i>Pinus resinosa</i>	Red Pine	8	3	0	S5	G5			X
<i>Pinus strobus</i>	Eastern White Pine	4	3	0	S5	G5			X
<i>Tsuga canadensis</i>	Eastern Hemlock	7	3	0	S5	G5			X
<b><u>DICOTYLEDONS</u></b>	<b><u>DICOTS</u></b>								



Species	Common Name	Coefficient of Conservatism	Wetness Index	Weediness Index	Provincial Status	Global Status	OMNR Status	SARA Status	Plant Presence
<b>Aceraceae</b>	<b>Maple Family</b>								
<i>Acer rubrum</i>	Red Maple	4	0	0	S5	G5			X
<i>Acer saccharum</i>	Sugar Maple	4	3	0	S5	G5			X
<i>Acer spicatum</i>	Mountain Maple	6	3	0	S5	G5			X
<b>Anacardiaceae</b>	<b>Sumac or Cashew Family</b>								
<i>Rhus hirta</i>	Staghorn Sumac	1	5	0	S5	G5			X
<i>Toxicodendron radicans</i> ssp. <i>negundo</i>	Poison-ivy	5	-1	0	S5	G5T			X
<b>Apiaceae</b>	<b>Carrot or Parsley Family</b>								
<i>Sanicula canadensis</i> var. <i>canadensis</i>	Canada Snakeroot	7	2	0	S4	G5T5			X
<b>Apocynaceae</b>	<b>Dogbane Family</b>								
<i>Apocynum androsaemifolium</i> ssp. <i>androsaemifolium</i>	Spreading Dogbane	3	5	0	S5	G5T?			X
<b>Araliaceae</b>	<b>Ginseng Family</b>								
<i>Aralia hispida</i>	Bristly Sarsaparilla	8	5	0	S5	G5			X
<i>Aralia nudicaulis</i>	Wild Sarsaparilla	4	3	0	S5	G5			X
<i>Aralia racemosa</i> ssp. <i>racemosa</i>	Spikenard	7	5	0	S5	G5T?			X
<b>Asclepiadaceae</b>	<b>Milkweed Family</b>								
<i>Asclepias syriaca</i>	Common Milkweed	0	5	0	S5	G5			X
<b>Asteraceae</b>	<b>Composite or Aster Family</b>								
<i>Achillea millefolium</i> var. <i>millefolium</i>	Common Yarrow	0	3	-1	SE?	G5T?			X
<i>Antennaria neglecta</i>	Field Pussytoes	3	5	0	S5	G5			X
<i>Arctium minus</i>	Common Burdock	0	5	-2	SE5	GNR			X
<i>Aster</i> sp.	Aster								X
<i>Cirsium arvense</i>	Canada Thistle	0	3	-1	SNA	GNR			X
<i>Eupatorium maculatum</i>	Spotted Joe-pye-weed	3	-5	0	S5	G5T5			X
<i>Eurybia macrophylla</i>	Large-leaved Aster	5	5	0	S5	G5			X
<i>Hieracium aurantiacum</i>	Devil's Paintbrush	0	5	-2	SE5	G?			X
<i>Hieracium caespitosum</i>	Field Hawkweed	0	5	-2	SE5	GNR			X
<i>Leucanthemum vulgare</i>	Ox-eye Daisy	0	5	-1	SNA	GNR			X
<i>Petasites frigidus</i>	Palmate-leaf Sweet-coltsfoot	8	-3	0	S5	G5			X
<i>Solidago canadensis</i>	Canada Goldenrod	1	3	0	S5	G5			X
<i>Solidago</i> sp.	Goldenrod								X
<i>Symphyotrichum</i> sp.									X
<i>Taraxacum officinale</i>	Common Dandelion	0	3	-2	SNA	G5			X
<i>Taraxacum</i> sp.	Dandelion								X
<b>Aquifoliaceae</b>	<b>Holly Family</b>								
<i>Ilex verticillata</i>	Winterberry	5	-4	0	S5	G5			X
<b>Balsaminaceae</b>	<b>Touch-me-not Family</b>								
<i>Impatiens capensis</i>	Spotted Touch-me-not	4	-3	0	S5	G5			X
<b>Berberidaceae</b>	<b>Barberry Family</b>								
<i>Caulophyllum thalictroides</i>	Blue Cohosh	6	5	0	S5	G4G5			X
<b>Betulaceae</b>	<b>Birch Family</b>								
<i>Alnus incana</i> spp. <i>rugosa</i>	Speckled Alder	6	-5	0	S5	G5T5			X
<i>Betula alleghaniensis</i>	Yellow Birch	6	0	0	S5	G5			X
<i>Betula papyrifera</i>	White Birch	0	2	0	S5	G5			X
<i>Corylus cornuta</i>	Beaked Hazel	5	5	0	S5	G5			X

Species	Common Name	Coefficient of Conservatism	Wetness Index	Weediness Index	Provincial Status	Global Status	OMNR Status	SARA Status	Plant Presence
<b>Caprifoliaceae</b>	<b>Honeysuckle Family</b>								
<i>Diervilla lonicera</i>	Bush Honeysuckle	5	5	0	S5	G5			X
<i>Linnaea borealis</i>	Twinflower	7	0	0	S5	G5			X
<i>Lonicera canadensis</i>	American Fly Honeysuckle	6	3	0	S5	G5			X
<i>Lonicera sp.</i>	Honeysuckle								X
<i>Sambucus canadensis</i>	American Elderberry	5	-2	0	S5	G5			X
<i>Viburnum acerifolium</i>	Maple-leaved Viburnum	6	5	0	S5	G5			X
<i>Viburnum edule</i>	Squashberry	0	0	0	S5	G5			X
<i>Viburnum lentago</i>	Nannyberry	4	-1	0	S5	G5			X
<i>Viburnum nudum var. cassinoides</i>	Northern Wild Raisin	7	-3		S5	G5			X
<i>Viburnum sp.</i>									X
<b>Celastraceae</b>	<b>Staff-tree Family</b>								
<i>Euonymus obovatus</i>	Running Strawberry-bush	6	5	0	S5	G5			X
<b>Cornaceae</b>	<b>Dogwood Family</b>								
<i>Cornus alternifolia</i>	Alternate-leaved Dogwood	6	5	0	S5	G5			X
<i>Cornus canadensis</i>	Bunchberry	7	0	0	S5	G5			X
<i>Cornus sericea</i>	Red-osier Dogwood	2	-3	0	S5	G5			X
<b>Ericaceae</b>	<b>Heath Family</b>								
<i>Arctostaphylos uva-ursi</i>	Common Bearberry	8	5	0	S5	G5			X
<i>Chamaedaphne calyculata</i>	Leatherleaf	9	-5	0	S5	G5			X
<i>Gaultheria procumbens</i>	Wintergreen	6	3	0	S5	G5			X
<i>Gaylussacia baccata</i>	Black Huckleberry	8	3	0	S4	G5			X
<i>Kalmia angustifolia</i>	Sheep Laurel	9	0	0	S5	G5			X
<i>Kalmia polifolia</i>	Bog Laurel	10	-5	0	S5	G5			X
<i>Vaccinium angustifolium</i>	Low Sweet Blueberry	6	3	0	S5	G5			X
<i>Vaccinium myrtilloides</i>	Velvet-leaf Blueberry	7	-2	0	S5	G5			X
<b>Fabaceae</b>	<b>Pea Family</b>								
<i>Trifolium arvense</i>	Rabbit-foot Clover	0	5	-1	SNA	GNR			X
<i>Trifolium aureum</i>	Yellow Clover	0	5	-1	SNA	GNR			X
<i>Trifolium hybridum ssp. elegans</i>	Alsike Clover	0	1	-1	SE5				X
<i>Vicia cracca</i>	Tufted Vetch	0	5	-1	SNA	GNR			X
<b>Fagaceae</b>	<b>Beech Family</b>								
<i>Quercus macrocarpa</i>	Bur Oak	5	1	0	S5	G5			X
<i>Quercus rubra</i>	Red Oak	6	3	0	S5	G5			X
<b>Fumariaceae</b>	<b>Fumitory Family</b>								
<i>Corydalis sempervirens</i>	Pale Corydalis	7	5	0	S5	G5			X
<i>Dicentra cucullaria</i>	Dutchman's-breeches	6	5	0	S5	G5			X
<b>Grossulariaceae</b>	<b>Currant Family</b>								
<i>Ribes cynosbati</i>	Prickly Gooseberry	4	5	0	S5	G5			X
<i>Ribes glandulosum</i>	Skunk Currant	6	-3	0	S5	G5			X
<i>Ribes hirtellum</i>	Smooth Gooseberry	6	-3	0	S5	G5			X
<i>Ribes lacustre</i>	Swamp Black Currant	7	-3	0	S5	G5			X
<i>Ribes rubrum</i>	Red Currant	0	5	-2	SNA	G4G5			X
<i>Ribes sp.</i>									X
<i>Ribes triste</i>	Wild Red Currant	6	-5	0	S5	G5			X



Species	Common Name	Coefficient of Conservatism	Wetness Index	Weediness Index	Provincial Status	Global Status	OMNR Status	SARA Status	Plant Presence
<b>Guttiferae</b>	<b>St. John's-wort Family</b>								
<i>Hypericum perforatum</i>	Common St. John's-wort	0	5	-3	SNA	GNR			X
<b>Lamiaceae</b>	<b>Mint Family</b>								
<i>Lycopus uniflorus</i>	Northern Water-horehound	5	-5	0	S5	G5			X
<b>Lentibulariaceae</b>	<b>Bladderwort Family</b>								
<i>Utricularia intermedia</i>	Flat-leaved Bladderwort	8	-5	0	S5	G5			X
<b>Lobelia</b>	<b>Bellflower Family</b>								
<i>Campanula rotundifolia</i>	Blue Bells of Scotland	7	1	0	S5	G5			X
<b>Monotropaceae</b>	<b>Indian Pipe Family</b>								
<i>Monotropa hypopithys</i>	Pinesap	6	5	0	S4	G5			X
<i>Monotropa uniflora</i>	Indian-pipe	6	3	0	S5	G5			X
<b>Nymphaeaceae</b>	<b>Water-lily Family</b>								
<i>Nuphar variegata</i>	Bulhead Pond-lily	4	-5	0	S5	G5T5			X
<b>Oleaceae</b>	<b>Olive Family</b>								
<i>Fraxinus americana</i>	White Ash	4	3	0	S4	G5			X
<i>Fraxinus nigra</i>	Black Ash	7	-4	0	S4	G5			X
<b>Onagraceae</b>	<b>Evening-primrose Family</b>								
<i>Circaea alpina</i>	Smaller Enchanter's Nightshade	6	-3	0	S5	G5			X
<b>Oxalidaceae</b>	<b>Wood Sorrel Family</b>								
<i>Oxalis acetosella</i> ssp. <i>montana</i>	True Wood-sorrel	8	3	0	S5	G5			X
<b>Plantaginaceae</b>	<b>Plantain Family</b>								
<i>Plantago major</i>	Common Plantain	0	-1	-1	S5	G5			X
<b>Polygonaceae</b>	<b>Smartweed Family</b>								
<i>Polygonum cilinode</i>	Fringed Black Bindweed	2	5	0	S5	G5			X
<i>Polygonum convolvulus</i>	Black Bindweed	0	1	-1	SE5	G?			X
<i>Polygonum hydropiper</i>	Water-pepper	4	-5	0	SE5	G5			X
<i>Polygonum sagittatum</i>	Arrow-leaved Tearthumb	5	-5	0	S4	G5			X
<i>Rumex acetosella</i> ssp. <i>acetosella</i>	Sheep Sorrel	0	0	-2	SEU	G5T			X
<b>Portulacaceae</b>	<b>Purslane Family</b>								
<i>Claytonia caroliniana</i>	Carolina Spring Beauty	7	3	0	S5	G5			X
<i>Claytonia</i> sp.									X
<b>Primulaceae</b>	<b>Primrose Family</b>								
<i>Trientalis borealis</i> ssp. <i>borealis</i>	Star-flower	6	-1	0	S5	G5			X
<b>Pyrolaceae</b>	<b>Wintergreen Family</b>								
<i>Pyrola chlorantha</i>	Green-flowered Pyrola	6	3	0	S4S5	G5			X
<b>Ranunculaceae</b>	<b>Buttercup Family</b>								
<i>Actaea rubra</i>	Red Baneberry	5	5	0	S5	G5			X
<i>Actaea</i> sp.	Baneberry								X
<i>Anemone americana</i>	Round-lobed Hepatica	6	5	0	S5	G5			X
<i>Anemone canadensis</i>	Canada Anemone	3	-3	0	S5	G5			X
<i>Aquilegia canadensis</i>	Wild Columbine	5	1	0	S5	G5			X
<i>Caltha palustris</i>	Marsh-marigold	5	-5	0	S5	G5			X
<i>Clematis virginiana</i>	Virgin's-bower	3	0	0	S5	G5			X
<i>Coptis trifolia</i>	Goldthread	7	-3	0	S5	G5			X

Species	Common Name	Coefficient of Conservatism	Wetness Index	Weediness Index	Provincial Status	Global Status	OMNR Status	SARA Status	Plant Presence
<i>Ranunculus abortivus</i>	Kidney-leaf Buttercup	2	-2	0	S5	G5			X
<i>Ranunculus acris</i>	Tall Buttercup	0	0	-2	SNA	G5			X
<i>Thalictrum dasycarpum</i>	Purple Meadow-rue	8	-2	0	S4?	G5			X
<i>Thalictrum dioicum</i>	Early Meadow-rue	5	2	0	S5	G5			X
<i>Thalictrum pubescens</i>	Tall Meadow-rue	5	-2	0	S5	G5			X
<b>Rosaceae</b>	<b>Rose Family</b>								
<i>Agrimonia gryposepala</i>	Tall Hairy Agrimony	2	2	0	S5	G5			X
<i>Amelanchier bartramiana</i>	Bartram's Juneberry	0	0	0	S5	G5			X
<i>Amelanchier laevis</i>	Smooth Juneberry	5	5	0	S5	G4G5Q			X
<i>Amelanchier sp.</i>	Serviceberry								X
<i>Fragaria vesca ssp. americana</i>	Woodland Strawberry	4	4	0	S5	G5T?			X
<i>Fragaria virginiana</i>	Virginia Strawberry	2	1	0	SU	G5			X
<i>Geum aleppicum</i>	Yellow Avens	2	-1	0	S5	G5			X
<i>Geum macrophyllum</i>	Large-leaved Avens	9	-4	0	S5	G5			X
<i>Geum sp.</i>	Avens								X
<i>Prunus pensylvanica</i>	Pin Cherry	3	4	0	S5	G5			X
<i>Prunus pumila</i>	Sand Cherry	10	5	0	S4?	G5T?			X
<i>Prunus serotina</i>	Black Cherry	3	3	0	S5	G5			X
<i>Prunus sp.</i>									X
<i>Prunus virginiana</i>	Choke Cherry	2	1	0	S5	G5T?			X
<i>Rosa blanda</i>	Smooth Rose	3	3	0	S5	G5			X
<i>Rubus allegheniensis</i>	Alleghany Blackberry	2	2	0	S5	G5			X
<i>Rubus canadensis</i>	Millsaugh's Blackberry	7	5	0	S4?	G5			X
<i>Rubus flagellaris</i>	Prickly Raspberry	4	4	0	S4	G5			X
<i>Rubus idaeus</i>	Red Raspberry	0	0	0	SNA	G5T5			X
<i>Rubus pubescens</i>	Dwarf Raspberry	4	-4	0	S5	G5			X
<i>Sorbus americana</i>	American Mountain-ash	8	-1	0	S5	G5			X
<i>Spiraea alba</i>	Narrow-leaved Meadow-sweet	3	-4	0	S5	G5			X
<i>Spiraea latifolia</i>	Broad-leaved Meadowsweet	0	0	0	S5	G5			X
<i>Spiraea sp.</i>	Meadow-sweet								X
<b>Rubiaceae</b>	<b>Madder Family</b>								
<i>Galium aparine</i>	Cleavers	4	3	0	S5	G5			X
<i>Galium asprellum</i>	Rough Bedstraw	6	-5	0	S5	G5			X
<i>Galium triflorum</i>	Sweet-scented Bedstraw	4	2	0	S5	G5			X
<i>Mitchella repens</i>	Creeping Partridge-berry	6	2	0	S5	G5			X
<b>Salicaceae</b>	<b>Willow Family</b>								
<i>Populus grandidentata</i>	Large-tooth Aspen	5	3	0	S5	G5			X
<i>Populus tremuloides</i>	Trembling Aspen	2	0	0	S5	G5			X
<i>Salix candida</i>	Hoary Willow	10	-5	0	S5	G5			X
<i>Salix lucida</i>	Shining Willow	5	-4	0	S5	G5			X
<i>Salix sp.</i>	Willow								X
<b>Santalaceae</b>	<b>Sandalwood Family</b>								
<i>Comandra umbellata</i>	Bastard Toad-flax	6	3	0	S5	G5			X
<b>Saxifragaceae</b>	<b>Saxifrage Family</b>								
<i>Mitella diphylla</i>	Two-leaved Bishop's Cap	5	2	0	S5	G5			X



Species	Common Name	Coefficient of Conservatism	Wetness Index	Weediness Index	Provincial Status	Global Status	OMNR Status	SARA Status	Plant Presence
<i>Mitella nuda</i>	Naked Mitrewort	6	-3	0	S5	G5			X
<i>Saxifraga virginensis</i>	Early Saxifrage	6	1	0	S5	G5			X
<i>Tiarella cordifolia</i>	False Mitrewort/foamflower	6	1	0	S5	G5			X
<b>Scrophulariaceae</b>	<b>Figwort Family</b>								
<i>Melampyrum lineare</i>	Cow-wheat	6	1	0	S4S5	G5			X
<i>Pedicularis canadensis</i>	Canada Wood-betony	7	2	0	S5	G5			X
<i>Verbascum thapsus</i>	Common Mullein	0	5	-2	SNA	GNR			X
<b>Tiliaceae</b>	<b>Linden Family</b>								
<i>Tilia americana</i>	American Basswood	4	3	0	S5	G5			X
<b>Ulmaceae</b>	<b>Elm Family</b>								
<i>Ulmus americana</i>	White Elm	3	-2	0	S5	G5?			X
<b>Urticaceae</b>	<b>Nettle Family</b>								
<i>Urtica dioica</i> ssp. <i>dioica</i>	European Stinging Nettle	0	-1	-1	SNA	G5T5?			X
<i>Urtica dioica</i> ssp. <i>gracilis</i>	American Stinging Nettle	2	-1	0	S5	G5T5			X
<b>Violaceae</b>	<b>Violet Family</b>								
<i>Viola blanda</i>	Sweet White Violet	6	-2	0	S5	G4G5			X
<i>Viola cucullata</i>	Marsh Blue Violet	5	-5	0	S5	G4G5			X
<i>Viola macloskeyi</i> ssp. <i>pallens</i>	Macloskey's Violet	6	-5	0	S5	G5T5			X
<i>Viola palustris</i>	Marsh Violet	0	0	0	SU	G5			X
<i>Viola sororia</i>	Woolly Blue Violet	4	1	0	S5	G5			X
<i>Viola</i> sp.	Violet								X
<b>MONOCOTYLEDONS</b>	<b>MONOCOTS</b>								
<b>Cyperaceae</b>	<b>Sedge Family</b>								
<i>Carex arctata</i>	Drooping Wood Sedge	5	5	0	S5	G5			X
<i>Carex brunnescens</i> ssp. <i>brunnescens</i>	Brownish Sedge	7	-3	0	S5	G5T?			X
<i>Carex communis</i>	Fibrous Rooted Sedge	6	5	0	S5	G5			X
<i>Carex crinita</i>	Fringed Sedge	6	-4	0	S5	G5			X
<i>Carex deweyana</i>	Dewey's Sedge	6	4	0	S5	G5			X
<i>Carex intumescens</i>	Bladder Sedge	6	-4	0	S5	G5			X
<i>Carex lacustris</i>	Lake-bank Sedge	5	-5	0	S5	G5			X
<i>Carex magellanica</i> ssp. <i>irrigua</i>	Stunted Sedge	10	-5	0	S5	G5T?			X
<i>Carex plantaginea</i>	Plantain-leaved Sedge	7	5	0	S5	G5			X
<i>Carex</i> sp.									X
<i>Carex stipata</i>	Awl-fruited Sedge	3	-5	0	S5	G5			X
<i>Carex stricta</i>	Tussock Sedge	4	-5	0	S5	G5			X
<i>Carex trisperma</i>	Three-seeded Sedge	9	-5	0	S5	G5			X
<i>Schoenoplectus acutus</i> var. <i>acutus</i>	Hard-stemmed Bulrush	0	0	0	S5	G5			X
<i>Scirpus cyperinus</i>	Wool-grass	4	-5	0	S5	G5			X
<b>Iridaceae</b>	<b>Iris Family</b>								
<i>Iris versicolor</i>	Multi-coloured Blue-flag	5	-5	0	S5	G5			X
<b>Juncaceae</b>	<b>Rush Family</b>								
<i>Juncus effusus</i>	Soft rush	0	0	0	S5	G5			
<i>Juncus</i> sp.	Rush								X
<b>Liliaceae</b>	<b>Lily Family</b>								
<i>Allium tricoccum</i>	Wild Leek	7	2	0	S5	G5			X

Species	Common Name	Coefficient of Conservatism	Wetness Index	Weediness Index	Provincial Status	Global Status	OMNR Status	SARA Status	Plant Presence
<i>Clintonia borealis</i>	Bluebead-lily	7	-1	0	S5	G5			X
<i>Erythronium americanum ssp. americanum</i>	Yellow Dog's-tooth Violet	5	5	0	S5	G5T5			X
<i>Maianthemum canadense</i>	Wild Lily-of-the-valley	5	0	0	S5	G5			X
<i>Maianthemum racemosum ssp. racemosum</i>	False Solomon's Seal	4	3	0	S5	G5			X
<i>Maianthemum trifolium</i>	Three-leaved Solomon's Seal	10	-5	0	S5	G5			X
<i>Polygonatum odoratum</i>	Scented Solomon's Seal								X
<i>Polygonatum pubescens</i>	Hairy Solomon's Seal	5	5	0	S5	G5			X
<i>Streptopus lanceolatus var. roseus</i>	Rose Twisted-stalk	7	0	0	S5	G5			X
<i>Trillium erectum</i>	Purple Trillium	6	1	0	S5	G5			X
<i>Trillium grandiflorum</i>	White Trillium	5	5	0	S5	G5			X
<b>Poaceae</b>	<b>Grass Family</b>								
<i>Agrostis gigantea</i>	Red-top	0	0	-2	SNA	G4G5			X
<i>Brachyelytrum erectum</i>	Bearded Short-husk	7	5	0	S4?	G5T4T5			X
<i>Calamagrostis canadensis</i>	Blue-joint Grass	4	-5	0	S5	G5			X
<i>Cinna latifolia</i>	Broad-leaved Reed Grass	7	-4	0	S5	G5			X
<i>Danthonia spicata</i>	Poverty Oat Grass	5	5	0	S5	G5			X
<i>Deschampsia cespitosa</i>	Tufted Hairgrass	9	-4	0	S4S5	G5T?			X
<i>Deschampsia flexuosa</i>	Common Hairgrass	8	5	0	S5	G5			X
<i>Glyceria striata</i>	Fowl Meadow Grass	3	-5	0	S5	G5			X
<i>Milium effusum</i>	Tall Millet	8	4	0	S4S5	G5			X
<i>Oryzopsis asperifolia</i>	White-grained Mountain-rice	6	5	0	S5	G5			X
<i>Phalaris arundinacea</i>	Reed Canary Grass	0	-4	0	S5	G5			X
<i>Poa saltuensis</i>	Languid Spear Grass	8	5	0	S4	G5T5			X
<i>Poa sp.</i>									X
<b>Potamogetonaceae</b>	<b>Pondweed Family</b>								
<i>Potamogeton richardsonii</i>	Richardson's Pondweed	5	-5	0	S5	G5			X
<b>Typhaceae</b>	<b>Cattail Family</b>								
<i>Typha latifolia</i>	Broad-leaved Cattail	3	-5	0	S5	G5			X
<b>ASCOMYCETES</b>	<b>LICHENS</b>								
<b>Cladoniaceae</b>	<b>Lichen Family</b>								
<i>Cladonia cristatella</i>	British Soldier Lichen				S5	G5?			X
<i>Cladonia rangiferina</i>	Grey Reindeer Lichen				S5	G5			X
<i>Cladonia sp.</i>									X
<i>Cladonia stellaris</i>	Northern Reindeer Lichen				S5	GNR			X
<b>Parmeliaceae</b>									
<i>Usnea sp.</i>									X
<b>Umbilicariaceae</b>									
<i>Umbilicaria mammulata</i>	Smooth Rock Tripe				S4S5	G4G5			X
<b>BRYOPSIDA</b>	<b>MOSSES</b>								
<b>Aulacomniaceae</b>	<b>Bog Moss Family</b>								
<i>Aulacomnium palustre</i>	Glow Moss				S5	G5			X
<b>Brachytheciaceae</b>	<b>Ragged Moss Family</b>								
<i>Pleurozium schreberi</i>	Schreber's Moss				S5	G5			X
<b>Dicranaceae</b>	<b>Dicranum Family</b>								
<i>Dicranum ontariense</i>	Ontario Dicranum Moss				S5	G4G5			X



Species	Common Name	Coefficient of Conservatism	Wetness Index	Weediness Index	Provincial Status	Global Status	OMNR Status	SARA Status	Plant Presence
<i>Dicranum scoparium</i>					S5	G5			X
<b>Ditrichaceae</b>									
<i>Ceratodon purpureus</i>	Fire Moss								X
<b>Leucobryaceae</b>									
<i>Leucobryum glaucum</i>	White Pincushion Moss				S5	G5			X
<b>Polytrichaceae</b>	<b>Haircap Mosses Family</b>								
<i>Polytrichum commune</i>	Common Haircap Moss				S5	G5			X
<i>Polytrichum juniperinum</i>	Juniper Haircap Moss				S5	G5			X
<b><u>SPHAGNOPSIDA</u></b>	<b><u>MOSSES</u></b>								
<b>Sphagnaceae</b>	<b>Peat Moss Family</b>								
<i>Sphagnum sp.</i>	Peat Moss								X
<i>Sphagnum squarrosum</i>	Squarrose Peat Moss				S5	G5			X

#### FLORISTIC SUMMARY & ASSESSMENT

##### Species Diversity

Total Species:		<b>421</b>	
Native Species:		<b>211</b>	50.12%
Exotic Species		<b>210</b>	49.88%
Total Taxa in Region (List Region, Source)		10000	
% Regional Taxa Recorded		4.21%	
Regionally Significant Species	enter manually		
S1-S3 Species	enter manually		
S4 Species		8	
S5 Species		183	

##### Co-efficient of Conservatism and Floral Quality Index

Co-efficient of Conservatism (CC) (average)		<b>4.75</b>	
CC 0 to 3	lowest sensitivity	57	27.01%
CC 4 to 6	moderate sensitivity	97	45.97%
CC 7 to 8	high sensitivity	46	21.80%
CC 9 to 10	highest sensitivity	11	5.21%
<b>Floral Quality Index (FQI)</b>		<b>68.98</b>	

##### Presence of Weedy & Invasive Species

mean weediness		<b>-0.15</b>	
weediness = -1	low potential invasiveness	10	4.76%
weediness = -2	moderate potential invasiveness	9	4.29%
weediness = -3	high potential invasiveness	1	0.48%

##### Presence of Wetland Species

average wetness value		<b>0.49</b>	
upland		47	11.16%
facultative upland		47	11.16%
facultative		48	11.40%
facultative wetland		40	9.50%
obligate wetland		29	6.89%

# Appendix C

## Ontario Breeding Bird Atlas Results



<u>Species</u>	<u>Scientific Name</u>	<u>ESA Status</u>	<u>SARA Status</u>	<u>COSEWIC Status</u>	<u>NHIC Status Ranking</u>	<u>Area-sensitive Species</u>	<u>Source</u>
Alder Flycatcher	<i>Empidonax alnorum</i>				S5	0	17NL38
American Bittern	<i>Botaurus lentiginosus</i>				S4	A	17NL38
American Black Duck	<i>Anas rubripes</i>				S4	0	17NL38
American Coot	<i>Fulica americana</i>				S4	A	17NL38
American Crow	<i>Corvus brachyrhynchos</i>				S5	0	17NL38
American Goldfinch	<i>Carduelis tristis</i>				S5	0	17NL38
American Kestrel	<i>Falco sparverius</i>				S4	0	17NL38
American Redstart	<i>Setophaga ruticilla</i>				S5	A	17NL38
American Robin	<i>Turdus migratorius</i>				S5	0	17NL38
American Tree Sparrow	<i>Spizella arborea</i>				S4	0	17NL38
American Wigeon	<i>Anas americana</i>				S4	0	17NL38
American Woodcock	<i>Scolopax minor</i>				S4	0	17NL38
Bald Eagle	<i>Haliaeetus leucocephalus</i>	SC			S2	A	17NL38
Baltimore Oriole	<i>Icterus galbula</i>				S4	0	17NL38
Bank Swallow	<i>Riparia riparia</i>	THR			S4	0	(17NL48)
Barn Swallow	<i>Hirundo rustica</i>	THR		THR	S4	0	17NL38
Barred Owl	<i>Strix varia</i>				S5	A	17NL38
Bay-breasted Warbler	<i>Dendroica castanea</i>				S5	0	17NL38
Belted Kingfisher	<i>Ceryle alcyon</i>				S4	0	17NL38
Black Tern	<i>Chlidonias niger</i>	SC			S3	A	17NL38
Black/Yell-billed Cuckoo					s4B		17NL38
Black-backed Woodpecker	<i>Picoides arcticus</i>				S4	0	17NL38
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>				S5	0	17NL38
Blackburnian Warbler	<i>Dendroica fusca</i>				S5	A	17NL38
Black-capped Chickadee	<i>Poecile atricapillus</i>				S5	0	17NL38
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>				S3	0	17NL58
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>				S5	A	17NL38
Black-throated Green Warbler	<i>Dendroica virens</i>				S5	A	17NL38
Black-and-white Warbler	<i>Mniotilta varia</i>				S5	A	17NL38
Blue Jay	<i>Cyanocitta cristata</i>				S5	0	17NL38
Bobolink	<i>Dolichonyx oryzivorus</i>	THR		THR	S4	A	17NL38
Blue-headed Vireo	<i>Vireo solitarius</i>				S5	A	17NL38
Blue-winged Teal	<i>Anas discors</i>				S4	0	17NL38
Canada Warbler	<i>Wilsonia canadensis</i>	SC	THR Schedule 1	THR	S4	A	17NL38
Boreal Chickadee	<i>Poecile hudsonica</i>				S5	0	17NL38
Boreal Owl	<i>Aegolius funereus</i>				S4	0	17NL38
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>				S4	0	17NL38
Brewster's Warbler					S4b		17NL58
Broad-winged Hawk	<i>Buteo platypterus</i>				S5	A	17NL38
Brown Creeper	<i>Certhia americana</i>				S5	A	17NL38
Brown Thrasher	<i>Toxostoma rufum</i>				S4	0	17NL38
Brown-headed Cowbird	<i>Molothrus ater</i>				S4	0	17NL38
Bufflehead	<i>Bucephala albeola</i>				S4	0	17NL58
Canada Goose	<i>Branta canadensis</i>				S5	0	17NL38

<u>Species</u>	<u>Scientific Name</u>	<u>ESA Status</u>	<u>SARA Status</u>	<u>COSEWIC Status</u>	<u>NHIC Status Ranking</u>	<u>Area-sensitive Species</u>	<u>Source</u>
<u>Cerulean Warbler</u>	<i>Dendroica cerulea</i>	THR	SC Schedule 1	END	S5	A	17NL58
<u>Chimney Swift</u>	<i>Chaetura pelagica</i>	THR	THR Schedule 1	THR	S4	0	17NL38
<u>Cape May Warbler</u>	<i>Dendroica tigrina</i>				S5	0	17NL38
<u>Caspian Tern</u>	<i>Sterna caspia</i>				S3	0	17NL38
<u>Cedar Waxwing</u>	<i>Bombycilla cedrorum</i>				S5	0	17NL38
<u>Chestnut-sided Warbler</u>	<i>Dendroica pensylvanica</i>				S5	0	17NL38
<u>Common Nighthawk</u>	<i>Chordeiles minor</i>	SC	THR Schedule 1	THR	S4	0	17NL38
<u>Chipping Sparrow</u>	<i>Spizella passerina</i>				S5	0	17NL38
<u>Clay-coloured Sparrow</u>	<i>Spizella pallida</i>				S4	0	17NL38
<u>Cliff Swallow</u>	<i>Petrochelidon pyrrhonota</i>				S4	0	17NL38
<u>Common Goldeneye</u>	<i>Bucephala clangula</i>				S5	A	17NL38
<u>Common Grackle</u>	<i>Quiscalus quiscula</i>				S5	0	17NL38
<u>Common Loon</u>	<i>Gavia immer</i>				S5	A	17NL38
<u>Common Merganser</u>	<i>Mergus merganser</i>				S5	A	17NL38
<u>Common Moorhen</u>	<i>Gallinula chloropus</i>				S4	0	17NL58
<u>Eastern Meadowlark</u>	<i>Sturnella magna</i>	THR		THR	S4	A	17NL38
<u>Common Raven</u>	<i>Corvus corax</i>				S5	0	17NL38
<u>Common Snipe</u>	<i>Gallinago gallinago</i>				S5	0	17NL38
<u>Common Tern</u>	<i>Sterna hirundo</i>				S4	0	17NL38
<u>Common Yellowthroat</u>	<i>Geothlypis trichas</i>				S5	0	17NL38
<u>Cooper's Hawk</u>	<i>Accipiter cooperi</i>				S4	A	17NL38
<u>Dark-eyed Junco</u>	<i>Junco hyemalis</i>				S5	0	17NL38
<u>Double-crested Cormorant</u>	<i>Phalacrocorax auritus</i>				S5	0	17NL38
<u>Downy Woodpecker</u>	<i>Picoides pubescens</i>				S5	0	17NL38
<u>Eastern Bluebird</u>	<i>Sialia sialis</i>				S5	0	17NL38
<u>Eastern Kingbird</u>	<i>Tyrannus tyrannus</i>				S4	0	17NL38
<u>Eastern Wood-Pewee</u>	<i>Contopus virens</i>	SC		SC	S4	0	17NL38
<u>Eastern Phoebe</u>	<i>Sayornis phoebe</i>				S5	0	17NL38
<u>Eastern Screech-Owl</u>	<i>Megascops asio</i>				S4	0	17NL58
<u>Eastern Towhee</u>	<i>Pipilio erythrophthalmus</i>				S4	0	17NL38
<u>Golden-winged Warbler</u>	<i>Vermivora chrysoptera</i>	SC	THR Schedule 1	THR	S4	0	17NL38
<u>European Starling</u>	<i>Sturnus vulgaris</i>				SNA	0	17NL38
<u>Evening Grosbeak</u>	<i>Coccothraustes vespertinus</i>				S4	0	17NL38
<u>Field Sparrow</u>	<i>Spizella pusilla</i>				S4	0	17NL58
<u>Gadwall</u>	<i>Anas strepera</i>				S4	0	17NL38
<u>Golden-crowned Kinglet</u>	<i>Regulus satrapa</i>				S5	0	17NL38
<u>Great Crested Flycatcher</u>	<i>Myiarchus crinitus</i>				S4	0	17NL38
<u>Grasshopper Sparrow</u>	<i>Ammodramus savannarum</i>				S4	A	17NL58
<u>Gray Catbird</u>	<i>Dumetella carolinensis</i>				S4	0	17NL38
<u>Gray Jay</u>	<i>Perisoreus canadensis</i>				S5	0	17NL38
<u>Great Black-backed Gull</u>	<i>Larus marinus</i>				S2	0	17NL58
<u>Great Blue Heron</u>	<i>Ardea herodias</i>				S4	0	17NL38
<u>Great Horned Owl</u>	<i>Bubo virginianus</i>				S4	0	17NL38



<u>Species</u>	<u>Scientific Name</u>	<u>ESA Status</u>	<u>SARA Status</u>	<u>COSEWIC Status</u>	<u>NHIC Status Ranking</u>	<u>Area-sensitive Species</u>	<u>Source</u>
<u>Green Heron</u>	<i>Butorides virescens</i>				S4	0	<b>17NL58</b>
<u>Green-winged Teal</u>	<i>Anas crecca</i>				S4	0	17NL38
<u>Hairy Woodpecker</u>	<i>Picoides villosus</i>				S5	A	17NL38
<u>Hermit Thrush</u>	<i>Catharus guttatus</i>				S5	A	17NL38
<u>Herring Gull</u>	<i>Larus argentatus</i>				S5	0	17NL38
<u>Hooded Merganser</u>	<i>Lophodytes cucullatus</i>				S5	0	17NL38
<u>Horned Lark</u>	<i>Eremophila alpestris</i>				S5	0	<b>17NL58</b>
<u>House Finch</u>	<i>Carpodacus mexicanus</i>				SNA	0	17NL38
<u>House Sparrow</u>	<i>Passer domesticus</i>				SNA	0	17NL38
<u>House Wren</u>	<i>Troglodytes aedon</i>				S5	0	17NL38
<u>Indigo Bunting</u>	<i>Passerina cyanea</i>				S4	0	17NL38
<u>Killdeer</u>	<i>Charadrius vociferus</i>				S5	0	17NL38
<u>Le Conte's Sparrow</u>	<i>Ammodramus leconteii</i>				S4	0	17NL38
<u>Least Bittern</u>	<i>Ixobrychus exilis</i>	THR	THR Schedule 1	THR	S4	A	<b>17NL58</b>
<u>Least Flycatcher</u>	<i>Empidonax minimus</i>				S4	A	17NL38
<u>Lincoln's Sparrow</u>	<i>Melospiza lincolni</i>				S5	0	17NL38
<u>Little Gull</u>					SNA		<b>17NL58</b>
<u>Loggerhead Shrike</u>	<i>Lanius ludovicianus migrans</i>	END	END Schedule 1	END	S2	A	17NL38
<u>Long-eared Owl</u>	<i>Asio otus</i>				S4	0	17NL38
<u>Louisiana Waterthrush</u>	<i>Seiurus motacilla</i>	SC	SC Schedule 1	SC	S3	0	<b>17NL58</b>
<u>Magnolia Warbler</u>	<i>Dendroica magnolia</i>				S5	A	17NL38
<u>Mallard</u>	<i>Anas platyrhynchos</i>				S5	0	17NL38
<u>Marsh Wren</u>	<i>Cistothorus palustris</i>				S4	0	17NL38
<u>Merlin</u>	<i>Falco columbarius</i>				S5	0	17NL38
<u>Mourning Dove</u>	<i>Zenaidura macroura</i>				S5	0	17NL38
<u>Mourning Warbler</u>	<i>Oporornis philadelphia</i>				S4	0	17NL38
<u>Nashville Warbler</u>	<i>Vermivora ruficapilla</i>				S5	0	17NL38
<u>Northern Rough-winged Swallow</u>	<i>Stelgidopteryx serripennis</i>				S4	0	17NL38
<u>Northern Saw-whet Owl</u>	<i>Aegolius acadicus</i>				S4	0	17NL38
<u>Northern Waterthrush</u>	<i>Seiurus noveboracensis</i>				S5	0	17NL38
<u>Northern Cardinal</u>	<i>Cardinalis cardinalis</i>				S5	0	17NL38
<u>Northern Flicker</u>	<i>Colaptes auratus</i>				S4	0	17NL38
<u>Northern Goshawk</u>	<i>Accipiter gentilis atricapillus</i>				S4	A	17NL38
<u>Northern Harrier</u>	<i>Circus cyaneus</i>				S4	A	17NL38
<u>Northern Hawk Owl</u>	<i>Surnia ulula</i>				S4	0	17NL38
<u>Northern Mockingbird</u>	<i>Mimus polyglottus</i>				S4	0	17NL38
<u>Northern Parula</u>	<i>Parula americana</i>				S4	A	<b>17NL58</b>
<u>Northern Pintail</u>	<i>Anas acuta</i>				S5	A	17NL38
<u>Northern Shoveler</u>	<i>Anas clypeata</i>				S4	0	17NL38
<u>Northern Shrike</u>	<i>Lanius excubitor</i>				SNA	0	17NL38
<u>Olive-sided Flycatcher</u>	<i>Contopus cooperi</i>	SC	THR Schedule 1	THR	S4	0	17NL38

<u>Species</u>	<u>Scientific Name</u>	<u>ESA Status</u>	<u>SARA Status</u>	<u>COSEWIC Status</u>	<u>NHIC Status Ranking</u>	<u>Area-sensitive Species</u>	<u>Source</u>
<u>Osprey</u>	<i>Pandion haliaetus</i>				S5	0	17NL38
<u>Ovenbird</u>	<i>Seiurus aurocapillus</i>				S4	A	17NL38
<u>Peregrine Falcon</u>	<i>Falco peregrinus anatum</i>	SC	SC Schedule 1	SC	S3	0	17NL38
<u>Philadelphia Vireo</u>	<i>Vireo philadelphicus</i>				S5	0	17NL38
<u>Pied-billed Grebe</u>	<i>Podilymbus podiceps</i>				S4	0	17NL38
<u>Pileated Woodpecker</u>	<i>Dryocopus pileatus</i>				S5	A	17NL38
<u>Pine Grosbeak</u>	<i>Pinicola enucleator</i>				S4	0	17NL57
<u>Pine Siskin</u>	<i>Cardeulis pinus</i>				S4	0	17NL38
<u>Pine Warbler</u>	<i>Dendroica pinus</i>				S5	A	17NL38
<u>Prairie Warbler</u>	<i>Dendroica discolor</i>				S3	0	17NL38
<u>Purple Finch</u>	<i>Carpodacus purpureus</i>				S4	0	17NL38
<u>Purple Martin</u>	<i>Progne subis</i>				S4	0	17NL38
<u>Red Crossbill</u>	<i>Loxia curvirostra</i>				S4	0	17NL38
<u>Red-bellied Woodpecker</u>	<i>Melanerpes carolinus</i>				S4	0	17NL58
<u>Red-breasted Merganser</u>	<i>Mergus serrator</i>				S4	A	17NL38
<u>Red-breasted Nuthatch</u>	<i>Sitta canadensis</i>				S5	A	17NL38
<u>Red-eyed Vireo</u>	<i>Vireo olivaceus</i>				S5	0	17NL38
<u>Redhead</u>	<i>Aythya americana</i>				S4	A	17NL38
<u>Red-headed Woodpecker</u>	<i>Melanerpes erythrocephalus</i>	SC	THR Schedule 1	THR	S4	0	17NL38
<u>Red-necked Grebe</u>	<i>Podiceps grisegena</i>				S4	0	17NL38
<u>Red-shouldered Hawk</u>	<i>Buteo lineatus</i>		SC Schedule 3		S4	A	17NL38
<u>Red-tailed Hawk</u>	<i>Buteo jamaicensis</i>				S4	0	17NL38
<u>Red-winged Blackbird</u>	<i>Agelaius phoeniceus</i>				S4	0	17NL38
<u>Ring-billed Gull</u>	<i>Larus delawarensis</i>				S5	0	17NL38
<u>Ring-necked Duck</u>	<i>Aythya collaris</i>				S5	0	17NL38
<u>Rock Dove</u>					SNA		17NL38
<u>Rose-breasted Grosbeak</u>	<i>Pheucticus ludovicianus</i>				S4	0	17NL38
<u>Ruby-crowned Kinglet</u>	<i>Regulus calendula</i>				S4	0	17NL38
<u>Ruby-throated Hummingbird</u>	<i>Archilochus colubris</i>				S5	0	17NL38
<u>Ruddy Duck</u>	<i>Oxyura jamaicensis</i>				S4B,S4N		17NL38
<u>Ruffed Grouse</u>	<i>Bonasa umbellus</i>				S4	0	17NL38
<u>Rusty Blackbird</u>	<i>Euphagus carolinus</i>		SC Schedule 1	SC	S4	0	17NL38
<u>Sandhill Crane</u>	<i>Grus canadensis tabida</i>				S5	A	17NL38
<u>Savannah Sparrow</u>	<i>Passerculus sandwichensis</i>				S4	A	17NL38
<u>Scarlet Tanager</u>	<i>Piranga olivacea</i>				S4	A	17NL38
<u>Sedge Wren</u>	<i>Cistothorus platensis</i>				S4	0	17NL38
<u>Sharp-shinned Hawk</u>	<i>Accipiter striatus</i>				S5	A	17NL38
<u>Short-eared Owl</u>	<i>Asio flammeus</i>	SC	SC Schedule 1	SC	S2	A	17NL38
<u>Solitary Sandpiper</u>	<i>Tringa solitaria</i>				S4		17NL38
<u>Song Sparrow</u>	<i>Melospiza melodia</i>				S5		17NL38
<u>Sora</u>	<i>Porzana carolina</i>				S4		17NL38



<u>Species</u>	<u>Scientific Name</u>	<u>ESA Status</u>	<u>SARA Status</u>	<u>COSEWIC Status</u>	<u>NHIC Status Ranking</u>	<u>Area-sensitive Species</u>	<u>Source</u>
<u>Spotted Sandpiper</u>	<i>Actitis macularia</i>				S5		17NL38
<u>Spruce Grouse</u>					S5		17NL38
<u>Swainson's Thrush</u>	<i>Catharus ustulatus</i>				S4		17NL38
<u>Swamp Sparrow</u>	<i>Melospiza georgiana</i>				S5		17NL38
<u>Tennessee Warbler</u>	<i>Vermivora peregrina</i>				S5		17NL38
<u>Tree Swallow</u>	<i>Tachycineta bicolor</i>				S4		17NL38
<u>Trumpeter Swan</u>	<i>Cygnus buccinator</i>				S4		17NL38
<u>Turkey Vulture</u>	<i>Cathartes aura</i>				S5		17NL38
<u>Upland Sandpiper</u>	<i>Bartramia longicauda</i>				S4	A	17NL38
<u>Veery</u>	<i>Catharus fuscescens</i>				S4	A	17NL38
<u>Vesper Sparrow</u>	<i>Poocetes gramineus</i>				S4		17NL38
<u>Virginia Rail</u>	<i>Rallus limicola</i>				S5		17NL38
<u>Warbling Vireo</u>	<i>Vireo gilvus</i>				S5		17NL38
<u>Whip-poor-will</u>	<i>Caprimulgus vociferus</i>	THR	THR Schedule 1	THR	S4	A	17NL38
<u>White-breasted Nuthatch</u>	<i>Sitta carolinensis</i>				S5	A	17NL38
<u>White-throated Sparrow</u>	<i>Zonotrichia albicollis</i>				S5		17NL38
<u>White-winged Crossbill</u>	<i>Loxia leucoptera</i>				S5		17NL38
<u>Wild Turkey</u>	<i>Meleagris gallopavo</i>				S5		17NL58
<u>Willow Flycatcher</u>	<i>Empidonax traillii</i>				S5		17NL38
<u>Wilson's Phalarope</u>	<i>Phalaropus tricolor</i>				S3		17NL38
<u>Wilson's Warbler</u>	<i>Wilsonia pusilla</i>				S4		17NL38
<u>Winter Wren</u>	<i>Troglodytes troglodytes</i>				S5	A	17NL38
<u>Wood Duck</u>	<i>Aix sponsa</i>				S5		17NL38
<u>Wood Thrush</u>	<i>Hylocichla mustelina</i>	SC		THR	S4		17NL38
<u>Yellow Rail</u>	<i>Coturnicops noveboracensis</i>	SC	SC Schedule 1	SC	S4	A	17NL38
<u>Yellow Warbler</u>	<i>Dendroica petechia</i>				S5		17NL38
<u>Yellow-bellied Flycatcher</u>	<i>Empidonax flaviventris</i>				S5		17NL38
<u>Yellow-bellied Sapsucker</u>	<i>Sphyrapicus varius</i>				S5	A	17NL38
<u>Yellow-billed Cuckoo</u>	<i>Coccyzus americanus</i>				S4		17NL58
<u>Yellow-rumped Warbler</u>	<i>Dendroica coronata</i>				S5		17NL38
<u>Yellow-throated Vireo</u>	<i>Vireo flavifrons</i>				S4	A	17NL58
							17NL37

Count All Sp 200  
S1 0  
S2 4  
S3 7  
S4 96  
S5 84  
SNA 6  
ESA SC 13  
ESATHR 8  
ESAEND 1  
SARA SC 6  
SARA THR 8  
SARA END 1