

**VEGETATION AND LICHEN HABITAT ASSESSMENT**

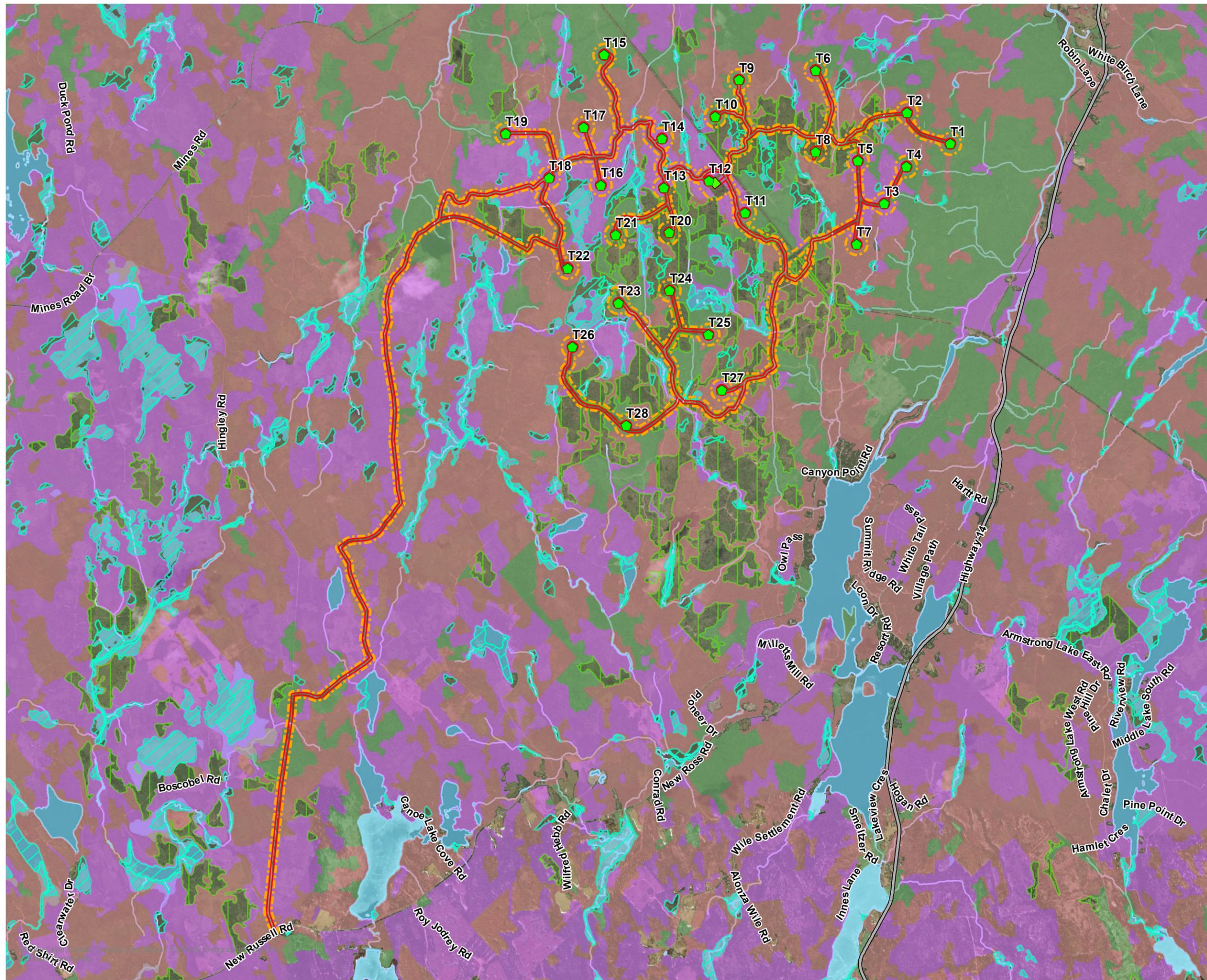
FIGURE 4

-  Proposed Turbine Location
  -  Proposed Substation Location
  -  Potential Development Area (PDA)
  -  Local Assessment Area
  -  Highway
  -  Watercourse
  -  Waterbodies
- Habitat Type**
-  Softwood - Dominant Forest
  -  Mixedwood - Wood Forest
  -  Hardwood - Dominant Forest
  -  Non-Forested Wetlands
- Anthropogenic Land Use**
-  Recently Cut Area or Regenerating Wood Lot



MAP DRAWING INFORMATION:  
DATA PROVIDED BY DILLON CONSULTING, NSDNRR, NATURAL FORCES

MAP CREATED BY: DU  
MAP CHECKED BY: KB  
MAP PROJECTION: NAD 1983 UTM ZONE 20N



## 3.1.1.2 Vegetation Field Assessment

### Approach and Methodology

Field vegetation surveys were completed in 2021 and 2022 to identify and target the major habitat types within the vegetation LAA. Representative areas of the redesigned Project layout were surveyed for vegetation and lichens in 2022.

In 2021, targeted vegetation surveys were conducted between July 27 and August 7. In 2022, targeted vegetation surveys were conducted on July 8 and August 11-12.

Vegetation surveys consisted of random meander searches through major habitat types by experienced plant identification specialists. GPS locations and tracks of the random meander paths of the plant specialists were recorded and are presented in **Figure 3**. At the discretion of the professionals conducting the plant and lichen assessments, the search areas were expanded beyond the LAA boundary to incorporate adjacent suitable vegetation or lichen habitat or for ease of access between segments of the LAA

Additionally, observed vegetation and lichen species were reported on an incidental basis in concert with other targeted field surveys (i.e., wetlands, watercourses, and wildlife and wildlife habitat) throughout the growing season (e.g., June – September) in both 2021 and 2022.

### Results

A total of 315 plant species were identified during the 2021 and 2022 field surveys, 259 of which were vascular plants.

The regional vegetation of the South Mountain Ecodistrict is generally dominated by Acadian Forest tree species. Locally, the site consists of two ecoelements; the Spruce Hemlock Pine Hummocks and Hills ecoelement, and the Red and Black Spruce Hummocks ecoelement (NSDLF 2019). The majority of the site is covered by Spruce Hemlock Pine Hummocks and Hills ecoelement, which consists of well drained coarse-grained soils. This ecoelement is dominated by red spruce, eastern hemlock and white pine in areas with slightly moist soils; and by white pine, red oak and red pine on the drier hilltops. The remaining portions of the site, which tends to be wetter and consist of imperfectly drained coarse-grained soils (NSDLF 2019), are characterized by the Red and Black Spruce Hummocks ecoelement. This ecoelement includes late successional shade-tolerant softwoods, such as red spruce and eastern hemlock, along with white pine (NSDFL 2019).

The following habitat types were identified in the LAA: hardwood-dominant forests, softwood-dominant forests, mixedwood forests, previously cut disturbed areas, bogs and fens, and swamps and marshes. Representative photos from the identified habitats, as well as a master list of all plants identified are included in **Appendix B**.

The general vegetation within each habitat type is described as follows:

#### Hardwood-dominant Forests

Hardwood forests are characterized by temperate trees and understory flora, high species richness, diverse stand structures, and require rich and well drained soils (NSDFL 2021a). This

habitat type was the least-common encountered and was generally limited to the Crown Land Property which has not been harvested as frequently as the privately-owned resource land parcels. The hardwood forest habitat encountered during the 2021 and 2022 vegetation surveys was dominated by red maple and included a diverse understory of mostly herbaceous plants. Only one SoCC was observed during surveys in hardwood-dominant forest habitat types: American Beech (*Fagus grandifolia*; listed as S3S4). Several culturally significant plants were identified within the hardwood forest and are listed in **Section 3.1.1.4**.

Dominant vegetation within the hardwood forest habitats of the terrestrial LAA included:

- A diverse herbaceous understory with ferns, flowering plants (e.g., asters, lilies, trillium) sedges and berries; and,
- Hardwood trees such as maples (i.e., red, striped, sugar and mountain), American beech, white ash, and paper and yellow birch.

#### Softwood-dominant Forests

Softwood-dominant forests are common in areas previously disturbed by fire or windthrow (NSDFL 2021), or, in the case of this site, forestry activities. A typical spruce and pine forest in Nova Scotia consists of an overstory of black spruce and pines (white, red, and/or jack), a shrub layer dominated by ericaceous species (i.e., lambkill, blueberry and huckleberry), along with black spruce regeneration, and an herb cover may be present but is dependent on the amount of light reaching the ground (NSDFL 2021). No SAR or SoCC vegetation were identified in softwood-dominant forests during 2021 or 2022 survey. Several culturally significant plants were identified within the softwood forest habitat and are listed in **Section 3.1.1.4**.

Dominant vegetation observed within softwood forests included the following:

- Softwood trees (e.g., black spruce and Balsam fir.);
- Woody shrubs (e.g., blueberry, smooth service berry, rhodora and juniper); and,
- Depending on the presence of open spaces, some locations had an understory of fern, grasses and asters, and other hardy flowering plants (i.e., northern starflower, painted trillium, wild sarsaparilla).

#### Mixedwood Forests

Mixedwood forests are tree-dominated landscapes that contain both softwood and deciduous trees (NSDLF 2021). A single vascular SoCC (American Beech, *Fagus grandifolia* - listed as S3S4) as well as several lichen SAR/SoCC were identified within the mixedwood forests during the 2021 and 2022 vegetation and lichen surveys at the Project site (**Figure 4**). A list of the SAR and SoCC lichen species are detailed in **Section 3.1.7**. Several culturally significant plants identified within the mixedwood forest habitat are listed in **Section 3.1.1.4**.

Dominant vegetation within mixedwood forests included the following:

- A diverse tree overstory that varied between landscapes. Dominant deciduous trees included maples (i.e., red, striped, sugar and mountain), American beech, white ash, and

paper and yellow birch. Dominant softwood tree species included eastern white pine, spruce (white, red and black) and Balsam fir;

- Woody shrubs (e.g., blueberry, smooth service berry, American witch-hazel, northern wild raisin, rhodora and juniper); and,
- Herbaceous understories were variable and depended on the available light and open spaces in the tree canopy.

#### Clear Cut or Previously Cut-Over Areas

This category includes all regenerating habitat that has been recently or historically harvested for forestry products. The majority of the PDA is anticipated to fall within this habitat type. No vegetation SAR or SoCC were identified within previously cut lands during the 2021 or 2022 vegetation surveys at the Project site. Several culturally significant plants identified within the previously cut lands are listed in **Section 3.1.1.4**.

Dominant vegetation within clear cut or previously cut-over areas included the following:

- A diverse tree over story that varied between landscapes. Dominant deciduous trees included red maple, trembling aspen, American mountain ash, paper and grey birch, white poplar, northern red oak, and Bebs willow. Dominant softwood tree species included eastern white pine, spruce (white and red) and Balsam fir; and
- Diverse assemblages of herbaceous plants including several weeds.

#### Bogs and Fens

Bogs and fens typically consist of peatlands saturated with water. Bog vegetation may or may not include trees and are usually covered with *Sphagnum* spp. and ericaceous shrubs. The vegetation of fens is more diverse than in bogs and generally consists of sedges and mosses and shrubby trees (NSE 2021). No vegetation SAR or SoCC were identified within bogs or fens during the 2021 or 2022 vegetation surveys at the Project site. Culturally significant plants identified with bogs and fens habitat are listed in **Section 3.1.1.4**.

Dominant vegetation within bogs and fens included the following:

- Woody shrubs (i.e., leatherleaf, sheep laurel, rhodora and sweet grass);
- Herbaceous plants (i.e., northern pitcher plant, three-leaved false soloman's seal, Virginia St. John's-wort, asters and other ferns, grasses and sedges); and
- Trees (when present) included black spruce and hardwood trees (i.e., red maple and paper birch).

#### Swamps and Marshes

Swamps and marshes are wetland types with mineral soils and are not typically dominated by peatlands (NSE 2021). Swamp vegetation is often dominated by trees and shrubs, but also often contain grasses, sedges ferns and rushes in open areas. Marshes, which are typically wetter than swamps, typical host emergent aquatic plants (macrophytes) such as rushes, reeds, grasses and sedges, as well as floating and submerged aquatic macrophytes, and non-vascular plants. Only one SoCC was observed during the 2021 and 2022 surveys in swamp and

marsh habitat types: American Beech (*Fagus grandifolia*; listed as S3S4). Several culturally significant plants identified within swamps are listed in **Section 3.1.1.4**.

Dominant vegetation within swamps and marshes included the following:

- Woody shrubs (including speckled alder, smooth service berry, mountain holly, Canada yew, red raspberry, and sheep laurel);
- Herbaceous plants (including water horsetail, white meadow sweet, asters and other grasses and sedges); and,
- Trees (when present) included softwood (i.e., black spruce, Balsam fir, and eastern white pine) and hardwood trees (i.e., red maple and American beech).

### 3.1.1.3 Lichen Field Assessment

#### Approach and Methodology

Field vegetation surveys were completed in 2021 and 2022 to identify and target the major habitat types within the vegetation LAA. Representative areas of the redesigned Project layout were surveyed for vegetation and lichens in 2022.

Targeted lichen surveys were conducted site wide in habitats with available epiphytic lichen habitat (e.g., forested wetlands with mature trees and upland habitats with mature hardwood trees) between April 27, 2021 and May 5, 2021 by a botanist experienced in lichen identification as recognized by NSDNRR. A random meander search through medium to mature mixed forested areas was conducted on September 9, and November 10, 2022 for potential epiphytic lichen species. Similar to the vegetation surveys, GPS locations and tracks of the random meander paths of the lichen specialists were tracked throughout the dedicated surveys.

Additionally, observed vegetation and lichen species were reported on an incidental basis in concert with other targeted field surveys (i.e., wetlands, watercourses, and wildlife and wildlife habitat) throughout the growing season (e.g., June – September) in both 2021 and 2022.

#### Results

A total of 69 lichen species were inventoried over the two years of biophysical surveys, including one SAR and five SoCC. More details of observed and recorded SAR and SoCC lichens are provided below in **Section 3.1.7**.

One lichen SAR lichen and five lichen SoCC were identified during biological field surveys:

- **Frosted Glass-whiskers** (*Sclerophora peronella* – Atlantic population) is listed as Special Concern under SARA and COSEWIC and ranked by AC CDC as S3S4 (vulnerable/apparently secure) in Nova Scotia.
- **Acadian Jellyskin Lichen** (*Leptogium acadiense*) is ranked by AC CDC as S3S4 (vulnerable/apparently secure) in Nova Scotia.
- **Blistered Tarpaper Lichen** (*Collema nigrescens*) is ranked by AC CDC as S3 (vulnerable) in Nova Scotia.

- **Eastern Candlewax Lichen** (*Ahtiana aurescens*) is ranked by AC CDC as S2S3 (imperiled/vulnerable) in Nova Scotia
- **Powdered Fringe Lichen** (*Heterodermia speciose*) is ranked by AC CDC as S3S4 (vulnerable/apparently secure) in Nova Scotia.
- **Shaggy Fringed Lichen** (*Anaptychia palmulata*) is ranked by AC CDC as S3S4 (vulnerable/apparently secure) in Nova Scotia.

Vascular plant SoCC observed in 2022 include:

- **Meadow Horsetail** (*Equisetum pretense*) is ranked by AC CDC as S3S4 (vulnerable/apparently secure) in Nova Scotia.
- **American beech** (*Fagus grandifolia*) is ranked by the AC CDC as S3S4 (vulnerable/apparently secure) in Nova Scotia and was found to be common through hardwood dominated forests of the LAA.

For the complete list of lichen identified in 2021 and 2022, refer to **Appendix C**.

### 3.1.1.4 Culturally Significant Flora

A non-exhaustive vegetation list of cultural importance for the Mi'kmaq bands in Nova Scotia was prepared by a terrestrial biologist from Maqamigew Anqotumeg. The list was established following a desktop analysis of the site and includes vegetation species that are culturally significant to the Mi'kmaq bands in Nova Scotia and are believed to likely be present within the LAA of the Project. The plant list compiled from surveys conducted in 2021 and 2022 was cross referenced with this assessment to identify plants of cultural importance that are present within the PDA.

Although the Proponent was supportive of engaging an Indigenous monitor to complete a site walk-over to identify any culturally significant vegetation species that could be impacted by the Project, one could not be identified due to timing constraints and COVID-19 health and safety considerations.

Some of the plants found within the terrestrial LAA are recognized to be traditional Mi'kmaw medicinal plants or culturally significant plants. A list of culturally important vegetation for the Mi'kmaq that had the potential to be located in the Project area was prepared by a terrestrial biologist from Maqamigew Anqotumeg. The list was established following desktop analysis of the site and overview of the habitat types located within the Project area. The plants identified during the 2021 and 2022 vegetation surveys were cross referenced with the list of culturally important vegetation. The list of culturally significant plants with the potential to occur in the area is included in **Appendix B**. A list of the flora considered to be of cultural significance to the Mi'kmaq that were identified across the Project site is presented below in **Table 9**.

**TABLE 9: CULTURALLY SIGNIFICANT FLORA TO THE MI'KMAQ OBSERVED DURING THE 2021 AND 2022 FIELDWORK**

<b>Common Name (Scientific Name)</b>	<b>Mi'kmaq Name</b>	<b>Habitats Observed within the LAA</b>
Striped maple ( <i>Acer pensylvanicum</i> )	<i>Wapoq</i>	Hardwood-dominant forest/mixedwood forest
Sugar maple ( <i>Acer saccharum</i> )	<i>Snaweyey</i>	Hardwood-dominant forest/mixedwood forest
Common yarrow ( <i>Achillea millefolium</i> )	N/A	Disturbed areas
Pearly everlasting ( <i>Anaphalis margaritacea</i> )	<i>Wapwasuek</i>	Disturbed areas
Wild sarsaparilla ( <i>Aralia nudicaulis</i> )	<i>Wopapa'kjukal</i>	Hardwood-dominant forest/softwood-dominant forest/mixedwood forest/wetlands
Yellow birch ( <i>Betula alleghaniensis</i> )	<i>Nimnoqn</i>	Hardwood-dominant forest/mixedwood forest/disturbed areas
Sweet-fern ( <i>Comptonia peregrina</i> )	N/A	Disturbed areas
Goldthread ( <i>Coptis trifolia</i> )	<i>Wisawkweskl</i>	Mixedwood forest/wetlands
Beaked hazelnut ( <i>Corylus cornuta</i> )	<i>Mlipkanjmusi</i>	Mixedwood forests
American beech ( <i>Fagus grandifolia</i> )	<i>Suomusi</i>	Hardwood-dominant forest/mixedwood forests/wetlands
Wild strawberry ( <i>Fragaria virginiana</i> )	<i>Atuomkominaqsi</i>	Disturbed areas
Creeping snowberry ( <i>Gaultheria hispida</i> )	<i>Kna'ji'j</i>	Softwood-dominant forest/mixedwood forest/disturbed areas/wetlands
Harlequin blue flag ( <i>Iris versicolor</i> )	N/A	Disturbed areas
Sheep laurel ( <i>Kalmia angustifolia</i> )	N/A	Softwood-dominant forest/mixedwood forest/disturbed areas/wetlands
Inflated lobelia ( <i>Lobelia inflata</i> )	<i>Tmawey</i>	Disturbed areas
Partridgeberry ( <i>Mitchella repens</i> )	<i>Ka'qaujumnaqsi</i>	Hardwood-dominant forest/mixedwood forest/wetlands
Red spruce ( <i>Picea rubens</i> )	<i>Mekwe'k kawatkw</i>	Hardwood-dominant forest/mixedwood forest/disturbed areas
Eastern white pine ( <i>Pinus strobus</i> )	<i>Kuow</i>	Hardwood-dominant forest/mixedwood forest/disturbed areas/wetlands
Common plantain ( <i>Plantago major</i> )	<i>Wijikanipkl</i>	Disturbed areas
Pin cherry ( <i>Prunus pensylvanica</i> )	<i>Maskwe'simanaqsi</i>	Hardwood-dominant forest/softwood-dominant forest/disturbed areas
Choke cherry ( <i>Prunus virginiana</i> )	<i>Elwimanaqsi</i>	Wetlands/Forests

Common Name ( <i>Scientific Name</i> )	Mi'kmaq Name	Habitats Observed within the LAA
Skunk currant ( <i>Ribes glandulosum</i> )	N/A	Wetlands/Forests
Alleghaney blackberry ( <i>Rubus allegheniensis</i> )	<i>Ajioqjimanaqsi</i> (blackberry)	Wetlands/disturbed areas (clear cut/previously cut-over habitats)
Red raspberry ( <i>Rubus idaeus</i> )	<i>Klitaw</i>	Hardwood-dominant forest/disturbed areas/wetlands
Dwarf red raspberry ( <i>Rubus pubescens</i> )	<i>Katomin</i>	Hardwood-dominant forest
Red elderberry ( <i>Sambucus racemosa</i> )	<i>Pukulu'skwimanaqsi</i> (elderberry)	Hardwood-dominant forest
American mountain ash ( <i>Sorbus americana</i> )	<i>Epsimusi</i>	Softwood-dominant forest/mixedwood forest/disturbed areas
Late lowbush blueberry ( <i>Vaccinium angustifolium</i> )	<i>Pkwiman</i> (blueberry)	Softwood-dominant forest
Velvet-leaved blueberry ( <i>Vaccinium myrtilloides</i> )	<i>Pkwiman</i> (blueberry)	Softwood-dominant forest/mixedwood forest/disturbed areas/wetlands
Northern wild raisin ( <i>Viburnum cassinoides</i> )	<i>Skinaqanmusi</i>	Mixedwood forest/disturbed areas/wetlands

### 3.1.1.5 Invasive Vegetation

Plant specialists documented the presence of invasive species that were encountered during the vegetation surveys and other biophysical surveys conducted between 2021 and 2022 for the proposed Project. A summary of the invasive species found in the terrestrial LAA during the 2021 and 2022 field surveys is presented in **Table 10**. For this assessment, invasive species are species that have been introduced into areas beyond their native range and negatively impact the environment, the economy, or society (Nova Scotia Invasive Species Council 2021). Numerous species of exotic plants that are typically considered weeds and are common in Nova Scotia were identified within the LAA, particularly in disturbed areas and along roadsides. It is important to note that not all exotic plant species in Nova Scotia are anticipated to take over natural habitat areas.

**TABLE 10: 2021 AND 2022 INVASIVE VEGETATION SPECIES FOUND IN THE BENJAMINS MILL TERRESTRIAL LAA**

Common Name	Scientific Name	Description	Habitat at Benjamins Mill Site
Common Hawkweed	<i>Hieracium lachenalii</i>	Considered highly invasive in woodlands, fields, and roadsides. <sup>2</sup>	Softwood-dominant forests and other anthropogenic disturbed areas

Common Name	Scientific Name	Description	Habitat at Benjamins Mill Site
Common St. John's-Wort	<i>Hypericum perforatum</i>	Inhabits agricultural areas, forest openings, and meadows. May poison livestock, but is of low concern. <sup>1</sup>	Agricultural areas, forest openings and meadows
Oxeye Daisy	<i>Leucanthemum vulgare</i>	Invasive – crowds out native plants in disturbed areas; of moderate concern. <sup>1</sup>	Blueberry fields and other anthropogenic disturbed areas
Norway Spruce	<i>Picea abies</i>	Potential concern as an invasive – can form dense evergreen canopies in deciduous forests. <sup>1</sup>	Softwood-dominant forests, plantation/Blueberry fields and other anthropogenic disturbed areas

**Notes:**

1. Canadian Wildlife Federation 2022.
2. King County. 2018.

### 3.1.1.6 Assessment Conclusions

Based on the results of the desktop review and confirmed through a two-year field assessment of terrestrial habitats and vegetation, the habitat types identified in the LAA for the vegetation and lichens include:

- Hardwood-dominated forest;
- Mixedwood dominated forest;
- Softwood-dominated forests;
- Clear cut or previously cut-over areas;
- Bogs and fens; and,
- Swamps and marshes.

Two SoCC vascular plants, one SAR lichen and five SoCC lichen (were identified during biological field surveys over 2021 and 2022. Lichen SoCC observed include: Frosted Glass-whiskers Lichen (*Sclerophora peronella*; listed as S3S4 and Special Concern under SARA and COSEWIC), Shaggy Fringed Lichen (*Anaptychia palmulata*; listed as S3S4), Blistered Tarpaper Lichen (*Collema nigrescens*; listed as S3 in Nova Scotia by the AC CDC), Acadian Jellyskin Lichen (*Leptogium acadiense*; listed as S3S4), Powdered Fringe Lichen (*Heterodermia speciose*; listed as S3S4), and Eastern Candlewax Lichen (*Ahtiana aurescens*; listed as S2S3). Vascular plant SoCC include: meadow horsetail (*Equisetum pretense*, listed as S3S4) and American beech (*Fagus grandifolia*; listed as S3S4), which was identified in hardwood-dominant forest, mixedwood forests and swamps and marshes habitat types in the LAA

The Project has been sited to minimize the potential impact of the Project on natural landscapes and undisturbed natural habitat by selecting lands previously impacted by anthropogenic activities. In this case, approximately 34% of the PDA is sited on lands previously or presently used for forestry activities, agricultural operations, and access roads and trails. The Project aims to benefit the area by providing an environmentally friendly and

productive source of renewable energy for Nova Scotia, while limiting potential impacts to the natural environment.

## 3.1.2 Terrestrial Wildlife

### Scope of VEC

Wildlife and wildlife habitat were selected as a valued environmental component (VEC) because they are valued in their relationship with species at risk, vegetation, and other biological and physical components addressed as VECs in this EA. In addition, species at risk (SAR) are protected under federal and provincial legislation (pursuant to the federal *Species at Risk Act* [SARA] and the *Nova Scotia Endangered Species Act* [NSES]).

For the terrestrial environment, the LAA is defined as a buffer of 50 m along roads required to access the turbine sites during construction and operation and along the powerline corridors, as well as a buffer of 150 m around the turbine bases, substations, and ancillary equipment (**Figure 5**). The LAA encompasses the terrestrial habitats located adjacent to the PDA for the assessment of terrestrial wildlife and habitats that are most likely to be impacted by the Project. Around turbine bases, substations and ancillary equipment, the LAA includes a larger buffer (i.e., 150 m) to assess current disturbances and understand the potential effects of the Project on wildlife and wildlife habitats.

The scope of work for the wildlife surveys is based on the recommended approach outlined in the *Guide to Preparing an EA Registration Document for Wind Power Projects in Nova Scotia* (NSECC 2021), as well as in the *Guide to Addressing Wildlife Species and Habitat in an EA Registration Document* (NSECC 2009). The scope of work for the wildlife and wildlife habitat surveys included the following:

- An initial desktop assessment of habitats within the Local Assessment Area (LAA);
- A desktop assessment of wildlife SAR and SoCC that have the potential to occur within the Potential Development Area (PDA);
- Targeted habitat search of reptiles and amphibians within the LAA; and
- Incidental observations of terrestrial wildlife, signs and habitat documentation throughout the 2021 and 2022 field seasons.

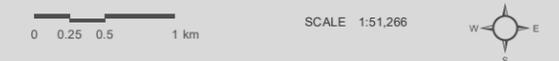
The SAR assessment is comprised of a review of two custom AC CDC reports and the SAR detected during the various field assessments. Details regarding approach, methodology and results of the wildlife SAR assessment are presented in **Section 3.1.7**.

Due to the complexity of the specific assessments conducted for birds and bats, the details of those surveys are included in their own respective reports (**Section 3.1.5** and **Section 3.1.6**, respectively). For more detailed methodology and results, refer to the full wildlife assessment (**Appendix C**).

**STUDY AREA AND LOCAL ASSESSMENT AREA FOR WILDLIFE**

FIGURE 5

-  Proposed Turbine Location
-  Proposed Substation Location
-  Potential Development Area (PDA)
-  Local Assessment Area
-  Highway
-  Watercourse
-  Waterbodies

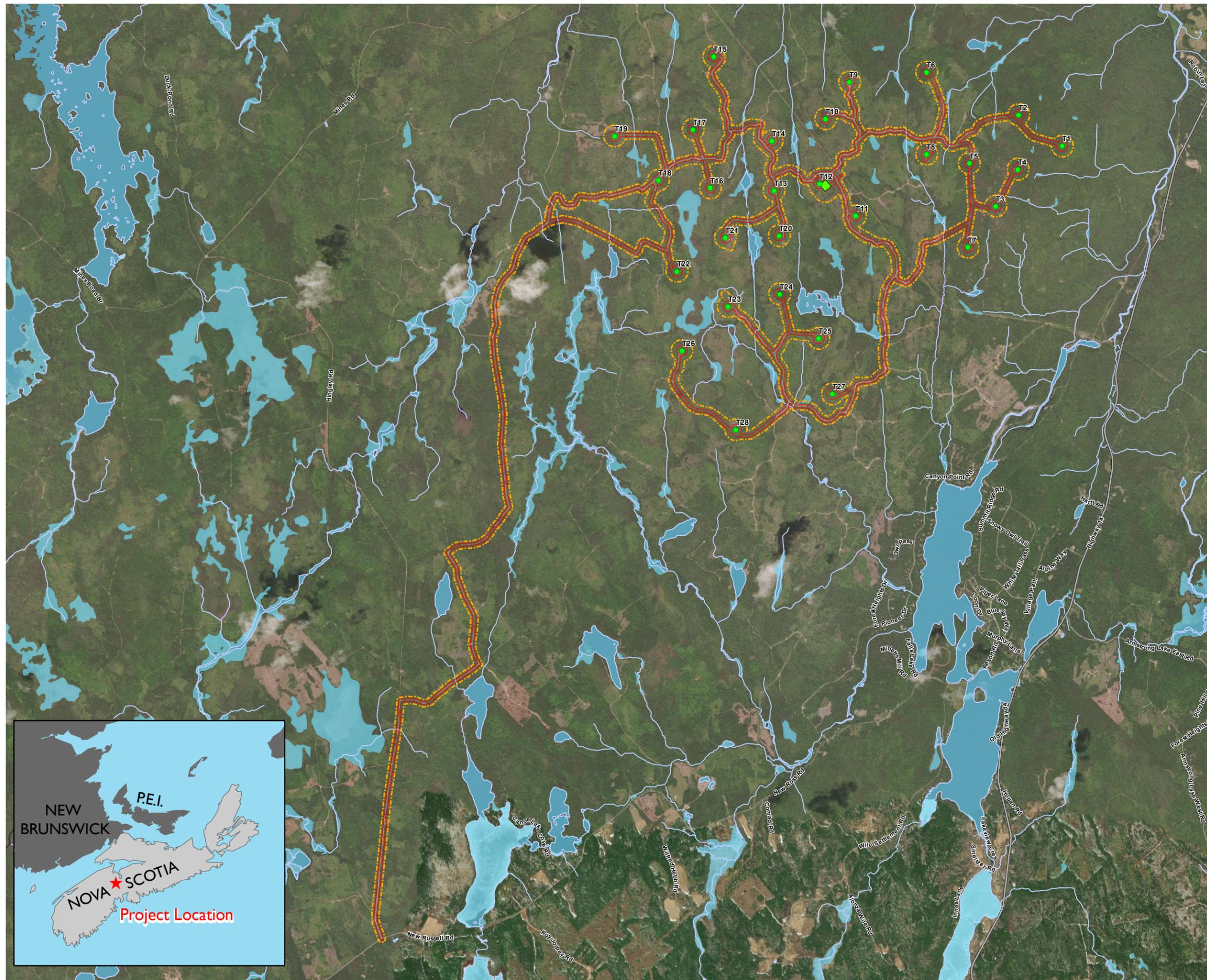


MAP DRAWING INFORMATION:  
DATA PROVIDED BY DILLON CONSULTING, GEONB, NATURAL FORCES

MAP CREATED BY: DU  
MAP CHECKED BY: KB  
MAP PROJECTION: NAD 1983 UTM ZONE 20N



PROJECT: 21-1329  
STATUS: DRAFT  
DATE: 2022-12-14



### 3.1.2.1 Desktop Survey and Habitat Assessment

#### Approach and Methodology

Prior to completing the terrestrial field surveys, Dillon reviewed readily-available information from reputable sources. The information was reviewed to evaluate the potential for wildlife and wildlife habitat within the LAA, and to assist in scoping the field program. The information was reviewed, along with information on habitats present in the LAA to determine preliminary potential for at-risk wildlife species and/or their critical habitat. Dillon completed a review of the following sources and data lists prior to completing the field surveys:

- *Guide to Addressing Wildlife Species and Habitat in an EA Registration Document* (NSE 2009);
- Custom AC CDC reports for the site (**Appendices I and J**);
- Available mapping to develop a list of potential terrestrial wildlife habitats from:
  - Nova Scotia Department of Natural Resources and Renewables (NSDNRR) forest inventory database;
  - NSDNRR ownership and restricted/limited land-use database;
  - NSDNRR wet areas mapping (WAM);
  - Publicly-available GIS map layers (e.g., ecological land classification, forest and non-forest inventory, wetland inventory, Protected Natural Areas, and Wildlife Management Zones);
  - NS Provincial Landscape Viewer; and
  - Google® Earth satellite imagery.

Following the recommendation of Environment and Climate Change Canada's (ECCC) Canadian Wildlife Service (CWS), available mapping through the NS DNRR was reviewed to identify forest types, general land use, wetlands, and watercourses within 500 m of the PDA. Observations gathered during the biophysical assessments carried out for this EA and aided by Google® satellite imagery were used to confirm the existing site conditions within the PDA. A GIS map (**Figure 4**) was generated to show the existing habitat and land use features within the PDA and to calculate the area of potential disturbance within each land type.

#### Results

The following managed or protected habitats have been identified within 5 km of the PDA:

- The Falmouth Municipal Water Supply and Water Supply Area, approximately 3.5 km north;
- Mill Lakes Watershed, approximately 4.7 km east; and
- Southern Bight Minas Basin Important Bird Area (IBA), approximately 3.8 km northeast.

A deer wintering area (DWA) is located adjacent to the Project site, on the north side of the West Branch of the Avon River. During the winter, white-tailed deer (*Odocoileus virginianus*) congregate in high-density groups in areas that provide shelter from prevailing wind, offer maximum exposure to the sun, and offer cover, as well as access to vegetation for browsing (NSDNR 2012). DWAs are identified by NSDNRR as areas for special management practices in

Nova Scotia. Although there are no designated DWAs within the PDA, there is potential for deer to winter in uncut forest areas, generally located on the east side of the Project site.

The habitats identified within the PDA are shown on **Figure 4**, indicating the areal coverage within the PDA as well as the area surrounding the Project. These areal coverages are summarized in **Table 8**, indicating the estimated area in hectares (ha) within the PDA and estimated percentage each habitat covers within the PDA.

The Project layout was designed to minimize the disturbance of naturalized areas by prioritizing development in areas with existing anthropogenic disturbance. Some areas within the proposed footprint for the Project will extend through less disturbed habitat types, including areas with mature trees, wetlands, and watercourses. Approximately 34% of the PDA is located within areas that have been previously disturbed by forestry, recreational trails and access roads, the remaining 66% of the PDA will be developed within existing forest habitat. It is noted that the PDA was conservatively defined and includes areas that are unlikely to be directly impacted by the Project (e.g., areas below collector lines that will be spanned using poles and buffered areas extending from the shoulders of access roads etc.).

### 3.1.2.2 Field Assessment

#### Approach and Methodology

Field studies of terrestrial habitats were conducted between April and October in 2021 and 2022, in collaboration with other targeted field surveys (i.e., bird surveys, wetlands, watercourses, baseline vegetation and rare plants). Biologists focused on the general characterization of available terrestrial habitats within the survey areas, as well as the potential for sensitive species or their critical habitats occurring in the survey area. The following criteria were documented:

- Occurrence of SAR/SoCC;
- Potential habitat for SAR/SoCC; and
- Incidental observation and documentation of observed wildlife (regardless of conservation status), signs of wildlife, and their habitat.

Such detections are rarely direct observations or vocalizations, but rather proxy evidence that is left behind and remains identifiable to species for some time after the animal has moved on. This includes more readily detectable indicators such as animal tracks in snow/mud, or animal scat, but also less obvious indicators such as browse marks, dens, or burrows. When possible, photographs were taken (see **Appendix C** for a photo plate).

#### Results

During the 2021 and 2022 field surveys, observations of 11 mammal species and 13 herptile (i.e., reptiles and amphibians) species were identified within the assessment area. Where data are available, the locations of observations are shown on **Figure 6**.

The mammal species observed or detected include:

- American beaver (*Castor canadensis*)
- Northern raccoon (*Procyon lotor*)

- Bobcat (*Lynx rufus*)
- American black bear (*Ursus americanus*)
- Fisher (*Pekania pennanti*)
- Eastern coyote (*Canis latrans*)
- North American porcupine (*Erethizon dorsatum*)
- Northern flying squirrel (*Glaucomys sabrinus*)
- Snowshoe hare (*Lepus americanus*)
- Striped skunk (*Mephitis mephitis*)
- White-tailed deer (*Odocoileus virginianus*).

Reptiles and amphibian (i.e., herptile) species observed, or detected, include:

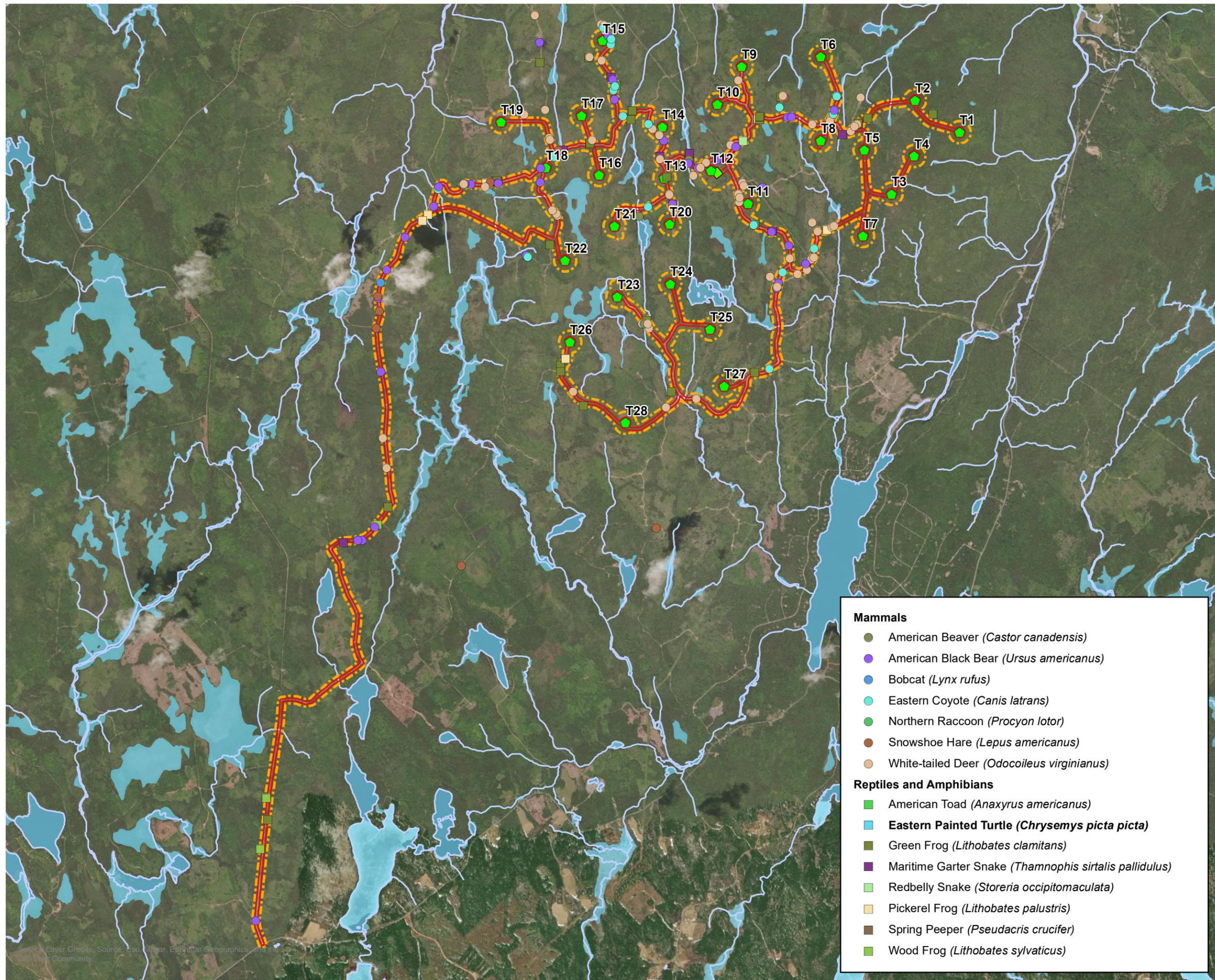
- Eastern newt (*Notophthalmus viridescens*)
- Green frog (*Lithobates clamitans*)
- Maritime garter snake (*Thamnophis sirtalis pallidulus*)
- Northern ring-necked snake (*Diadophis punctatus edwardsii*)
- Eastern painted turtle (*Chrysemys picta picta*)
- Northern leopard frog (*Lithobates pipiens*)
- Pickerel frog (*Lithobates palustris*)
- Redbelly snake (*Storeria occipitomaculata*)
- Mink frog (*Lithobates septentrionalis*)
- Spring peeper (*Pseudacris crucifer*)
- American bullfrog (*Lithobates crucifer*)
- American toad (*Anaxyrus americanus*)
- Wood frog (*Lithobates sylvaticus*)
- 3 observations of unidentified amphibian egg masses or tadpoles
- 2 observations of ideal amphibian breeding habitat.

A list of all recorded observations of wildlife species from the 2021 and 2022 field seasons (excluding birds and bats, which are included in their own reports) is presented in **Appendix C** and includes their AC CDC S-ranks, date of observation, and type of observation. The wildlife species observed have apparently secure and secure populations (i.e., ranked as S4 or S5) within Nova Scotia according to the AC CDC (2022) except for the fisher which is ranked as S3 for vulnerable. Although ranked S4S5 by the AC CDC, the eastern painted turtle is listed as *Special Concern* under SARA. Fishers and eastern painted turtles are further discussed in **Section 3.1.7** as SoCC and SAR, respectively.

TERRESTRIAL WILDLIFE OBSERVATIONS WITHIN THE LOCAL ASSESSMENT AREA

FIGURE 6

-  Proposed Turbine Location
-  Proposed Substation Location
-  Potential Development Area (PDA)
-  Local Assessment Area
-  Watercourse
-  Waterbodies



- Mammals**
-  American Beaver (*Castor canadensis*)
  -  American Black Bear (*Ursus americanus*)
  -  Bobcat (*Lynx rufus*)
  -  Eastern Coyote (*Canis latrans*)
  -  Northern Raccoon (*Procyon lotor*)
  -  Snowshoe Hare (*Lepus americanus*)
  -  White-tailed Deer (*Odocoileus virginianus*)
- Reptiles and Amphibians**
-  American Toad (*Anaxyrus americanus*)
  -  **Eastern Painted Turtle (*Chrysemys picta picta*)**
  -  Green Frog (*Lithobates clamitans*)
  -  Maritime Garter Snake (*Thamnophis sirtalis pallidulus*)
  -  Redbelly Snake (*Storeria occipitomaculata*)
  -  Pickerel Frog (*Lithobates palustris*)
  -  Spring Peeper (*Pseudacris crucifer*)
  -  Wood Frog (*Lithobates sylvaticus*)

\*Note: Bold indicates a Species at Risk



SCALE 1:50,000

MAP DRAWING INFORMATION:  
DATA PROVIDED BY DILLON CONSULTING, NSDNRR, NATURAL FORCES

MAP CREATED BY: MEC  
MAP CHECKED BY: KB  
MAP PROJECTION: NAD 1983 UTM ZONE 20N



PROJECT: 21-1329

STATUS: DRAFT

DATE: 2022-12-14

### 3.1.2.3 Assessment Conclusions

Based on the results of the terrestrial wildlife observations completed in 2021 and 2022, all populations of wildlife found within the PDA are secure according to the AC CDC (2022); however, the eastern painted turtle is listed as *Special Concern* under the federal SARA, and the fisher is ranked as S3 by the AC CDC. Observations of mammal and herptile species encountered during field studies only included species that are considered to be native to Nova Scotia and no invasive wildlife species were encountered.

To minimize the potential impact of the Project on existing landscapes and undisturbed wildlife habitat, approximately 34% of the proposed locations for the WTGs and associated infrastructure were selected because they have been previously cut through forestry activities and have an existing network of forestry access roads. The Project aims to benefit the site by providing an environmentally friendly and productive source of renewable energy for Nova Scotia while limiting potential impacts to the natural environment and the disturbance of environmental features.

### 3.1.3 Wetlands

#### Scope of VEC

Wetlands are included as a biophysical valued environmental component (VEC) as these ecosystems perform many important ecological, social, and economic functions and services in landscapes (NSE 2019).

The wetlands LAA (**Figure 7**) covers a buffer of 500 m around the PDA, where predicted wetlands were modelled. The study area is where fieldwork surveys were conducted, and it encompassed wetlands located within 30 m of the PDA. A 30 m wide protective buffer of natural, undisturbed vegetation around a wetland is encouraged to protect wetlands from the impact of outside threats, and serves as important habitat for wildlife (NBDELG, 2002).

To support the assessment of the potential effects of the Project on wetlands, the scope of work for the wetland surveys was based on the recommended approach outlined in the Nova Scotia Wetland Conservation Policy (NSE 2019). The scope of the wetlands assessment included:

- Initial desktop assessment of wetlands within the Local Assessment Area (LAA) to identify potential locations of wetlands and inform, and refine, the field surveys;
- Delineation and classification of wetlands through field surveys completed within the study area of a 30 m buffer of the PDA; and
- Functional assessment of wetlands in the study area that have the potential to be impacted.