

Henvey Inlet Wind LP

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Natural Heritage Assessment: Site Investigation Report – Final Draft

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List of Acronyms and Glossary

ANSI	Area of Natural and Scientific Interest
Candidate Important Wildlife Habitat	Potential area of wildlife habitat that may be considered important using procedures established or accepted by the Ministry of Natural Resources and Forestry.
Confirmed Important Wildlife Habitat	Area of important wildlife habitat verified using procedures established or accepted by the Ministry of Natural Resources and Forestry.
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
COSSARO	Committee on the Status of Species at Risk in Ontario
CLI	Canada Land Inventory
DFO	Fisheries and Oceans Canada
Dripline	The area defined by the outermost circumference of a tree canopy.
EC-CWS	Environment Canada – Canadian Wildlife Service
EIS	Environmental Impact Study
ELC	Ecological Land Classification; refers to ecological units defined on the basis of bedrock, climate (temperature, precipitation), physiography (soils, slope, aspect) and corresponding vegetation.

ESA	Environmental Sensitive Area
Feathering of blades	Pitching of turbine blades out of the wind so the turbine does not capture the wind and will not produce power.
Federal SAR	Species listed as Endangered or Threatened under Schedule 1 of the federal <i>Species at Risk Act, 2002</i> .
Frac-out	Escape of drilling mud into the environment as a result of a spill, tunnel collapse or the rupture of mud to the surface.
Generalized Candidate Important Wildlife Habitat	Potential wildlife habitats listed in Appendix D of the <i>Natural Heritage Assessment Guide for Renewable Energy Projects</i> (MNRF, 2012a), which are not required to be identified for a particular HIWEC component, but may exist within 120 metres (m) of that component and are assumed to exist.
GIS	Geographic Information System
HIWEC	Henvey Inlet Wind Energy Centre
HIWEC Location	The area encompassing all construction activities and HIWEC components.
Important	Natural feature that (1) the Ministry of Natural Resources and Forestry has identified as important, or (2) has been determined to be important using applicable evaluation criteria or procedures established or accepted by the Ministry of Natural Resources and Forestry.
IWH	Important Wildlife Habitats
LIO	Land Information Ontario
MNRF	Ontario Ministry of Natural Resources and Forestry
MOECC	Ontario Ministry of Environment and Climate Change
Natural Feature	One of the following: (1) an Area of Natural and Scientific Interest (earth science or life science), (2) a wetland, (3) a wildlife habitat, (4) a woodland, (5) a provincial park, or (6) a conservation reserve.
NHIC	Natural Heritage Information Centre
NRVIS	Natural Resource Value and Information System
NTS	National Topographic System
OGS	Ontario Geological Survey
OGSR	Oil, Gas and Salt Resources
OPA	Ontario Power Authority
OWES	Ontario Wetland Evaluation System
PIW	Provincially Important Wetland
Provincial SAR	Species listed as Endangered or Threatened under the provincial <i>Endangered Species Act, 2007</i> but not listed as Endangered or Threatened under Schedule 1 of the federal <i>Species at Risk Act, 2002</i> .

REA	Renewable Energy Approval
SAR	Species at Risk, including both Federal SAR (species listed as Endangered or Threatened under Schedule 1 of the federal <i>Species at Risk Act, 2002</i>) and Provincial SAR (species listed as Endangered or Threatened under the provincial <i>Endangered Species Act, 2007</i> but not listed as Endangered or Threatened under Schedule 1 of the federal <i>Species at Risk Act, 2002</i>).
SARA	Federal <i>Species at Risk Act, 2002</i>
SARO	Species at Risk In Ontario
SOCC	Species of Conservation Concern, including (a) provincially rare species ranked by the Natural Heritage Information Centre (NHIC) as S1 (critically imperiled), S2 (imperiled) or S3 (vulnerable) in the province of Ontario but not listed as Endangered or Threatened under Schedule 1 of the federal <i>Species at Risk Act, 2002</i> (SARA) or the provincial <i>Endangered Species Act, 2007</i> (ESA); (b) species listed as Special Concern under Schedule 1 of SARA; (c) species evaluated by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as Special Concern, Threatened or Endangered but not listed as Endangered or Threatened under Schedule 1 of SARA or the ESA; and (d) species listed as Special Concern under the ESA.
SWHTG	Significant Wildlife Habitat Technical Guide
UTM	Universal Transverse Mercator
Wetland	Land such as a swamp, marsh, bog or fen, other than land that is being used for agricultural purposes and no longer exhibits wetland characteristics, that (a) is seasonally or permanently covered by shallow water or has the water table close to or at the surface, and (b) has hydric soils and vegetation dominated by hydrophytic or water-tolerant plants.
Wildlife Habitat	Area where plants, animals and other organisms live or have the potential to live and find adequate amounts of food, water, shelter and space to sustain their population, including an area where a species concentrates at a vulnerable point in its annual or life cycle and an area that is important to a migratory or non-migratory species.
Woodland	Treed area, woodlot or forested area, other than a cultivated fruit or nut orchard or a plantation established for the purpose of producing Christmas trees, that is located south and east of the Canadian Shield.

1. Introduction

1.1 Project Overview

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 and Nigig Power Corporation, 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). AECOM Canada Ltd. (AECOM) was retained by HIW to prepare an Environmental Assessment (EA) for the proposed HIWEC. The EA was conducted in accordance with the Henvey Inlet First Nation Environmental Assessment Guidance Instrument (HIFN EA Guidance) requirements.

The HIFN EA Guidance document includes a requirement to complete a Natural Heritage Assessment (NHA) having regard to the provincial process. Under the provincial process, a proponent who proposes to engage in a renewable energy project is required to conduct a NHA, consisting of the following:

- A Records Review;
- A Site Investigation; and
- An Evaluation of Importance (EOI).

Through this process, proponents identify natural features near the proposed HIWEC location and determine if prohibitions and setbacks apply. In instances where the HIWEC location is proposed within such a setback, the proponent must prepare an Environmental Impact Study (EIS) Report to identify and assess the potential negative environmental effects that may result from the proposed HIWEC, identify appropriate mitigation measures and describe how the potential effects will be addressed through the Environmental Effects Monitoring Plan (EEMP) and Construction Plan Report.

This document is intended to address the Site Investigation requirements of the NHA for the HIWEC, including documenting the following with respect to the air, land, and water within 120 metres (m) of the HIWEC location:

- A summary of any corrections to the Records Review Report and the determinations made as a result of conducting the Site Investigation;
- Information establishing the type of each natural feature identified in the Records Review and in the Site Investigation;
- A map showing:
 - All boundaries, located within 120 m of the HIWEC location, of any natural feature that was identified in the Records Review Report or the Site Investigation;
 - The location and type of each natural feature identified in relation to the HIWEC location;
 - The distance from the HIWEC location to the boundaries of a natural feature, as defined above;
- A summary of methods used to make observations for the purposes of the Site Investigation;
- The name and qualifications of the person conducting the Site Investigation;
- If an investigation was conducted by visiting the site, include:
 - The dates and times of the beginning and completion of the Site Investigation;
 - The duration of the Site Investigation;
 - The weather conditions during the Site Investigation;
 - Field notes kept by the person conducting the Site Investigation;

- If an alternative investigation of the site was conducted, include:
 - The dates of the generation of the data used in the Site Investigation; and
 - An explanation of why the person who conducted the alternative investigation determined that it was not reasonable to conduct the Site Investigation by visiting the site.

Throughout this NHA, the term “significant” or “significance” as per provincial requirements has been changed to “important” or “importance” as the term “significance” has specific meaning in the federal EA process which is different from the meaning in the provincial process. Therefore, the term in the provincial process has been changed to avoid confusion. The meaning of “significance” in the provincial process is carried over to the term “importance” for the purpose of the NHA. The term “significance” is not changed if it is in the title of a reference document.

1.2 Summary of Natural Features Carried Forward from the Records Review

Table 1-1 summarizes the natural features identified through the Records Review as occurring or potentially occurring within 120 m of the HIWEC location; these are the features that were carried forward to the Site Investigation. The Site investigation was conducted to confirm the presence and boundaries of these features, as well as to determine whether any additional natural features are present within 120 m of the HIWEC location.

Table 1-1: Summary of Natural Features Identified Through the Records Review

Feature	Results of Records Review
Conservation Reserves	<ul style="list-style-type: none"> • The North Georgian Bay Shoreline and Islands Conservation Reserve is located within 120 m of the HIWEC location.
Provincially Important Wetlands	<ul style="list-style-type: none"> • Unevaluated wetlands are present within the HIWEC study area and may be present within 120 m of the HIWEC location.
Important Wildlife Habitat	<ul style="list-style-type: none"> • Several types of IWH may occur within 120 m of the HIWEC location.
Federal Species at Risk	<ul style="list-style-type: none"> • In total, 18 Federal Species at Risk have the potential to occur within 120 m of the HIWEC location.
Provincial Species at Risk	<ul style="list-style-type: none"> • In total, two (2) Provincial Species at Risk have the potential to occur within 120 m of the HIWEC location.

2. Methods

HIFN EA Guidance requires that a Site Investigation be conducted to identify natural features associated with a renewable energy project. The Site Investigation is to include an investigation of the air, land, and water within 120 m of the HIWEC location, either by visiting the site or by an alternative investigation of the site, for the purpose of making the following determinations:

- Whether the results of the Records Review Report are correct or require correction(s);
- Whether any additional natural features exist, other than those identified in the Records Review Report;
- The boundaries, located within 120 m of the HIWEC location, of any natural feature that was identified in the Records Review Report or the Site Investigation; and
- The distance from the HIWEC location to the boundaries of a natural feature, as defined above.

An alternative to a site investigation may be conducted only if the proponent determines that it is not reasonable to conduct a site investigation by visiting the site.

The Site Investigation was completed for the area encompassed by the HIWEC location and the area within 120 m of the HIWEC location from October 21, 2014 through November 14, 2014 and April 13, 2015 through July 2, 2015. For each type of natural feature carried forward from the Records Review (i.e., wetlands, IWH and Conservation Reserves) as well as habitats for Species at Risk identified through the Records Review, the Site Investigation was conducted to determine their presence, boundaries, composition, form and function. Any additional natural features not previously documented in the Records Review were also identified during the Site Investigation, if present. Corrections to the Records Review, including changes to the boundaries of previously identified natural features and any additional features identified based on the results of the Site Investigation are documented in **Section 4.3**.

The following sections describe the methods used to conduct the Site Investigation and provide summaries of the results. The names and qualifications (i.e., curriculum vitae) for all persons involved in conducting the Site Investigation are provided in **Appendix A**. The dates, times, duration, weather conditions and field notes related to the Site Investigation are provided in **Appendix B**.

2.1 Ecological Land Classification (ELC) and Vascular Plant Surveys

The protocol for the *Ecological Land Classification for Southern Ontario* (Lee *et al.*, 1998) was used to classify and delineate vegetation communities within 120 m of the HIWEC location through a combination of both aerial photography interpretation (i.e., an alternative investigation) and field studies (i.e., by visiting the site). Ecological Land Classification (ELC) is the provincially accepted standard for classifying vegetation communities in Ontario, and provides methods for identifying and mapping areas in a form that is useful for land use planning. It uses a series of six (6) nested levels (Site Region, System, Community Class, Community Series, Ecosite and Vegetation Type) to describe the ecological form and function of a vegetation community in a spatial context, from largest to smallest scale. Vegetation communities are classified into each of these levels based on the stand structure and species composition, which includes noting species dominance within each vegetation layer and a delineation of vegetation communities into distinct ELC polygons.

Prior to conducting field studies, vegetation communities within the HIWEC study area (and in a few cases immediately outside the boundary) were initially delineated and classified to the lowest level possible as a desktop exercise, through interpretation of a combination of stereographic (AOO, 1987 and 1989) and aerial photographs taken of the HIWEC study area by Tulloch Engineering on June 29, 2015, as well as ELC mapping previously

completed through field studies completed by Stantec in 2013 (AECOM, 2015a). Vegetation communities identified to overlap with the HIWEC location were investigated on-site during ELC field studies. The purpose of the ELC field studies was to confirm and / or to further refine the delineated boundaries and ELC classifications identified through the desktop exercise.

An alternative investigation was completed for the areas within 120 m of the HIWEC, based on the desktop exercise described above. Detailed field studies were conducted within a 50 m area at access road and collector line, and transmission line locations and a 160 m by 160 m area around turbine locations to confirm the results of the desktop analysis. It was considered unnecessary and unreasonable to conduct a Site Investigation on the full 120 m area based on the extensive field effort that would be required and the abundance of baseline information collected from 2011 to 2013 (as described in the Records Review Report). As well, field studies covered additional areas that are not anticipated to be disturbed during construction of the HIWEC for flexibility in final HIWEC siting.

In order to facilitate the Site Investigation, including ELC field studies, data collection and reporting, each ELC polygon delineated through aerial photography interpretation was assigned a unique identifier consisting of the study area name, field map number and a numerical ELC polygon ID. Data collected for each ELC polygon were linked to its unique identifier for data management purposes. Survey data were later analyzed to identify natural features (i.e., woodlands, wetlands, IWH and Conservation Reserves), as required by the NHA process.

During the ELC field studies, field staff walked through the entire HIWEC location and completed a combination of soil profile analyses, basal area prism sweeps, and multilayer (canopy, sub-canopy, and ground cover) vegetation inventories for each ELC polygon. Wherever possible, communities were described to the Vegetation Type level, which is the finest level of classification. In certain instances, some of the vegetation communities observed on-site did not fit within the existing ELC designations for Vegetation Type; these communities were described to the Ecosite level. Field staff used electronic tablets to record data during the field studies. Electronic versions of the standard ELC cards were used to collect the following information for each surveyed ELC polygon:

- Names of field staff;
- Date;
- Survey start and end times;
- UTM co-ordinates;
- Weather conditions, including temperature (°C), cloud cover, precipitation and wind speed (Beaufort scale);
- Stand description and composition;
- Age of vegetation community;
- Tree tally;
- Soil description; and
- Representative photographs of the community.

ELC field data were also collected on electronic field maps including modifications to ELC polygon boundaries delineated through the desktop exercise and ELC classifications. ELC codes were recorded on all maps being used.

Vascular plant inventories and incidental wildlife observations were completed in conjunction with ELC field studies. Plant or animal Species at Risk (SAR) and Species of Conservation Concern (SOCC) were searched for during these surveys and were recorded if encountered.

2.2 Wetlands

Unevaluated wetlands were identified within the HIWEC study area through the Records Review. Wetlands within the HIWEC study area are considered to be Northern Wetlands in accordance with the Ministry of Natural Resources' (MNRF) Ontario Wetland Evaluation System (OWES) manual for northern Ontario (MNRF, 2014a). The presence, boundaries and characteristics of wetland features were confirmed during the Site Investigation in conjunction with ELC field studies within the HIWEC location. Field data and a desktop analysis (as described in **Section 2.1**) were used to identify wetlands in accordance with the *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNRF, 2012a).

Wetland boundaries were delineated in the field using standardized methods as outlined within the OWES manual for northern Ontario (MNRF, 2014a). More specifically, wetland boundaries were delineated using the “50% wetland vegetation rule”, where 50% of the physical area is covered by wetland indicator species and 50% by upland plant species (MNRF, 2014a). Wetland species identification was based on the Coefficient of Wetness Index in Oldham *et al.*, (1995), indicator species outlined in Appendix 10 of the OWES manual (MNRF, 2014a) and species identified in Newmaster *et al.* (1997). Tree and / or shrub forms were used as the best indicators for long-term site conditions. Where woody vegetation species did not clearly indicate upland or wetland areas, other vegetation forms were also considered.

The Coefficient of Wetness is one (1) component of the Floristic Quality Assessment System for Southern Ontario (Oldham *et al.*, 1995). This system provides a numerical ranking of the relative affinity for wet soil conditions for native plant species. For the purposes of the wetland index, plants are designated as:

- Obligate Wetland (-5):**..... almost always occurs in wetlands under natural conditions (estimated probability >99%);
- Facultative Wetland (-4 to -2):**..... usually occurs in wetlands, but occasionally found in non-wetlands (estimated probability 67 to 99%);
- Facultative (-1 to 1):**..... equally likely to occur in wetlands or non-wetlands (estimated probability 34 to 66%);
- Facultative Upland (+2 to +4):**..... occasionally occurs in wetlands, but usually occurs in non-wetlands (estimated probability 1 to 33%); and
- Obligate Upland (+5):**..... occurs almost never in wetlands under natural conditions (estimated probability <1%).

Some plant species can tolerate different moisture regimes and can occur in wetland and upland habitats. For example, Red Maple (*Acer rubrum*), which has a Wetness Index value of zero (0), demonstrates high genetic variability for soil conditions and can be found in very dry conditions and in areas where hydric soils or saturated conditions prevail. To further support the wetland boundary determination in areas where the vegetation does not clearly indicate a wetland community, a soil profile analysis was also completed to determine the presence / absence of hydric soils. Hydrologic conditions, including the presence of seeps, were also assessed.

Wetland features occurring within 120 m of the HIWEC location were identified as individual wetlands or wetland complexes meeting the minimum size requirements for evaluation outlined in the OWES manual (MNRF, 2014a) as follows:

- According to the OWES manual (MNRF 2014a), wetland complexes or contiguous wetlands smaller than 2 ha in size are generally not evaluated. In this assessment, all individual wetland complexes or contiguous wetlands greater than 2 ha in size were identified as wetland features. Those located at least partially within 120 m of the HIWEC location were carried forward to the EOI.

- Wetland complexes or contiguous wetlands smaller than 2 ha in size can, however, sometimes provide important habitat for wildlife or be important for other reasons and therefore may be evaluated if there is a rationale for including them. This is particularly true in wetland complexes. For the purposes of this NHA, individual wetland communities or contiguous groups of wetland communities less than 2 ha in size were assessed to determine whether they are functionally linked and no more than 750 m away from the outer boundary of a wetland feature greater than 2 ha in size. If these criteria were met, the wetland communities were complexed together, as per the wetland complexing procedure described in the OWES manual (MNRF 2014a). This procedure states that wetlands must not be complexed across watersheds, except in rare circumstances, and that the maximum distance between units of a wetland complex must not exceed 750 m (MNRF, 2014a). Complexing was completed through the delineation of watershed boundaries within the HIWEC study area to identify whether wetlands that are located within 750 m of each other are located in different watersheds. Wetlands where this occurred were not complexed with each other and were treated as separate wetland features. Consideration was given to wetland features that were formed as a result of flooding by a beaver dam with respect to the age and structural integrity of the beaver dam. Relatively new beaver dams are often more susceptible to breaking as opposed to longer standing beaver dams which can result in permanent wetlands. Wetland complexes located at least partially within 120 m of the HIWEC location were carried forward to the EOI. If a wetland less than 2 ha in size was not located within 750 m of the outer boundary of a wetland feature greater than 2 ha in size, it was assessed to determine if it provides an important ecological function, such as rare species, seepage or linkage functions.
- According to the OWES manual (MNRF 2014a), isolated individual wetland communities or contiguous groups of wetland communities that are less than 0.5 ha in size generally are not mapped, provided they do not contain rare wetland communities, species or other types of special features or functions. Wetlands that are less than 0.5 ha in size and not part of a wetland complex that is greater than 2 ha in size where no special features or functions were encountered were mapped, but were not included as wetland features for the purpose of the Site Investigation or EOI.

Field information pertaining to identified wetlands was recorded on ELC forms using the electronic tablets following the methods described in **Section 2.1**.

Vascular plant inventories and incidental wildlife observations were completed in conjunction with ELC field studies. Plant or animal Species at Risk (SAR) and Species of Conservation Concern (SOCC) were searched for during these surveys and were recorded if encountered.

2.3 Wooded Areas

The *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNRF, 2012a) defines a “woodland” as a “treed area, woodlot or forested area, other than a cultivated fruit or nut orchard or a plantation established for the purpose of producing Christmas trees, that is located south and east of the Canadian Shield”. The HIWEC study area is located within the Canadian Shield; therefore, woodland features as defined by the REA process are not present within the HIWEC study area. Nonetheless, the identification of these features contributes to an understanding of the wildlife habitats present within the HIWEC study area. Therefore the presence, boundaries (determined by the dripline of trees) and characteristics of wooded areas (i.e., features meeting the definition of woodlands except that they are located within the Canadian Shield) located in or within 120 m of the HIWEC location were confirmed during the Site Investigation in conjunction with the desktop analysis and ELC field studies as described in **Section 2.1**.

The following ELC classifications were considered to constitute wooded areas: all vegetation communities within FO Community Series, as well as SWD, SWM, SWC, CUW and RBT Ecosites. Wooded areas were further

identified according to MNRF (2012a) procedures, which state that “a bisecting opening 20 m or less in width between crown edge is not considered to divide a woodland into two (2) separate woodlands and the area of the developed opening (e.g., maintained public opening or rail line) is not included in the wooded area calculation”. Wooded areas were therefore established by grouping qualifying ELC polygons located within 20 m or less of each other. Wooded areas measuring at least 0.5 ha in size and located at least partially in or within 120 m of the HIWEC location were delineated and characterized.

Field information pertaining to identified wooded area was recorded on ELC forms using the electronic tablets following the methods described in **Section 2.1**.

Vascular plant inventories and incidental wildlife observations were completed in conjunction with ELC field studies. Plant or animal Species at Risk (SAR) and Species of Conservation Concern (SOCC) were searched for during these surveys and were recorded if encountered.

2.4 Important Wildlife Habitat

Potential or Candidate Important Wildlife Habitat (IWH) features were identified within the HIWEC study area through the Records Review. The presence, boundaries and characteristics of Candidate IWH features located within 120 m of the HIWEC location were confirmed during the Site Investigation in conjunction with ELC field studies as described in **Section 2.1**.

Candidate IWH features were identified using criteria assembled from the following sources:

- *Significant Wildlife Habitat Technical Guide* (MNRF, 2000);
- *Draft Significant Wildlife Habitat Ecoregion 5E Criterion Schedule* (MNRF, 2012b); and
- *Bats and Bat Habitats: Guidelines for Wind Power Projects* (MNRF, 2011).

A summary of the criteria and methods used to identify each type of Candidate IWH is provided in **Table 2-1**. Some information pertaining to identified Candidate IWH features was recorded on ELC forms using the electronic tablets following the methods described in **Section 2.1**. In addition, electronic IWH field forms were used to record the location and relevant characteristics of Candidate IWH features, as well as representative photographs. Different characteristics were recorded for different types of Candidate IWH in accordance with the criteria and methods outlined in **Table 2-1**. Incidental wildlife observations were also recorded during Site Investigations using the IWH field forms.

Wherever a feature met the criteria outlined in **Table 2-1** for a particular Candidate IWH type, Appendix D of the *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNRF, 2012a) was consulted to determine whether the feature should be carried forward to the EOI as Candidate IWH or as Generalized Candidate IWH. Features identified through the Site Investigation that are either overlapped by the HIWEC location or located within 120 m of qualifying HIWEC components (e.g., Wind Turbine Generator, access road and collector line, etc.) specific to the IWH type were identified and delineated as Candidate IWH. Features identified within 120 m of the HIWEC location but not within 120 m of qualifying HIWEC components specific to the IWH type were identified as Generalized Candidate IWH. Whenever a Candidate IWH feature was identified, a unique feature identifier (e.g., RH-01) was assigned to it for reference purposes.

Table 2-1: Summary of the Criteria and Methods Used to Identify Each Type of Candidate Important Wildlife Habitat (IWH)

Type of Candidate IWH	Characteristics of Candidate IWH	Methods Used to Complete Assessment
Seasonal Concentration Areas of Animals		
Waterfowl Stopover and Staging Areas (Aquatic)	<ul style="list-style-type: none"> Presence of the following Ecosites: MAM, MAS, SA, OAO; 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 IWH; Important sites generally have better habitat quality (e.g., optimal vegetation composition, ratio of open water to emergent vegetation, extensive shoreline, abundant food, and nocturnal roosting cover); and Larger wetlands are more important (size). 	<ul style="list-style-type: none"> Presence of marsh, shallow water or deciduous swamp communities large enough to act as waterfowl staging areas was searched for within 120 m of the HIWEC location through the Site Investigation. The following physical attributes were recorded for qualifying features found during field studies: <ul style="list-style-type: none"> Area and type of standing water; Percent open water; Percent aquatic vegetation cover; and Presence of staging waterfowl, numbers and species.
Shorebird Migratory Stopover Area	<ul style="list-style-type: none"> Presence of the following Ecosites: BBO, SDO, MAM; and Shorelines of lakes, rivers and wetlands, including beach areas, bars, seasonally flooded shoreline, mudflats, rock groynes, and other forms of armour rock lakeshore. 	<ul style="list-style-type: none"> Presence of undisturbed and unvegetated landscape found along shorelines and mudflats of lakes, rivers and wetlands was searched for within 120 m of the HIWEC location through the Site Investigation. The following physical attributes were recorded for qualifying features found during field studies: <ul style="list-style-type: none"> Type of shoreline habitat; Substrate type; Percent vegetation cover on shoreline; and Presence of staging shorebirds, numbers and species, if present.
Bat Hibernacula	<ul style="list-style-type: none"> All caves, abandoned mine shafts, underground foundations, karst, or one of the following Ecosites: CCR1, CCR2, CCA1, CCA2 (buildings are not to be considered IWH). 	<ul style="list-style-type: none"> Presence of caves, mine shafts, underground formations and karst was searched for within 120 m of the HIWEC location through the Site Investigation. The following physical attributes were recorded for any qualifying features found during field studies: <ul style="list-style-type: none"> Type of features (e.g., cave, crevice, mineshaft); Dimensions including approximate height, width and depth in metres (m); Type of rock; Presence of water; and Immediate surrounding vegetation.
Bat Maternity Colonies	<ul style="list-style-type: none"> Found in tree cavities and vegetation; Mature deciduous or mixed forest stands with > 10 large cavity trees (with at least 25 cm in diameter at breast height) per hectare; and Maternity roosts are not found in caves and mines in Ontario. 	<ul style="list-style-type: none"> Refer to Section 2.4.1 of this Report for a detailed description of the methods used to assess candidate bat maternity colonies.
Turtle Wintering Areas	<ul style="list-style-type: none"> Presence of all Ecosites associated with the following ELC Community Series: FEO, BOO; or the following ELC Community Classes: SW, MA, OA, SA; Open water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat (Northern Map Turtle); Overwintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate dissolved oxygen; and Water has to be deep enough not to freeze to the bottom and have soft mud substrates. 	<ul style="list-style-type: none"> Presence of ponds, large marshes, lakes or other water bodies was searched for within 120 m of the HIWEC location through the Site Investigation. The following physical attributes were recorded for qualifying features found during field studies: <ul style="list-style-type: none"> Type of standing water; Water depth (m); Habitat type (e.g., marsh, open aquatic, fen, bog, swamp); Surrounding vegetation; Substrate type; Percent open water; Percent emergent vegetation cover; and Presence of turtles and which species, if present.
Reptile Hibernacula	<ul style="list-style-type: none"> All ELC Ecosites can potentially contain these habitat features; 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 IWH; and Wetlands can also be important over-wintering habitat in conifer or shrub swamps with sphagnum moss or sedge hummock ground cover. 	<ul style="list-style-type: none"> Areas of broken and fissured rock, rock piles or slopes, stone fences, crumbling foundations, and suitable over-wintering wetlands were searched for within 120 m of the HIWEC location through the Site Investigation. The following physical attributes were recorded for qualifying features found during field studies: <ul style="list-style-type: none"> Habitat type (e.g., burrows, rock crevices, broken and fissured rock, wetlands with sedge hummocks and sphagnum moss); Potential for feature to extend below the frost line; Surrounding vegetation; and Presence of snakes and which species, if present.
Colonially-Nesting Bird Breeding Habitat (Bank and Cliff)	<ul style="list-style-type: none"> Presence of the following Ecosites: CUM1, CUT1, CUS1, BLO1, BLS1, BLT1, CLO1, CLS1, CLT1; Eroding banks, sandy hills, borrow pits, steep slopes, sand piles and rock faces that are undisturbed or naturally eroding; and Important habitats are not located in licensed aggregate pits, man-made structures (bridges or buildings), or recently (within 2 years) disturbed soils areas. 	<ul style="list-style-type: none"> Presence of eroding banks, hills, steep slopes and rock faces was searched for within 120 m of the HIWEC location through the Site Investigation. The following physical attributes were recorded for qualifying features found during the field studies: <ul style="list-style-type: none"> Habitat type (e.g., cliff, eroding bank, sandy slope); Number of burrows, if any; and Presence of swallows and which species, if present.
Colonially-Nesting Bird Breeding Habitat (Trees / Shrubs)	<ul style="list-style-type: none"> Presence of the following Ecosites: SWM, SWD, FET1; Nests in live or dead standing trees in wetlands, lakes, islands and peninsulas. Shrubs and occasionally emergent vegetation may also be used; Important sites generally have better habitat quality (e.g., optimal vegetation structure, abundant food); and Size of habitat and level of disturbance are also important. 	<ul style="list-style-type: none"> Presence of treed wetlands (e.g., mixed or deciduous swamps or treed fen habitats) was searched for within 120 m of the HIWEC location through the Site Investigation. The following physical attributes were recorded for qualifying features found during field studies: <ul style="list-style-type: none"> Stick nest descriptions including nest position in tree, tree species in which nest is observed, height of nest and number of observable nests; Surrounding habitat; Nest activity; and Presence of herons and which species, if present.

Table 2-1: Summary of the Criteria and Methods Used to Identify Each Type of Candidate Important Wildlife Habitat (IWH)

Type of Candidate IWH	Characteristics of Candidate IWH	Methods Used to Complete Assessment
Colonially-Nesting Bird Breeding Habitat (Ground)	<ul style="list-style-type: none"> Presence of the following Ecosites: MAM1-6, MAM1-3; Ecosites associated with the following ELC Community Series: CUM, CUT, CUS; 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); 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; Important sites generally have better habitat quality (e.g., optimal vegetation composition, abundant food); and Size of habitat and level of disturbance are also important. 	<ul style="list-style-type: none"> Presence of rocky islands or peninsulas within lakes or large rivers was searched for within 120 m of the HIWEC location through the Site Investigation. The following physical attributes were recorded for qualifying features found during field studies: <ul style="list-style-type: none"> Colony description including bird species, number of nests and nest activity; and Landscape feature (e.g., islands, peninsula).
Deer Yarding Areas	<ul style="list-style-type: none"> Presence of all Ecosites associated with the following ELC Community Series: FOC, FOM, SWM; Forests and swamps at least 100 ha in size; 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 Deer yards are composed of two (2) areas referred to Stratum I, which is the core of the deer yard, and Stratum II, which covers the entire deer yard areas. 	<ul style="list-style-type: none"> Suitable forest stands were searched for within 120 m of the HIWEC location through the Site Investigation. The following physical attributes were recorded for qualifying features found during field studies: <ul style="list-style-type: none"> Evidence of large concentrations of deer (e.g., deer tracks, beds and / or scat); and Vegetation structure (e.g., description of coniferous component).
Rare Vegetation Communities		
Shallow Atlantic Coastal Marsh	<ul style="list-style-type: none"> Presence of the following ELC community Series: MAS; Shallow marsh on shallow mineral (sand) or mineral organic (sandy peat) shoreline, inland lakes and beaver ponds; and Presence of Virginia Meadow-beauty (<i>Rhexia virginica</i>) and other associated species: <ul style="list-style-type: none"> Brownish beaksedge (<i>Rhynchospora capitellata</i>); Bog Yellow-eyed Grass (<i>Xyris difformis</i>); Eaton’s rosette grass (<i>Panicum spretum</i>); Virginia Marsh-St. John’s Wort (<i>Triadenum virginicum</i>); Carey’s Smartweed (<i>Polygonum careyi</i>); and Bayonet Rush (<i>Juncus militaris</i>). 	<ul style="list-style-type: none"> This type of vegetation community was searched for within 120 m of the HIWEC location through the Site Investigation. The following physical attributes were recorded for qualifying features found during field studies: <ul style="list-style-type: none"> Substrate type; and Presence of characteristic flora.
Cliffs and Talus Slopes	<ul style="list-style-type: none"> Presence of all Ecosites associated with the following ELC Community Series: TAO, CLO, TAS, CLS, TAT, CLT; Any cliff or talus slope; and A talus slope is rock rubble at the base of a cliff made up of coarse rocky debris. Characteristic flora for cliffs and talus slopes include: <ul style="list-style-type: none"> Lichen, such as Rock Tripe (<i>Umbilicaria</i> spp.); Rock Polyploidy (<i>Polypodium virginianum</i>); Brittle Bladder-fern (<i>Cystopteris fragilis</i>); Oblong Woodsia (<i>Woodsia ilvensis</i>); Fragile rockbrake (<i>Cryptogramma stelleri</i>); Alpine Woodsia (<i>Woodsia alpina</i>); White Mountain Saxifrage (<i>Saxifraga paniculata</i>); Fragrant Cliff Fern (<i>Dryopteris fragrans</i>); and Laurent’s Cliff Fern (<i>Woodsia scopulina</i> ssp. <i>laurentiana</i>). 	<ul style="list-style-type: none"> This type of vegetation community was searched for within 120 m of the HIWEC location through the Site Investigation. The following physical attributes were recorded for qualifying features found during field studies: <ul style="list-style-type: none"> Height of cliff; Substrate type of the cliff; and Presence of characteristic flora.
Precambrian Rock Barren	<ul style="list-style-type: none"> Presence of all Ecosites associated with the following ELC Community Class: RB; Any rock barren area > 1 ha; and Extensive areas of exposed granitic bedrock that are sparsely vegetated (i.e., tree cover < 60%); Characteristic flora for rock barrens include: <ul style="list-style-type: none"> Lichens and mosses (<i>Polytrichum</i> spp.); Sparse grasslands of Poverty Grass (<i>Danthonia spicata</i>) or Wavy-hair Grass (<i>Deschampsia flexuosa</i>); Low shrubs of Common Juniper (<i>Juniperus communis</i>), Lowbush Blueberry (<i>Vaccinium angustifolium</i>) or Sweet Fern (<i>Comptonia peregrina</i>); Stunted open grown trees of White Oak (<i>Quercus alba</i>), Red Oak (<i>Quercus rubra</i>) or White Pine (<i>Pinus strobus</i>); and Also characterized by Bristly Sarsaparilla (<i>Aralia hispida</i>), Case’s Ladies’-tresses (<i>Spiranthes casei</i>), Early Saxifrage (<i>Saxifraga virginensis</i>), Black Huckleberry (<i>Gaylussacia baccata</i>), Pink Corydalis (<i>Corydalis sempervirens</i>), or Bastard Toadflax (<i>Comandra umbellata</i>). 	<ul style="list-style-type: none"> This type of vegetation community was searched for within 120 m of the HIWEC location through the Site Investigation. The following physical attributes were recorded for qualifying features found during field studies: <ul style="list-style-type: none"> Tree cover; and Presence of characteristic flora.
Sand Barren	<ul style="list-style-type: none"> Presence of all Ecosites associated with the following ELC Community Class: SB; 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; Sites must not be dominated by non-indigenous species; and Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always < 60%. Characteristic flora for sand barrens include: <ul style="list-style-type: none"> Reindeer Lichens (<i>Cladina</i> spp.); Houghton’s Sedge (<i>Carex houghtoniana</i>); Fernald’s Sedge (<i>Carex merritt-fernaldis</i>); 	<ul style="list-style-type: none"> This type of vegetation community was searched for within 120 m of the HIWEC location through the Site Investigation. The following physical attributes were recorded for qualifying features found during field studies: <ul style="list-style-type: none"> Substrate type; and Presence of characteristic flora.

Table 2-1: Summary of the Criteria and Methods Used to Identify Each Type of Candidate Important Wildlife Habitat (IWH)

Type of Candidate IWH	Characteristics of Candidate IWH	Methods Used to Complete Assessment
	<ul style="list-style-type: none"> ▪ Sweetfern (<i>Comptonia peregrina</i>); ▪ Northern Dewberry (<i>Rubus flagellaris</i>); ▪ Rock spike-moss (<i>Selaginella rupestris</i>); ▪ Alpine Dog Violet (<i>Viola labradorica</i>); ▪ Coastal Jointweed (<i>Polygonella articulata</i>); and ▪ Procupine Grass (<i>Stipa spartea</i>). 	
Old-growth Forest	<ul style="list-style-type: none"> • Presence of all Ecosites associated with the following ELC Community Series: FOD, FOC, FOM; • Typically relatively undisturbed, structurally complex and contain a wide variety of trees and shrubs in various age classes; • 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; • Stands containing predominantly long-lived species are probably more important than stands consisting primarily of short-lived species (e.g., Trembling Aspen, Birch); and • Stands > 30 ha in size or with at least 10 ha of interior forest habitat (> 100 m from forest edge) are considered IWH. 	<ul style="list-style-type: none"> • This type of vegetation community was searched for within 120 m of the HIWEC location through the Site Investigation. • The following physical attributes were recorded for qualifying features found during field studies: <ul style="list-style-type: none"> ▪ Forest age; ▪ Size greater than 30 ha; ▪ Size and structure of trees; and ▪ Evidence of disturbance.
Bog	<ul style="list-style-type: none"> • Presence of all Ecosites associated with the following ELC Community Class: BO; • Any size bog; • Nutrient poor, acid peatlands dominated by peat mosses (<i>Sphagnum</i> sp.), ericaceous shrubs and sedges; and • Water table is at or near the surface in spring and lower remainder of the year. 	<ul style="list-style-type: none"> • This type of vegetation community was searched for within 120 m of the HIWEC location through the Site Investigation. • The following physical attributes were recorded for qualifying features found during field studies: <ul style="list-style-type: none"> ▪ Substrate type; and ▪ Presence of characteristic flora.
Rare Forest (Red Spruce and White Oak)	<ul style="list-style-type: none"> • Any forest stand with composition ≥ 10% of Red Spruce or White Oak regardless of stand size. 	<ul style="list-style-type: none"> • This type of vegetation community was searched for within 120 m of the HIWEC location through the Site Investigation. • The following physical attributes were recorded for qualifying features found during field studies: <ul style="list-style-type: none"> ▪ Presence and abundance of Red Spruce or White Oak.
Specialized Habitats for Wildlife		
Waterfowl Nesting Area	<ul style="list-style-type: none"> • All upland habitats associated with Ecosites with the following ELC Community Series: SWT, SWD, SWM; or Ecosites associated with the following ELC Community Classes: FO, CU, that are located adjacent to (within 120 m of) wetland Ecosites with the following ELC community Series: MAM, MAS, FEO; or Ecosites associated with the following ELC Community Class: SA, including of individual wetlands or a complex of smaller wetlands that are at least 2 ha in size; • Upland areas should be on average 120 m wide so that predators have difficulty finding nests; • Larger sites of suitable habitat are more important; • Important sites generally have better habitat quality (e.g., optimal vegetation structure, stable water levels, abundant cover); and • Sites with little disturbance (e.g., from agricultural activities such as hay cultivation or cattle grazing) are more important. 	<ul style="list-style-type: none"> • Upland habitats located near wetlands with standing water or open water areas were searched for within 120 m of the HIWEC location through the Site Investigation. • The following physical attributes were recorded for qualifying features found during field studies: <ul style="list-style-type: none"> ▪ Type of standing water; ▪ Surrounding communities; and ▪ Presence of waterfowl, numbers and species.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	<ul style="list-style-type: none"> • Presence of all Ecosites 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, forested shorelines and islands; and • Nests located on man-made objects are not IWH. 	<ul style="list-style-type: none"> • Presence of forest communities directly adjacent to open water or nest bowls was searched for within 120 m of the HIWEC location through the Site Investigation. • The following physical attributes were recorded for qualifying features found during field studies: <ul style="list-style-type: none"> ▪ Nest structure and size (e.g., height and width), position on tree, trees species and height of nest; ▪ Presence of open water nearby; ▪ Evidence of nest activity; and ▪ Presence and behaviour of Bald Eagle or Osprey, if present.
Woodland Raptor Nesting Habitat	<ul style="list-style-type: none"> • Presence of all Ecosites associated with the following ELC Community Series: FOC, FOM, FOD, SWC, SWM, SWD, or the following Ecosite: CUP3; and • All natural or conifer plantation woodland / forest stands; • Stick nests can be found in a variety of intermediate-aged to mature coniferous, deciduous or mixed forests within tops or crotches of trees; • Merlin (<i>Falco columbarius</i>) or Cooper's Hawks (<i>Accipiter cooperii</i>) nest along forest edges, sometimes on peninsulas or small off-shore islands; and • Barred Owls and sometimes Great Horned Owls and Merlin can nest in tree cavities. 	<ul style="list-style-type: none"> • Suitable large patches of forest stands were searched for within 120 m of the HIWEC location through the Site Investigation. • The following physical attributes were recorded for qualifying features found during field studies: <ul style="list-style-type: none"> ▪ Nest structure and size (e.g., height, width, depth); ▪ Position and height (m) of nest on tree; ▪ Tree species; ▪ Presence of nearby open water; ▪ Evidence of nest activity; and ▪ Presence and species of raptors, if present.
Turtle and Lizard Nesting Areas	<ul style="list-style-type: none"> • For turtles, exposed mineral soil (sand or gravel) areas adjacent to (< 100 m from), or Ecosites associated with the following ELC Community Series: MAM; • 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; • Nesting areas on the sides of road embankments, railway embankments and active aggregate operations are not IWH; and • For lizards, all rock barren was considered suitable nesting habitat. 	<ul style="list-style-type: none"> • Presence of exposed mineral soil areas near ponds, marshes, lakes or other water bodies, and elevated areas consisting of gravel and sandy soils was searched for within 120 m of the HIWEC location through the Site Investigation. • The following physical attributes were recorded for any qualifying features found during field studies: <ul style="list-style-type: none"> ▪ Habitat type (e.g., marsh, open aquatic, fen, bog, swamp); ▪ Substrate type; ▪ Percent emergent vegetation cover; ▪ Presence of basking logs and sunny areas; and ▪ Presence of turtle or skink egg shells, or presence of turtles or skinks.
Seeps and Springs	<ul style="list-style-type: none"> • Seeps and springs are areas where groundwater comes to the surface. Often they are found within headwater areas within forested habitats; and • Any forested Ecosite (with < 25% meadow/ field/ pasture) within the headwater areas of a stream could have seeps or springs. 	<ul style="list-style-type: none"> • Presence of seeps and springs in forest or swamp communities were searched for within 120 m of the HIWEC location during the Site Investigation. • The following physical attributes were recorded for any qualifying features found during field studies: <ul style="list-style-type: none"> ▪ Description of seep or spring (i.e., pool, swale); and ▪ Presence of seep indicators, including skunk cabbage and watercress.

Table 2-1: Summary of the Criteria and Methods Used to Identify Each Type of Candidate Important Wildlife Habitat (IWH)

Type of Candidate IWH	Characteristics of Candidate IWH	Methods Used to Complete Assessment
Aquatic Feeding Habitat	<ul style="list-style-type: none"> Habitat may be found in all mixed or conifer forested Ecosites adjacent to water (within 120 m); and Wetlands and isolated embayments in rivers or lakes with an abundance of submerged aquatic vegetation such as pond weeds, water milfoil and water lilies. 	<ul style="list-style-type: none"> Aquatic feeding habitats were searched for within 120 m of the HIWEC location through the Site Investigation. The following physical attributes were recorded for qualifying features found during field studies: <ul style="list-style-type: none"> Type of standing water; Percent open water; Percent emergent vegetation cover; and Types of submerged aquatic vegetation present.
Mineral Licks	<ul style="list-style-type: none"> Habitat may be found in all forested Ecosites in upwelling groundwater and the soil around these seepage areas. 	<ul style="list-style-type: none"> Mineral licks were searched for within 120 m of the HIWEC location during the Site Investigation. The following physical attributes were recorded for qualifying features found during field studies: <ul style="list-style-type: none"> Substrate type; Description of seep or springs (e.g., pool, swale); Presence of seep indicators, including groundwater indicator plants; and Presence and abundance of animal tracks.
Denning Sites for Mink, Otter, Marten, Fisher and Eastern Wolf	<ul style="list-style-type: none"> Dens may be found in all forested Ecosites; Denning sites are often in cavities in large trees or under large downed woody debris for Marten (<i>Martes americana</i>) and Fisher (<i>Martes pennanti</i>); Denning sites for Mink (<i>Neovison vison</i>) includes old muskrat lodges; Denning sites for Eastern Wolf (<i>Canis lycaon</i>) are excavated in the ground; and Denning sites for River Otter (<i>Lontra canadensis</i>) include downed woody debris, old beaver lodges, log jams and crevices in rock piles. 	<ul style="list-style-type: none"> Denning sites were searched for within 120 m of the HIWEC location through the Site Investigation. The following physical attributes were recorded for qualifying features found during field studies: <ul style="list-style-type: none"> Description of denning site (e.g., burrow, construction material); Surrounding habitat; and Evidence of mammal use (e.g., animal tracks and / or scat nearby).
Amphibian Breeding Habitat (Woodland and Wetland)	<ul style="list-style-type: none"> Presence of all Ecosites associated with the following ELC Community Classes: FO, SW, MA, FE, BO, OA and SA; Woodland (no minimum size) with a wetland, lake or pond, including breeding pools that may be permanent, seasonal or ephemeral; Wetlands and vernal pools > 500 m² (about 25 m diameter), supporting high species diversity and larger sites of suitable habitat are important; Some smaller wetlands or vernal pools may also be important breeding pools for amphibians; Vernal pools or ponds that contain water until mid-July in most years are more likely to be important Vernal pools or ponds with presence of shrubs and logs around the edges are more important because of increased structure for calling, foraging, escape and concealment from predators; and Bullfrogs require permanent water bodies with abundant emergent vegetation. 	<ul style="list-style-type: none"> Presence of permanent or temporary ponds in forests or swamps that are likely to hold water until July, or have depths of at least 30 cm in early spring, (Calhoun and deMaynadier 2004), was searched for within 120 m of the HIWEC location through the Site Investigation.
Mast Producing Areas	<ul style="list-style-type: none"> Mature forests > 0.5 ha in size and containing numerous large Beech and / or Red Oak trees. 	<ul style="list-style-type: none"> Presence of mast producing areas was searched for within 120 m of the HIWEC location through the Site Investigation. The following physical attributes were recorded for qualifying features found during field studies: <ul style="list-style-type: none"> Presence of > 50% mast producing tree species with > 40 cm dbh.
Habitat for Species of Conservation Concern (SOCC)		
Marsh Bird Breeding Habitat	<ul style="list-style-type: none"> Presence of the following Ecosites: FEO1; or Ecosites associated with the following ELC Community Series: MAM, MAS; or Ecosites associated with the following ELC Community Class: SA, including individual wetlands or complexes of smaller wetlands that are at least 2 ha in size; For Green Heron, presence of all Ecosite associated with the following ELC Community Series: SWD and SWM, that are at least 0.5 ha in size and located adjacent to Ecosites identified in the point above; Wetland habitats containing shallow water and emergent aquatic vegetation; and For Green Heron, habitat is usually at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. 	<ul style="list-style-type: none"> Presence of large marshes containing standing water at least 30 cm in depth and emergent aquatic vegetation was searched for within 120 m of the HIWEC location through the Site Investigation. The following physical attributes were recorded for qualifying features found during field studies: <ul style="list-style-type: none"> Type of standing water; Water depth (m); Percent open water; Percent emergent vegetation cover; Surrounding habitat; and Presence of marsh birds and species, if present.
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	<ul style="list-style-type: none"> <u>Preferred habitat</u> Species nests in a variety of habitats and forest types, almost always near a major lake or river where they do most of their hunting. They usually nest in large trees such as pine and poplar. <u>Corresponding ELC</u>: FOC, FOM, FOD, SWC, SWM and SWD. 	<ul style="list-style-type: none"> Habitat for this species was assessed as part of Bald Eagle and Osprey Nesting, Foraging and Perching Habitat as described above.
Black Tern (<i>Chlidonias niger</i>)	<ul style="list-style-type: none"> <u>Preferred habitat</u> Found in wetlands, coastal or inland marshes; large cattail marshes, marshy edges of rivers, lakes or ponds, wet open fens, wet meadows; returns to same area to nest each year in loose colonies; must have shallow (0.5 to 1 m deep) water and areas of open water near nests; requires marshes > 20 ha in size; feeds over adjacent grasslands for insects; also feeds on fish, crayfish and frogs. <u>Corresponding ELC</u>: MAS and FEO1. 	<ul style="list-style-type: none"> Habitat for this species was assessed as part of Marsh Bird Breeding Habitat as described above.
Caspian Tern (<i>Sterna caspia</i>)	<ul style="list-style-type: none"> <u>Preferred habitat</u> Prefers open habitat near large lakes or rivers, beaches, shorelines, rocky or sandy beaches, offshore islands; negatively affected by elevated water levels during nesting season; feeds on fish; often found in association with Ring-billed Gulls (<i>Larus delawarensis</i>). <u>Corresponding ELC</u>: MAM1-3, CUM, CUT and CUS. 	<ul style="list-style-type: none"> Habitat for this species was assessed as part of Colonially-Nesting Bird Breeding Habitat (Ground) as described above.
Eastern Wood-Pewee (<i>Contopus virens</i>)	<ul style="list-style-type: none"> <u>Preferred habitat</u> Prefers open, deciduous or mixed forest greater than 3 ha in size; with little understorey; forest clearings, edges; farm woodlots, parks. <u>Corresponding ELC</u>: FOM and FOD. 	<ul style="list-style-type: none"> Habitat for this species was searched for within 120 m of the HIWEC location through the Site Investigation.

Table 2-1: Summary of the Criteria and Methods Used to Identify Each Type of Candidate Important Wildlife Habitat (IWH)

Type of Candidate IWH	Characteristics of Candidate IWH	Methods Used to Complete Assessment
Peregrine Falcon (<i>Falco peregrinus</i>)	<ul style="list-style-type: none"> Preferred habitat Prefers rock cliffs, crags, especially situated near water; tall buildings in urban centres; and Prefers cliffs ranging from 50 to 200 m in height (COSEWIC, 2007a). Corresponding ELC: CLO, CLS and CLT. 	<ul style="list-style-type: none"> Presence of cliffs ranging from 50 to 200 m in height was searched for within 120 m of the HIWEC location through the Site Investigation. The following physical attributes were recorded for any qualifying features found during field studies: <ul style="list-style-type: none"> Height of cliff (m); Presence of prey populations (,e.g. shorebirds, waterfowl, pigeons and songbirds); Presence/evidence of Peregrine Falcon nests on suitable ledges (Peregrine Falcons have high breeding site fidelity); Surrounding habitat; and Presence of Peregrine Falcons.
Prairie Warbler (<i>Setophaga discolor</i>)	<ul style="list-style-type: none"> Preferred habitat Inhabits Precambrian rock barrens with scrubby Common Juniper, White Pine and Oak. Corresponding ELC: RBO, RBS and RBT. 	<ul style="list-style-type: none"> Habitat for this species was assessed as part of Precambrian Rock Barren as described above.
Wood Thrush (<i>Hylocichla mustelina</i>)	<ul style="list-style-type: none"> Preferred habitat Found in Carolinian and Great Lakes – St. Lawrence forest zones; prefers undisturbed moist mature deciduous or mixed forest greater than 3 ha in size with deciduous sapling growth; hardwood forest edges; must have some trees higher than 12 m. Corresponding ELC: FOD and FOM. 	<ul style="list-style-type: none"> Habitat for this species was searched for within 120 m of the HIWEC location through the Site Investigation.
Yellow Rail (<i>Coturnicops noveboracensis</i>)	<ul style="list-style-type: none"> Preferred habitat Prefers large, freshwater or brackish grass and sedge marshes with dense vegetation including bulrushes, horsetails and grasses. Corresponding ELC: MAS. 	<ul style="list-style-type: none"> Habitat for this species was assessed as part of Marsh Bird Breeding Habitat as described above.
Horned Clubtail (<i>Arigomphus cornutus</i>)	<ul style="list-style-type: none"> Preferred habitat Found in permanent slow streams, rivers, lakes and ponds with vegetated edges. Also uses open meadows and woodlands as foraging and roosting habitat (Montana Natural Heritage Program, date unknown). Features equal to or greater than 0.5 ha were considered suitable habitat. Corresponding ELC: OAO, BO, FEO, SA and MAS. 	<ul style="list-style-type: none"> Habitat for this species was searched for within 120 m of the HIWEC location through the Site Investigation.
Monarch (<i>Danaus plexippus</i>)	<ul style="list-style-type: none"> Preferred habitat Found in meadows and open areas that contain an abundance of Common Milkweed (<i>Asclepias syriaca</i>), it's host food plant. Corresponding ELC: CUM. 	<ul style="list-style-type: none"> Habitat for this species was searched for within 120 m of the HIWEC location through the Site Investigation.
Mottled Darner (<i>Aeshna clepsydra</i>)	<ul style="list-style-type: none"> Preferred habitat Found in marshes, bogs, ponds, lakes and bays. Prefers wetlands with water lilies and clear water. Foraging habitat includes open woodlands and clearings (Pennsylvania Natural Heritage Program, date unknown). Features equal to or greater than 0.5 ha were considered suitable habitat. Corresponding ELC: OAO, BO, FEO, SA and MAS. 	<ul style="list-style-type: none"> Habitat for this species was searched for within 120 m of the HIWEC location through the Site Investigation.
Pine Imperial Moth	<ul style="list-style-type: none"> Preferred habitat Found in coniferous or mixed forests dominated by Red Pine (<i>Pinus resinosa</i>) or White Pine (NatureServe, 2015). Corresponding ELC: FOC1, FOC1-2, FOM1, FOM1-2, FOM2, FOM2-1, FOM2-2, FOM5, FOM5-1 and FOM5-2. 	<ul style="list-style-type: none"> Habitat for this species was searched for within 120 m of the HIWEC location through the Site Investigation.
Eastern Wolf (<i>Canis lupus lycaon</i>)	<ul style="list-style-type: none"> Preferred habitat Prefers deciduous and mixed forests in its southern range, and mixed and coniferous forests further north. Wolf packs require a home range of approximately 500 km². Corresponding ELC: FOD, FOM and FOC. 	<ul style="list-style-type: none"> Habitat for this species was assessed as part of Denning Sites for Mink, Otter, Marten, Fisher and Eastern Wolf as described above.
Common Five-lined Skink (Southern Shield population) (<i>Plestiodon fasciatus pop. 2</i>)	<ul style="list-style-type: none"> Preferred Habitat Found primarily in rock barrens in this area but also in moderately dense or open deciduous or mixed woodlands with logs and slash piles; damp spots under logs, leaf litter, or sawdust; open talus slopes; lays and protects eggs under rocks, logs; forages in open woodlands, in sandy areas, along shores of lakes and islands; hibernates under rock piles, in rock crevices, under logs and in stumps. Corresponding ELC: TA, RB, FOD and FOM. 	<ul style="list-style-type: none"> Habitat for this species was assessed as part of Turtle and Lizard Nesting Areas as described above.
Eastern Ribbonsnake (<i>Thamnophis sauritus</i>)	<ul style="list-style-type: none"> Preferred Habitat Found in sunny grassy areas with low dense vegetation near bodies of shallow permanent quiet water; wet meadows, grassy marshes or sphagnum bogs; borders of ponds, lakes or streams. Corresponding ELC: SWM, SWD, MAM, MAS, FEO, CUM, SAS, SAM and SAF. 	<ul style="list-style-type: none"> Habitat for this species was assessed as part of Reptile Hibernacula as described above.
Milksnake (<i>Lampropeltis triangulum</i>)	<ul style="list-style-type: none"> Preferred Habitat Found in farmlands, meadows, hardwood or aspen stands; pine forest with brushy or woody cover; hides under logs, stones, or boards or in outbuildings; often uses communal nest sites. Corresponding ELC: CUM1, CUT1, MAM, FOM and FOD. 	<ul style="list-style-type: none"> Habitat for this species was assessed as part of Reptile Hibernacula as described above.
Northern Map Turtle (<i>Graptemys geographica</i>)	<ul style="list-style-type: none"> Preferred Habitat Prefers large bodies of water with soft bottoms, and aquatic vegetation; basks on logs or rocks or on beaches and grassy edges, will bask in groups; uses soft soil or clean dry sand for nest sites; may nest at some distance from water; home range size is larger for females (about 70 ha) than males (about 30 ha) and includes hibernation, basking, nesting and feeding areas; aquatic corridors (e.g., stream) are required for movement. Corresponding ELC: OAO, SA, MAS and MAM. 	<ul style="list-style-type: none"> Habitat for this species was assessed as part of Turtle and Lizard Nesting Areas and Turtle Wintering Areas as described above.

Table 2-1: Summary of the Criteria and Methods Used to Identify Each Type of Candidate Important Wildlife Habitat (IWH)

Type of Candidate IWH	Characteristics of Candidate IWH	Methods Used to Complete Assessment
Snapping Turtle (<i>Chelydra serpentina</i>)	<ul style="list-style-type: none"> • <u>Preferred Habitat</u> • Prefers permanent, semi-permanent fresh water; marshes, swamps or bogs; rivers and streams with soft muddy banks or bottoms; often uses soft soil or clean dry sand on south-facing slopes for nest sites; may nest at some distance from water; often hibernate together in groups in mud under water; home range size of approximately 28 ha. • <u>Corresponding ELC</u>: MAM, MAS, SWD, OAO, BO, SAS, SAM and SAF. 	<ul style="list-style-type: none"> • Habitat for this species was assessed as part of Turtle and Lizard Nesting Areas and Turtle Wintering Areas as described above.
Animal Movement Corridors		
Amphibian Movement Corridors	<ul style="list-style-type: none"> • Corridors may be found in all Ecosites associated with water; • Corridors will be determined based on identifying Important Amphibian Breeding Habitat (Woodland and Wetland); • Corridors should consist of native vegetation with no gaps such as roads, fields, waterways or waterbodies; and • Corridors should be at least 200 m wide with gaps < 20 m and, if following riparian area, with at least 15 m of vegetation on both sides of the waterway. 	<ul style="list-style-type: none"> • Candidate amphibian movement corridors were assessed as part of the Amphibian Breeding Habitat (Woodland and wetland) as described above. • Where Candidate Amphibian Breeding Habitat (Woodland and Wetland) was identified, possible amphibian movement corridors associated with these habitats were searched for within 120 m of the HIWEC location through the Site Investigation.
Cervid Movement Corridors	<ul style="list-style-type: none"> • Corridors may be found in all forested Ecosites; • Corridors will be determined based on identifying Important Deer Yarding Areas, Aquatic Feeding Habitats and / or Mineral Licks; • Corridors should consist of native vegetation and should be unbroken by roads and residential areas; • Corridors should be at least 200 m wide with gaps < 20 m and, if following riparian area, with at least 15 m of vegetation on both sides of the waterway; and • Shorter corridors are more important than longer corridors. 	<ul style="list-style-type: none"> • Cervid movement corridors were assessed as part of the Deer Yarding Areas, Aquatic Feeding Habitats and Mineral Licks as described above. • Where Candidate Deer Yarding Areas, Aquatic Feeding Habitats or Mineral Licks were identified, possible cervid movement corridors were searched for within 120 m of the HIWEC location through the Site Investigation.
Furbearer Movement Corridor	<ul style="list-style-type: none"> • All forested Ecosites adjacent to or within shoreline habitats; and • Only denning sites for Mink and Otter are to be considered for an animal movement corridor. 	<ul style="list-style-type: none"> • Candidate furbearer movement corridors were assessed as part of the Denning Sites for Mink, Otter, Marten, Fisher and Eastern Wolf as described above. • Where Candidate Denning Sites for Mink and / or Otter were identified, possible furbearer movement corridors were searched for within 120 m of the HIWEC location through the Site Investigation.

2.4.1 Bat Habitat Assessments

Bat habitat assessments to identify candidate maternity colonies were completed during the Site Investigation in accordance with the methods described in Appendix A of *Bats and Bat Habitats: Guidelines for Wind Power Projects* (MNRF, 2011).

According to MNRF (2011) guidance, the following ELC Community Series may contain suitable habitats for candidate bat maternity colonies:

- Deciduous forests (FOD); and
- Mixed forests (FOM).

ELC polygons belonging to these Community Series were first identified through a desktop analysis as described in **Section 2.1**. Cavity tree density was calculated for each suitable Ecosite within the HIWEC location as follows:

- Select random plots across the ELC Ecosite within the HIWEC location;
- Survey fixed area 12.6 m radius plots (equates to 0.05 ha);
- Measure the number of cavity trees ≥ 25 cm diameter-at-breast-height (DBH) in each plot;
- Use the formula πr^2 to determine number of snags per hectare; and
- Survey a minimum of ten (10) plots for Ecosites covering ≤ 10 ha within the HIWEC location, and add another plot for each ha up to a maximum of 35 plots.

Locations for snag / cavity tree density plots were identified within appropriate ELC polygons randomly using a Sampling Design Tool for ArcGIS (NOAA's Biogeography Branch, 2013). Each pre-selected snag / cavity tree density plot location was provided a unique feature identifier to facilitate data collection during the Site Investigation.

Snag / cavity tree density plots surveys were completed within the HIWEC location during leaf off conditions, between April 13, 2015 and May 30, 2015. Within each plot, all suitable snag / cavity trees with a diameter-at-breast-height (DBH) of equal to or greater than 25 cm were recorded within a 12.6 m search radius, which equates to an area of 0.05 ha. Where suitable Ecosites measuring less than 0.05 ha were identified within the HIWEC location, the entire ELC polygon was surveyed. Suitable snag / cavity trees included those that exhibit cavities or crevices most often originating as cracks, scars, knot holes or woodpecker cavities that are located more than 10 m up the tree. Cavity trees that have large amounts of loose, peeling bark are also preferred by bats (MNRF, 2014b).

The following information was recorded during snag / cavity tree density plot surveys:

- Unique snag / cavity tree density plot identifier;
- Date, and start and end times;
- Weather conditions including temperature ($^{\circ}\text{C}$), precipitation (i.e., snow, rain, none), wind speed (Beaufort scale), and % cloud cover;
- Location of the center of the plot;
- Location of every cavity tree observed within the plot;
- Species name and decay class of every cavity tree observed within the plot; and
- Representative photographs.

The snag / cavity tree density was calculated for each suitable Ecosite overlapped by the HIWEC location to determine whether it qualifies as a candidate bat maternity colony in accordance with MNRF (2011) guidance. The following formulae were used to calculate snag / cavity tree densities:

- πr^2 to determine number of snags per hectare; and
- Total number of candidate trees / (number of plots x 0.05 ha) = snag / cavity tree density.

Features with a snag / cavity tree density \geq ten (10) snag / cavity trees per hectare were carried forward to the EOI as candidate bat maternity colonies.

2.5 Species at Risk

2.5.1 Federal Species at Risk

Species listed as Endangered and Threatened under Schedule 1 of the federal *Species at Risk Act, 2002* (SARA) are protected and may require permits and / or authorization administered by Environment Canada – Canadian Wildlife Service (EC-CWS) if the proposed HIWEC negatively affects the species or its habitat. Permit requirements, if any, will be determined in consultation with EC-CWS. There is no provincial requirement or guidance for completing an NHA on Federal Species at Risk, however these species are included in the NHA to ensure that potential effects of the HIWEC and mitigation measures, if required, are appropriately addressed through the HIWEC EA.

A total of 18 Federal Species at Risk, including 12 Threatened species, five (5) Endangered species, and one (1) restricted species¹, were identified as potentially occurring within the HIWEC study area through the Records Review. The presence of suitable habitats of these species within 120 m of the HIWEC location was assessed during the Site Investigation. A summary of the criteria and methods used to identify habitat for Federal Species at Risk within 120 m of the HIWEC location is provided in **Table 2-2** below.

1. *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.*

Table 2-2: Summary of the Criteria and Methods Used to Identify Habitat for Federal Species at Risk

Species	S-rank ¹	ESA Status ²	COSEWIC Status ³	SARA Status ⁴	Preferred Habitat ⁵	Method Used to Complete Assessment
Amphibian Species (1)						
Western Chorus Frog (Great Lakes / St. Lawrence - Canadian Shield Population) (<i>Pseudacris triseriata</i> pop. 1)	S3	NAR	THR	THR (Schedule 1)	<ul style="list-style-type: none"> Preferred Habitat Found in roadside ditches or temporary ponds in fields; swamps or wet meadows; woodland or open country with cover and moisture; small ponds and temporary pools. Corresponding ELC: SW, MA, FE, BO, OA and SA. 	<ul style="list-style-type: none"> Habitat for this species was assessed as part of Amphibian Breeding Habitat (Woodlands and Wetlands) as described in Table 2.1.
Bird Species (7)						
Canada Warbler (<i>Cardellina pusilla</i>)	S4	SC	THR	THR (Schedule 1)	<ul style="list-style-type: none"> Preferred Habitat This species breeds in moist mixed woods or deciduous forests with a dense, complex understorey (shrubs, downed trees, hummocks, or ferns) near standing water or streams (Environment Canada, 2015a). Canada Warbler is an interior forest species that requires at least 30 ha of habitat which includes forested swamps, shrub thicket swamps, riparian woodland and moist forests. Corresponding ELC: FOC, FOM, FOD, SWC, SWM and SWD. 	<ul style="list-style-type: none"> Habitat for this species was searched for within 120 m of the HIWEC location through the Site Investigation.
Chimney Swift (<i>Chaetura pelagica</i>)	S4	THR	THR	THR (Schedule 1)	<ul style="list-style-type: none"> Preferred Habitat This species is commonly found in urban areas near buildings; nests in hollow trees, crevices of rock cliffs, and chimneys. This species feeds over open water. Large hollow trees (>60 cm DBH) such as White Pine, and Yellow Birch are used as nesting / roosting trees by the species (MNRF, 2013; COSEWIC, 2007b). Corresponding ELC: FOC, FOM and FOD. 	<ul style="list-style-type: none"> Habitat for this species was assessed as part of the Old Growth Forests as described in Table 2.1.
Common Nighthawk (<i>Chordeiles minor</i>)	S4	SC	THR	THR (Schedule 1)	<ul style="list-style-type: none"> Preferred Habitat This species breeds and forages in a wide range of habitats, including sandy areas (e.g., dunes and beaches), open forests (e.g., burns and clearcuts in mixed wood and coniferous stands), grasslands, wetlands (e.g., marshes, lakeshores and riverbanks), rock barrens and cultivated / landscaped areas (Environment Canada, 2015b). Corresponding ELC: RB, CUM, BO, SB, FE, MA, OA and SA. 	<ul style="list-style-type: none"> Habitat for this species was searched for within 120 m of the HIWEC location through a combination of aerial photography interpretation and field studies
Eastern Whip-poor-will (<i>Caprimulgus vociferus</i>)	S4	THR	THR	THR (Schedule 1)	<ul style="list-style-type: none"> Preferred Habitat The preferred habitats for this species are summarized below as described in the <i>Recovery Strategy for the Eastern Whip-poor-will (Antrostomus vociferus) in Canada</i> (Environment Canada, 2015c): <ul style="list-style-type: none"> Nesting habitat <ul style="list-style-type: none"> Well-drained soils (sand or sandy-loam), sparse to dense tree cover, and sparse to moderate shrub and herbaceous cover; Include most types of forest (deciduous, mixed, or coniferous), forests at early successional stages, forest edges, rock or sand barrens with scattered trees, savannahs, old burns; Prefers open forest to closed canopy; and Adjacent to open habitats required for foraging. Foraging habitat <ul style="list-style-type: none"> Include areas of low tree cover and an availability of foraging perches (e.g., sparse forests, prairies, shrubby wetlands, regenerating clearcuts, rock and sand outcrops, agricultural fields); and Foraging usually takes place within 500 m of nest. Corresponding ELC: BO, CUM, CUT, CUW, FE, FOD, FOM, MA, RB, SWD, SWM, SWT and SB. 	<ul style="list-style-type: none"> Habitat for this species was searched for within 120 m of the HIWEC location through the Site Investigation.
Golden-winged Warbler (<i>Vermivora chrysoptera</i>)	S4	SC	THR	THR (Schedule 1)	<ul style="list-style-type: none"> Preferred Habitat Prefers a mosaic of mature and disturbed habitat in close proximity to each other. The Golden-winged Warbler typically nests and forages within early successional habitats created by natural disturbance and those that contain herbaceous elements (e.g., grasses and forbs) woody shrubs / saplings, and scattered canopy trees (Environment Canada, 2014). It requires nesting and foraging habitat patches within a primarily deciduous or mixed forested landscape (must be a shared edge between forests and open / shrub habitat). It nests in loose colonies that can contain up to ten (10) pairs of breeding birds. Nesting habitat for this species tends to be associated with open or disturbed habitat (10 to 30 years into succession) such as hydro / utility right-of-ways, field edges, recently logged areas and beaver marshes with patches of herbs and low shrubs for nesting located adjacent to forested edges that are used for perching and foraging. This species also uses habitats that exhibit characteristics of early succession e.g., alder (<i>Alnus spp.</i>) swamps, Tamarack (<i>Larix laricina</i>) bogs, open Jack Pine (<i>Pinus banksiana</i>), beaver meadows and shrubby stream borders (EC, 2014). Corresponding ELC: CUW, CUT and SWT that have tall shrubs. 	<ul style="list-style-type: none"> Habitat for this species was searched for within 120 m of the HIWEC location through the Site Investigation.
Kirtland's Warbler	S1	END	END	END	<ul style="list-style-type: none"> Preferred Habitat This species is a habitat specialist which only breeds <u>in extensive homogeneous stands of young Jack Pine larger than 30 ha in size</u> (COSEWIC, 2000). Corresponding ELC: RB 	<ul style="list-style-type: none"> Habitat for this species was searched for within 120 m of the HIWEC location through the Site Investigation.
Least Bittern (<i>Ixobrychus exilis</i>)	S4	THR	THR	THR (Schedule 1)	<ul style="list-style-type: none"> Preferred Habitat Found in deep marshes, thicket swamps, bogs; marshy borders of lakes, ponds, streams, ditches; dense emergent vegetation of cattail, bulrush, sedge; nests in cattails; prefers large wetland with good interspersions of emergent marsh and open water (COSEWIC, 2009). Corresponding ELC: MAS and SA. 	<ul style="list-style-type: none"> Habitat for this species was searched for within 120 m of the HIWEC location through the Site Investigation.
Olive-sided Flycatcher (<i>Contopus borealis</i>)	S4	SC	THR	THR (Schedule 1)	<ul style="list-style-type: none"> Preferred Habitat Prefers natural forest edges and openings. This species will use forests that have been logged or burned, if there are ample tall snags and trees to use for foraging perches. This species breeds and forages in open coniferous or mixed-coniferous forests often near water or wetlands with the presence of tall snags from which the species relies for prey; prefer mature conifer stands in a mosaic of wet areas and clearings created by natural disturbance (e.g., recent burns) (Environment Canada, 2015d). In Ontario, Olive-sided Flycatchers commonly nest in conifers such as White and Black Spruce, Jack Pine and Balsam Fir. Corresponding ELC: BOT, SWC, FOM and FOC. 	<ul style="list-style-type: none"> Habitat for this species was searched for within 120 m of the HIWEC location through the Site Investigation.

Table 2-2: Summary of the Criteria and Methods Used to Identify Habitat for Federal Species at Risk

Species	S-rank ¹	ESA Status ²	COSEWIC Status ³	SARA Status ⁴	Preferred Habitat ⁵	Method Used to Complete Assessment
Mammal Species (3)						
Little Brown Bat (<i>Myotis lucifugus</i>)	S4	END	END	END (Schedule 1)	<ul style="list-style-type: none"> Preferred Habitat Uses caves, quarries, tunnels, hollow trees or buildings for roosting; winters in humid caves; maternity sites can be found in dark warm areas such as attics and barns, as well as cavity trees; feeds primarily over wetlands, forests and forest edges (COSEWIC, 2013a). Corresponding ELC: CCR, CCA, FOC, FOM, FOD, FOC, SWD, SWM and SWC. 	<ul style="list-style-type: none"> Habitat for this species was assessed as part of Bat Hibernacula and Bat Maternity Colonies as described in Table 2.1. In addition to the bat habitat assessment for identifying candidate important Bat Maternity Colonies, which follow the protocols described in <i>Bats and Bat Habitats: Guideline for Wind Power Projects</i> (MNR, 2011), tree cavity searches were also conducted in ELC Community Series that may contain suitable habitat for bat species at risk in accordance with the <i>Draft Bat and Bat Habitat Surveys of Treed Habitats</i> (MNR, 2014b). These additional ELC Community Series include FOC, SWD, SWM and SWC.
Northern Myotis (<i>Myotis septentrionalis</i>)	S4	END	END	END (Schedule 1)	<ul style="list-style-type: none"> Preferred Habitat Typically overwinters in mines or caves; in the spring, females leave winter hibernacula to give birth and raise pups in maternity colonies which may contain hundreds of females; maternity sites of this species are rarely found in houses or other manmade structures, as the species prefers to roost in large cavity trees, typically ranging from 25 to 44 cm diameter-at-breast-height (COSEWIC, 2013a). Corresponding ELC: CCR1, CCR2, CCA1, CCA2, FOC, FOM, FOD, FOC, SWD, SWM and SWC. 	<ul style="list-style-type: none"> Habitat for this species was assessed as part of Bat Hibernacula and Bat Maternity Colonies as described in Table 2.1. In addition to the bat habitat assessment for identifying candidate important Bat Maternity Colonies, which follow the protocols described in <i>Bats and Bat Habitats: Guideline for Wind Power Projects</i> (MNR, 2011), tree cavity searches were also conducted in ELC Community Series that may contain suitable maternity colony habitat for bat species at risk in accordance with the <i>Draft Bat and Bat Habitat Surveys of Treed Habitats</i> (MNR, 2014b). These additional ELC Community Series include FOC, SWD, SWM and SWC.
Tri-colored Bat (<i>Perimyotis subflavus</i>)	S3?	END	END	END (Schedule 1)	<ul style="list-style-type: none"> Preferred Habitat Typically overwinters in the deepest part of caves where temperature and humidity levels are the most stable; maternity sites are typically found in cavity trees, and females may return to the same area and use the same few trees per year (COSEWIC, 2013a). Corresponding ELC: CCR1, CCR2, CCA1, CCA2, FOC, FOM, FOD, FOC, SWD, SWM and SWC. 	<ul style="list-style-type: none"> Habitat for this species was assessed as part of Bat Hibernacula and Bat Maternity Colonies as described in Table 2.1. In addition to the bat habitat assessment for identifying candidate important Bat Maternity Colonies, which follow the protocols described in the <i>Bats and Bat Habitats: Guideline for Wind Power Projects</i> (MNR, 2011), tree cavity searches were also conducted in ELC Community Series that may contain suitable maternity colony habitat for bat species at risk in accordance with the <i>Draft Bat and Bat Habitat Surveys of Treed Habitats</i> (MNR, 2014b). These additional ELC Community Series include FOC, SWD, SWM and SWC.
Plant Species (1)						
Branched Bartonina (<i>Bartonia paniculata</i>)	S1	THR	THR	THR (Schedule 1)	<ul style="list-style-type: none"> Preferred Habitat Grows in sphagnum bogs (COSEWIC, 2003). Corresponding ELC: BOO, BOS and BOT. 	<ul style="list-style-type: none"> Habitat for this species was assessed as part of Bogs as described in Table 2-1.
Reptile Species (5)						
Blanding's Turtle (<i>Emydoidea blandingii</i>)	S3	THR	THR (Schedule 1)	THR (Schedule 1)	<ul style="list-style-type: none"> Preferred Habitat The preferred habitats for this species are summarized below as described in the <i>Recovery Strategy for the Blanding's Turtle (Emydoidea blandingii), Nova Scotia Population, in Canada</i> (Parks Canada, 2012): <ul style="list-style-type: none"> Overwintering habitat (September / October to March / April) <ul style="list-style-type: none"> Dense aggregations of individuals may occur; Mating activity occurs at sites in the fall and basking activity occurs in nearby areas in the spring; and Includes wooded pools or channels, specific sections of streams or wetlands, sites with deep organic sediment or undercut banks. Summer habitat (April to late September) <ul style="list-style-type: none"> Areas with shallow (<2 m deep) water (e.g., fens, bogs, vernal pools, slow flowing streams), abundant aquatic vegetation, and deep organic substrate (few rocks). Nesting habitat (evenings in June to early July) <ul style="list-style-type: none"> Females may spend several days at or near the site prior to nesting; Include a variety of habitats that are a variable distance from water; Sites often southwest facing (require adequate exposure to sunlight); Also require exposed substrate (gravel, soil or sand) in which the turtle can dig a nest; Includes lakeshores, beaches, woodland outcrops, gravel pits, roadsides; and Hatchlings emerge from late August to mid-October and may remain in the vicinity of the nest for several days before dispersing. Travel routes <ul style="list-style-type: none"> Blanding's Turtles can move considerable distance among seasonal habitats; and Variety of terrestrial and aquatic habitats (e.g., woodlands, meadows, along water body boundaries, through wetlands and vernal pools). Corresponding ELC: MAS, BO, OAO, SWM, SWD and SWC. 	<ul style="list-style-type: none"> Habitat for this species was assessed as part of Turtle and Lizard Nesting Areas and Turtle Wintering Areas as described in Table 2-1.
Eastern Foxsnake (Georgian Bay population) (<i>Pantherophis gloydi</i> pop. 1)	S3	THR	END	END (Schedule 1)	<ul style="list-style-type: none"> Preferred Habitat Found in shrub swamps and marshes; deciduous forest containing openings with shrubs and saplings; prefer woodland-marsh edges for hunting and breeding. The Georgian Bay population only occurs within 1 km of Georgian Bay (including inlets) and will move through any habitats near this shoreline (COSEWIC, 2008a). Corresponding ELC: RB SWT, MA and FOD. 	<ul style="list-style-type: none"> Habitat for this species was assessed as part of Reptile Hibernacula as described in Table 2-1.
Eastern Hog-nosed Snake (<i>Heterodon platirhinos</i>)	S3	THR	THR	THR (Schedule 1)	<ul style="list-style-type: none"> Preferred Habitat Found in sandy upland fields, pastures, savannahs, sandy beaches; dry open oak-pine-maple forest with sandy soils; prefer forest areas greater than 5 ha in size (MNR, 2000). This species prefers forested areas and wetlands and is more likely found in areas with a diverse habitat mosaic (Seburn, 2008). Physical characteristics of preferred habitat include well-drained soil, a loose or sandy soil, open vegetation cover, proximity to water and climatic conditions of the eastern deciduous forest (Seburn, 2008 and COSEWIC, 2007c). Corresponding ELC: RB, BBO, CUM, FOM and FOD. 	<ul style="list-style-type: none"> Habitat for this species was assessed as part of Reptile Hibernacula as described in Table 2-1.

Table 2-2: Summary of the Criteria and Methods Used to Identify Habitat for Federal Species at Risk

Species	S-rank ¹	ESA Status ²	COSEWIC Status ³	SARA Status ⁴	Preferred Habitat ⁵	Method Used to Complete Assessment
Eastern Musk Turtle (<i>Sternotherus odoratus</i>)	S3	SC	SC ⁹	THR (Schedule 1)	<ul style="list-style-type: none"> Preferred Habitat Prefers shallow slow moving water of lakes, streams, marshes and ponds; hibernate in underwater mud, in banks or in muskrat lodges; eggs are laid in debris or under stumps or fallen logs at waters edge; often share nest sites; sometimes congregate at hibernation sites (MNRFP, 2000). This species prefers shallow water with depths <2 m with abundant floating and submerged vegetation. Nest sites are located 3 to 11 m from the shoreline and are laid in shallow excavations in sand, base of dune grasses, decaying vegetation matter, and sometimes in the walls of Muskrat or Beaver lodges (COSEWIC, 2012). Corresponding ELC: MAS, OAO, SAS, SAM and SAF. 	<ul style="list-style-type: none"> Habitat for this species was assessed as part of Turtle and Lizard Nesting Areas and Turtle Wintering Areas as described in Table 2-1.
Massasauga Rattlesnake (Great Lakes / St. Lawrence population) (<i>Sistrurus catenatus</i> pop. 1)	S3	THR	Non-Active	THR (Schedule 1)	<ul style="list-style-type: none"> Preferred Habitat The preferred habitats for this species are summarized below as described in the <i>Recovery Strategy for the Massasauga (Sistrurus catenatus) in Canada</i> (Parks Canada Agency, 2013): <ul style="list-style-type: none"> Hibernation sites <ul style="list-style-type: none"> Hibernation may occur in small groups; Habitat includes conifer or shrub swamps and swales, poor fens, or water saturated soils formed in rock barren depressions characterized by sparse tree cover or shrubs with sphagnum moss or sedge hummocks; and Site needs to provide insulated and moist subterranean spaces below the frost line (e.g., burrows created by other animals, rock crevices, root systems, and sphagnum hummocks). Foraging and mating sites (May to October) <ul style="list-style-type: none"> Prefer areas with low canopy cover (e.g., forest openings, old burn areas, rock barrens, marshes, fens and swamps, fields and grasslands) with surrounding vegetative cover (low lying shrubs, grass); and Avoids dense forests, open water, and areas lacking ground cover. Gestation and basking sites <ul style="list-style-type: none"> The species gives birth to live young and gestation period is 3 months; Some sites may be used by multiple females; Similar to foraging and mating sites, gestation and basking sites are found in areas of low canopy cover (e.g., forest openings, bedrock outcrops, shorelines of water bodies, alvars) and high vegetative cover (e.g., low lying shrubs, grass); and Includes a feature that provides relatively warm refuge during cool weather (e.g., large flat and thin rock with crevices, rock piles, old tree stump, earth mounds, brush or debris pile). 	<ul style="list-style-type: none"> Habitat for this species was assessed as part of Reptile Hibernacula as described in Table 2-1.

¹ **S-rank:** The natural heritage provincial ranking system (provincial S-rank) is used by the MNRFP Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. Definitions are as follows:

- S1 Extremely rare in Ontario; usually five (5) or fewer occurrences in the province or very few remaining individuals; often especially vulnerable to extirpation.
- S2 Very rare in Ontario; usually between five (5) and 20 occurrences in the province or with many individuals in fewer occurrences; often susceptible to extirpation.
- S3 Rare to uncommon in Ontario; usually between 20 and 100 occurrences in the province; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances. Most species with an S3 rank are assigned to the watch list, unless they have a relatively high global rank.
- S4 Common and apparently secure in Ontario; usually with more than 100 occurrences in the province.
- S5 Very common and demonstrably secure in Ontario.
- SH Possibly Extirpated (Historical). Species or community occurred historically in the nation or province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years.
- S#S# A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community.
- S#? Rank uncertain.

² **ESA Status:** The Endangered Species Act 2007 (ESA) protects species listed as Threatened and Endangered on the Species at Risk in Ontario (SARO) List on provincial and private land. The Minister lists species on the SARO list based on recommendations from the Committee on the Status of Species at Risk in Ontario (COSSARO), which evaluates the conservation status of species occurring in Ontario. The following are the categories of at risk:

- END** (Endangered) – A species facing imminent extinction or extirpation in Ontario.
- THR** (Threatened) – Any native species that, on the basis of the best available scientific evidence, is at risk of becoming endangered throughout all or a large portion of its Ontario range if the limiting factors are not reversed.
- SC** (Special Concern) – A species that may become threatened or endangered due to a combination of biological characteristics and identified threats.
- NAR** (Not at Risk) – A species that has been evaluated and found to be not at risk.

³ **COSEWIC Status:** The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) evaluates a federal status ranking for all species that it assesses. Rankings include the following:

- END** (Endangered) – A species facing imminent extirpation or extinction throughout its range.
- THR** (Threatened) – A species likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction
- SC** (Special Concern) – A species of special concern because of characteristics that make it particularly sensitive to human activities or natural events, but does not include an extirpated, endangered or threatened species.
- NAR** (Not at Risk) – A species that has been evaluated and found to be not at risk.

⁴ **SARA Status:** The Species at Risk Act (SARA) protects Species at Risk designated as Endangered, Threatened and Extirpated listed under Schedule 1, including their habitats on federal land. Schedule 1 of SARA is the official list of wildlife species at risk in Canada and includes species listed as Extirpated, Endangered, Threatened and of Special Concern. Once a species is listed on Schedule 1, they receive protection and recovery measures that are required to be developed and implemented under SARA. Species that were designated at risk by COSEWIC before SARA need to be reassessed based on the new criteria of the Act before they can be listed under Schedule 1. These species that are waiting to be listed under Schedule 1 do not receive official protection under SARA. Once the species on other schedules (2 and 3) have been reassessed, the other schedules are eliminated and the species is either listed under Schedule 1 or is not listed under the Act.

- The following are definitions of the SARA status rankings assigned to each species in the table above:
- END (Schedule 1)** – These species are listed as Endangered under Schedule 1 of SARA and receive species and habitat protection under SARA, as well as recovery strategies and action plans.
 - THR (Schedule 1)** – These species are listed as Threatened under Schedule 1 of SARA and receive species and habitat protection under SARA, as well as recovery strategies and action plans.
 - SC (Schedule 1)** – These species are listed as Special Concern under Schedule 1 of SARA and receive management initiatives under SARA to prevent them from becoming endangered and threatened.
 - No Status (No Schedule)** – These species are evaluated and designated by COSEWIC but are not listed under Schedule 1 and therefore do not receive protection under SARA.
 - NAR (Not at Risk)** – These species have either been assessed by COSEWIC as Not at Risk or there is not enough data to assess the status ranking of the species and therefore these are not listed on Schedule 1 nor do they receive protection under SARA.
 - Not Applicable (N/A)** – These species have either been assessed by COSEWIC as Not at Risk or there is not enough data to assess the status ranking of the species and therefore these are not listed on Schedule 1 nor do they receive protection under SARA.
- Source: Government of Canada, 2009: Frequently Asked Questions: What are the SARA schedules? Accessed on February 2015. Available: <http://www.dfo-mpo.gc.ca/species-especes/faq/faq-eng.htm>

⁵ **Preferred Habitat:** Habitat descriptions for species were taken from Appendix G of the Significant Wildlife Habitat Technical Guide (MNRFP, 2000), unless indicated otherwise.

2.5.2 Provincial Species at Risk

Species listed as Endangered or Threatened under the provincial *Endangered Species Act, 2007 (ESA)* but not listed under Schedule 1 of *SARA* are treated as Provincial Species at Risk for the purpose of this NHA. There is no provincial requirement or guidance for completing an NHA on Provincial Species at Risk, however these species are included in the NHA to ensure that potential effects of the HIWEC and mitigation measures, if required, are appropriately addressed through the HIWEC EA.

Two (2) Provincial Species at Risk were identified as potentially occurring within the HIWEC study area through the Records Review. The presence of suitable habitat for these species within 120 m of the HIWEC location was assessed during the Site Investigation. A summary of the criteria and methods used to identify habitat for Provincial Species at Risk within 120 m of the HIWEC location is provided in **Table 2-3** below.

Table 2-3: Summary of the Criteria and Methods Used to Identify Habitat for Provincial Species at Risk

Species	S-rank ¹	ESA Status ²	COSEWIC Status ³	SARA Status ⁴	Preferred Habitat ⁵	Method Used to Complete Assessment
Bank Swallow (<i>Riparia riparia</i>)	S4	THR	THR	No Status (No Schedule)	<ul style="list-style-type: none"> <u>Preferred Habitat</u> Prefers sand, clay or gravel river banks or steep riverbank cliffs; lakeshore bluffs of easily crumbled sand or gravel; gravel pits, road-cuts, grassland or cultivated fields that are close to water. <u>Corresponding ELC</u>: TPO, CUM1, MAM, MAS, OAO, SAS1, SAM1 and SAF1. 	<ul style="list-style-type: none"> Habitat for this species was assessed as part of Cliffs and Talus Slopes and Colonially-Nesting Bird Breeding Habitat (Bank and Cliff) as described in Table 2-1.
Barn Swallow (<i>Hirundo rustica</i>)	S4	THR	THR	No Status (No Schedule)	<ul style="list-style-type: none"> <u>Preferred Habitat</u> Prefers farmlands or rural areas; cliffs, caves, rock niches; buildings or other man-made structures for nesting; forages widely over open country and near bodies of water. <u>Corresponding ELC</u>: TPO, CUM1, MAM, MAS, OAO, SAS1, SAM1 and SAF1. 	<ul style="list-style-type: none"> Habitat for this species was assessed as part of Cliffs and Talus Slopes and Colonially-Nesting Bird Breeding Habitat (Bank and Cliff) as described in Table 2-1.

¹ **S-rank:** The natural heritage provincial ranking system (provincial S-rank) is used by the MNRF Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. Definitions are as follows:

- S1 Extremely rare in Ontario; usually five (5) or fewer occurrences in the province or very few remaining individuals; often especially vulnerable to extirpation.
- S2 Very rare in Ontario; usually between five (5) and 20 occurrences in the province or with many individuals in fewer occurrences; often susceptible to extirpation.
- S3 Rare to uncommon in Ontario; usually between 20 and 100 occurrences in the province; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances. Most species with an S3 rank are assigned to the watch list, unless they have a relatively high global rank.
- S4 Common and apparently secure in Ontario; usually with more than 100 occurrences in the province.
- S5 Very common and demonstrably secure in Ontario.
- SH Possibly Extirpated (Historical). Species or community occurred historically in the nation or province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years.
- S#S# A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community.
- S#? Rank uncertain.

² **ESA Status:** The Endangered Species Act 2007 (ESA) protects species listed as Threatened and Endangered on the Species at Risk in Ontario (SARO) List on provincial and private land. The Minister lists species on the SARO list based on recommendations from the Committee on the Status of Species at Risk in Ontario (COSSARO), which evaluates the conservation status of species occurring in Ontario. The following are the categories of at risk:

- END** (Endangered) – A species facing imminent extinction or extirpation in Ontario.
- THR** (Threatened) – Any native species that, on the basis of the best available scientific evidence, is at risk of becoming endangered throughout all or a large portion of its Ontario range if the limiting factors are not reversed.
- SC** (Special Concern) – A species that may become threatened or endangered due to a combination of biological characteristics and identified threats.
- NAR** (Not at Risk) – A species that has been evaluated and found to be not at risk.

³ **COSEWIC Status:** The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) evaluates a federal status ranking for all species that it assesses. Rankings include the following:

- END** (Endangered) – A species facing imminent extirpation or extinction throughout its range.
- THR** (Threatened) – A species likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction
- SC** (Special Concern) – A species of special concern because of characteristics that make it particularly sensitive to human activities or natural events, but does not include an extirpated, endangered or threatened species.
- NAR** (Not at Risk) – A species that has been evaluated and found to be not at risk.

⁴ **SARA Status:** The Species at Risk Act (SARA) protects Species at Risk designated as Endangered, Threatened and Extirpated listed under Schedule 1, including their habitats on federal land. Schedule 1 of SARA is the official list of wildlife species at risk in Canada and includes species listed as Extirpated, Endangered, Threatened and of Special Concern. Once a species is listed on Schedule 1, they receive protection and recovery measures that are required to be developed and implemented under SARA. Species that were designated at risk by COSEWIC before SARA need to be reassessed based on the new criteria of the Act before they can be listed under Schedule 1. These species that are waiting to be listed under Schedule 1 do not receive official protection under SARA. Once the species on other schedules (2 and 3) have been reassessed, the other schedules are eliminated and the species is either listed under Schedule 1 or is not listed under the Act.

The following are definitions of the SARA status rankings assigned to each species in the table above:

- END (Schedule 1)** – These species are listed as Endangered under Schedule 1 of SARA and receive species and habitat protection under SARA, as well as recovery strategies and action plans.
 - THR (Schedule 1)** – These species are listed as Threatened under Schedule 1 of SARA and receive species and habitat protection under SARA, as well as recovery strategies and action plans.
 - SC (Schedule 1)** – These species are listed as Special Concern under Schedule 1 of SARA and receive management initiatives under SARA to prevent them from becoming endangered and threatened.
 - No Status (No Schedule)** – These species are evaluated and designated by COSEWIC but are not listed under Schedule 1 and therefore do not receive protection under SARA.
 - NAR (Not at Risk)** – These species have either been assessed by COSEWIC as Not at Risk or there is not enough data to assess the status ranking of the species and therefore these are not listed on Schedule 1 nor do they receive protection under SARA.
 - Not Applicable (N/A)** – These species have either been assessed by COSEWIC as Not at Risk or there is not enough data to assess the status ranking of the species and therefore these are not listed on Schedule 1 nor do they receive protection under SARA.
- Source: Government of Canada, 2009: Frequently Asked Questions: What are the SARA schedules? Accessed on February 2015. Available: <http://www.dfo-mpo.gc.ca/species-especes/faq/faq-eng.htm>

⁵ **Preferred Habitat:** Habitat descriptions for species were taken from Appendix G of the Significant Wildlife Habitat Technical Guide (MNRF, 2000), unless indicated otherwise.

3. Results

3.1 Ecological Land Classification (ELC) and Vascular Plant Surveys

3.1.1 Vegetation Communities

A total of 77 ELC vegetation community types were identified within 120 m of the HIWEC location. The locations and ELC classifications of these vegetation communities are shown on **Figure 3-1** (key map) and **Figures 3-2a to 3-2o**. Detailed field notes are provided in **Appendix B**.

Vegetation communities found within 120 m of the HIWEC location can be divided into 26 different ELC Community Series (e.g., FOD: Deciduous Forest). This is the lowest level within the ELC classification that can be identified without site-specific surveys. The units are determined based on the type of vegetation cover or plant form that best characterizes the community in question (e.g., open, shrub, treed, deciduous, coniferous or mixed).

The observed ELC Community Series designations were further separated into 57 different Ecosites (e.g., FOD5: Dry-Fresh Sugar Maple Deciduous Forest Ecosite). Ecosites are defined as “mappable, landscape units integrating a consistent set of environmental factors and vegetation characteristics” (Lee *et al.*, 1998).

Where possible, these Ecosites were then classified to vegetation type (e.g., FOD5-1: Dry-Fresh Sugar Maple Deciduous Forest Type) which is the finest level of detail within the ELC classification system. These units are based on specific groupings of plants (Lee *et al.*, 1998). Vegetation communities identified within 120 m of the HIWEC location are further described in **Table 3-1** below. This table includes common names of plant species; the scientific species names for these species can be found in the plant list included in **Appendix C**.

Through the Site Investigation, it was noted that Jack Pine Acidic Treed Rock Barren Type (RBT3-2) is both the most frequent and largest Vegetation Community present within 120 m of the HIWEC location, claiming a total of 2,191.5 ha or 23% of the HIWEC study area.

3.1.2 Vascular Plant Inventory

A complete list of plant species observed in 2014 and 2015 within 120 m of the HIWEC location are presented in **Appendix C**. In 2014, a total of 104 vascular plants were observed with 120 m of the HIWEC location. Of these, 103 (99%) are native and one (1) (1%) is exotic. In 2015, a total of 598 vascular plant, moss and lichen species were observed within 120 m of the HIWEC location, including 457 vascular plant species. Of these, 344 (75%) are native and 18 (0.05%) are exotic. An additional 95 (21%) plants are unranked.

- The rarity of each species was determined using Appendices J and M of the *Significant Wildlife Habitat Technical Guide* (MNRF, 2000) and the Natural Heritage Information Centre (MNRF, 2015). Of the species recorded during the Site Investigation, 304 are ranked as S5 (secure) and 22 are ranked as S4 (apparently secure). No provincially rare (S1 to S3) plant species, plant Species at Risk or plant Species of Conservation Concern were observed during the Site Investigation.

Table 3-1: Vegetation Communities Identified within 120 m of the HIWEC Location

ELC Code	ELC Name	Tree Canopy	Shrub Layer	Ground Layer	Comments	Total Area (ha)	Total Percentage (%)
Cultural Communities						2.2	<1
Cultural Meadow (CUM)						1.6	<1
CUM	Cultural Meadow Community Series	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).			Cultural meadows are characterized by having less than 25% tree cover and less than 25% shrub cover (Lee <i>et al.</i> , 1998).	1.6	<1
Cultural Woodland (CUW)						Total Hectares for Cultural Woodland Series:	
CUW1	Mineral Cultural Woodland Ecosite	Twenty-five (25) to 60% tree cover: dominated by Eastern White Pine and may contain other tree species.	Occasional shrubs may be present.	The ground layer may contain a mix of forbs and grasses with some mosses.	Cultural woodlands are characterized by between 25 and 60% tree cover, with a broken canopy resulting from past human-caused disturbance (Lee <i>et al.</i> , 1998).	0.4	<1
CUW2	Bedrock Cultural Woodland Ecosite	Twenty-five (25) to 60% tree cover: includes White Birch, Trembling Aspen and White Spruce.	Greater than 60% shrub cover: consists of Beaked Hazel and Round-leaved Dogwood.	The ground layer consists of Wild Sarsaparilla, Eastern Bracken-fern and Red Raspberry.		0.2	<1
Sand Barren Communities						2.3	<1
Open Sand Barren Ecosite (SBO)						1.1	<1
SBO1-1	Dry Bracken Fern Forb Sand Barren Type	Less than 10% tree cover: dominated by Jack Pine.	Greater than 60% shrub cover: consists of Eastern Bracken-fern.	The ground layer consists of Low Sweet Blueberry, Wintergreen and Wild Lily-of-the-valley.	Vegetation cover varies from patchy and barren to continuous meadow, with extremely droughty and disturbed sands (Lee <i>et al.</i> , 1998).	1.1	<1
Shrub Sand Barren Ecosite (SBS)						1.2	<1
SBS1	Shrub Sand Barren Ecosite	Generally none present.	Greater than 25% shrub cover consisting mainly of Bush Honeysuckle, Dwarf Raspberry, and Common Juniper.	Less than 25% ground cover dominated by Eastern Bracken-fern, Sheep Sorrel, and various grass and sedge species.	Vegetation cover varies from patchy and barren to continuous thicket, with extremely drought-prone and disturbed sands (Lee <i>et al.</i> , 1998).	1.2	<1
Rock Barren Communities						4,820.1	53
Open Rock Barren (RBO)						754.7	8
RBO3	Acidic Open Rock Barren Ecosite	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).			This is a very dry community of mostly exposed rock outcrops with scattered pockets of shallow soil.	24.2	<1
RBO3-1	Dry Acidic Open Rock Barren Type	Less than 25% tree cover: mainly Jack Pine or Eastern White Pine, but some Red Oak, Black Spruce and Red Maple may be present.	Less than 25% shrub cover: mainly Common Juniper, Low Sweet Blueberry and / or Velvet-leaf Blueberry with some Sheep Laurel, Narrow-leaved Meadow-sweet, Bristly Sarsaparilla, Red Raspberry and Beaked Hazel.	Greater than 10% ground cover: dominated by Eastern Bracken-fern, Wild Lily-of-the-valley, Wintergreen, Bristly Sarsaparilla, Poverty Oat Grass, Common Hairgrass, as well as other grasses, lichens and mosses.		730.6	8
Shrub Rock Barren (RBS)						1,694.2	19
RBS3	Acidic Shrub Rock Barren Ecosite	Less than 25% tree cover: canopy consists of Red Oak and Red Maple, whereas the sub canopy consists of Red Maple. Jack Pine may be present.	Greater than 25% shrub cover: the shrub layer may consist of Red Raspberry, Sheep Laurel, Eastern Bracken-fern and some Northern Wild Raisin.	The ground layer consists of Eastern Bracken-fern, Bunchberry, grasses, mosses and lichens.	More disturbed than other rock barrens.	21.2	<1
RBS3-1	Blueberry Acidic Shrub Rock Barren Type	Less than 25% tree cover: mainly Jack Pine with some Eastern White Pine, White Birch, Red Maple and Black Spruce.	Greater than 25% shrub cover: predominantly Low Sweet Blueberry and Velvet-leaved Blueberry with some Common Juniper, Sweetfern and Eastern Bracken-fern.	Greater than 25% ground cover: dominated by Lichen, mosses, Common Hairgrass, other grasses, Wild Lily-of-the-valley, Large-leaved Aster and sedges.	This is a very dry community with exposed rock outcrops and pockets of shallow soil. Blueberries can form large patches. Community complexes of Dry-Fresh White Pine-Hardwood Mixed Forest (FOM2) and Shrub Fens (FES1) can form within this community.	57.8	1
RBS3-2	Common Juniper Acidic Shrub Rock Barren Type	Less than 25% tree cover: mainly Jack Pine or Eastern White Pine, but some Red Oak, Black Spruce, White Spruce, Red Pine, White Birch and / or Red Maple may be present.	Greater than 25% shrub cover: predominantly Common Juniper with lesser amounts of Low Sweet Blueberry, Velvet-leaved Blueberry, Sheep Laurel and Eastern Bracken-fern. A few isolated saplings of Red Maple, Jack Pine, Paper Birch and Eastern White Pine may also be present.	Greater than 25% ground cover: dominated by lichens and mosses with some Eastern Bracken-fern, Wintergreen, Wild Lily-of-the-valley, Bearberry, Common Hairgrass and other grasses and sedges.	This is a very dry community with exposed rock outcrops and pockets of shallow soil. Junipers can form large patches.	1615.2	17
Treed Rock Barren (RBT)						2,371.2	26
RBT	Treed Rock Barren Community Series	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).				7.0	<1

Table 3-1: Vegetation Communities Identified within 120 m of the HIWEC Location

ELC Code	ELC Name	Tree Canopy	Shrub Layer	Ground Layer	Comments	Total Area (ha)	Total Percentage (%)
RBT2-1	Oak – Red Maple – Pine Basic Treed Rock Barren Type	Twenty-five (25) to 60% tree cover: mainly dominated by Red Maple with some Trembling Aspen and Eastern White Pine.	Less than 25% shrub cover: Red Maple saplings are often abundant with small amounts of American Basswood, and Red Oak saplings. Common Juniper is also common.	25 to 60% ground cover: dominated by Eastern Bracken-fern with some Wild Lily-of-the-valley and Wild Sarsaparilla.	This community is generally associated with basic rock barrens. However, the HIWEC study area is dominated by acidic rock barrens. Lee <i>et al.</i> (1998) does not contain an ELC community to describe acidic rock barrens dominated by Red Maple.	11.0	<1
RBT3	Acidic Treed Rock Barren Ecosite	Twenty-five (25) to 60% tree cover: dominated by Eastern White Pine, Red Pine, Red Oak, Balsam Fir and / or Jack Pine and, to a much lesser extent, Trembling Aspen.	Ten (10) to greater than 60% shrub cover: dominated by Common Juniper. May also contain some Eastern White Pine saplings and Blueberry species.	Twenty-five (25) to 60% ground cover: consists of Eastern Bracken-fern, Common Hairgrass, other grasses, lichens and mosses.	This is a very dry community with exposed rock outcrops and pockets of shallow soil. Trees and shrubs are only present where there is sufficient soil.	2,353.2	1
RBT3-2	Jack Pine Acidic Treed Rock Barren Type	Twenty-five (25) to 60% tree cover: dominated by Jack Pine which often forms pure stands. May also occur with some Eastern White Pine, Black Spruce, Spruce species, and to a lesser extent with Red Maple, Trembling Aspen and White Birch.	Ten (10) to greater than 60% shrub cover: Common Juniper is often abundant with Low Sweet Blueberry and Velvet-leaved Blueberry forming patches of a low shrub layer. Some Sweetfern, Bush Honeysuckle, Sheep Laurel and Sand Cherry occur where patches of shallow soil are present. A few tree saplings, such as Jack Pine, Red Maple and White Birch may also grow in the shrub layer.	Ten (10) to greater than 60% ground cover: consists of Common Hairgrass, Poverty Oat Grass, Flattened Wild Oat Grass, and various lichens, sedges and mosses, including Juniper Haircap Moss. Various abundances of Eastern Bracken-fern, Wintergreen, Bunchberry, Wild Lily-of-the-valley, Bearberry and Large-leaved Aster may also be present.	This is a very dry community with exposed rock outcrops and pockets of shallow soil. Trees and shrubs are only present where there is sufficient soil. Vegetation community inclusions that are less than 0.5 ha in size can form in depression within the treed rock barren communities where deeper soils, organic material and / or wetter soil conditions have been allowed to develop and may include Dry – Fresh Sugar Maple Deciduous Forest Ecosites (FOD5), Dry – Fresh Poplar – White Birch Deciduous Forest Ecosites (FOD3), Treed Fens (FET), Shrub bog Ecosites (BOS1), Organic Thicket Swamp Ecosites (SWT3), and Open Fen Ecosites (FEO1). In some areas, these inclusions may form complexes within the rock barren communities.	2,190.5	23
Forest Communities						1,836.7	20
Coniferous Forest (FOC)						539.7	6
FOC	Coniferous Forest Community Series	Greater than 60% tree cover: Both canopy and sub canopy are almost entirely dominated by Balsam Fir.	No shrub layer present.	Ground layer exceeds 25% in cover, and consists primarily of Eastern Bracken-fern and Bunchberry.	Coniferous forests are characterized by greater than 75% tree cover within the canopy being coniferous (Lee <i>et al.</i> , 1998).	74.1	1
FOC1	Dry – Fresh Pine Coniferous Forest Ecosite	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).				217.1	2
FOC1-1	Dry Jack Pine Coniferous Forest Type	Greater than 60% tree cover: the canopy is dominated by Eastern White Pine, Balsam Fir, Jack Pine and / or Eastern Hemlock, with small amounts of White Birch, Red Maple, White Spruce and / or White Cedar.	The shrub layer consists of saplings of Pine, Balsam Fir, and Eastern Hemlock, as well as Sheep Laurel, Black Huckleberry, Low Sweet Blueberry and / or Common Juniper.	The ground layer consists of Eastern Bracken-fern, Wintergreen, Bunchberry and mosses.		31.4	<1
FOC1-2	Dry – Fresh White Pine – Red Pine Coniferous Forest Type	Greater than 60% tree cover: most frequently Eastern White Pine. Red Pine sometimes mixed in or may form pure stands. May contain some Jack Pine, White Birch, Aspen species or Red Maple.	Saplings, especially of Pine, are usually present. The low shrub layer is variable and consists mainly of Low Sweet Blueberry and Common Juniper.	The ground layer is moderately dense and consists of Eastern Bracken-fern, Wintergreen and Bunchberry.		164.2	2
FOC3	Fresh – Moist Hemlock Coniferous Forest Ecosite	Greater than 60% tree cover: dominated by Eastern Hemlock, and Balsam Fir; Eastern White Pine, White Spruce, Eastern White Cedar, and White Birch also occur.	No distinct shrub layer other than Eastern Hemlock and Balsam Fir saplings.	Less than 25% ground cover comprised mainly of mosses, ferns, and Bunchberry.		0.5	<1
FOC4-3	Fresh – Moist White Cedar – Balsam Fir Coniferous Forest Type	Greater than 60% tree cover: dominated by Balsam Fir. Balsam Fir and Red Maple are present in sub canopy.	The shrub layer consists of Beaked Hazel and Balsam Fir.	The ground layer is dominated by Bunchberry and Wild Sarsaparilla.		52.4	1
Deciduous Forest (FOD)						564.2	6
FOD	Deciduous Forest Community Series	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).			Deciduous forests are characterized by greater than 75% tree cover within the canopy being deciduous (Lee	189.6	2

Table 3-1: Vegetation Communities Identified within 120 m of the HIWEC Location

ELC Code	ELC Name	Tree Canopy	Shrub Layer	Ground Layer	Comments	Total Area (ha)	Total Percentage (%)
FOD2-1	Dry – Fresh Oak – Red Maple Deciduous Forest Type	Greater than 60% tree cover dominated by Red Maple, Red Oak and Large-tooth Aspen.	Greater than 25% shrub cover: consists of Fly Honeysuckle, as well as Red Maple and Red Oak saplings.	Ground layer dominated by Large-leaved Aster, Wild Lily-of-the-valley, Wild Sarsaparilla and Eastern Bracken-fern.		4.4	<1
FOD3-1	Dry – Fresh Poplar Deciduous Forest Type	Greater than 60% tree cover: consisting of Trembling Aspen, Red Maple, White Birch, Jack Pine and Black Cherry. The sub canopy consists of Beaked Hazel with Speckled Alder and Red Maple.	The shrub layer consists of Common Juniper and Red-osier Dogwood.	The ground layer consists of Marginal Wood Fern, Spinulose Wood Fern, Eastern Bracken-fern, Wintergreen, Bunchberry and club mosses.		79.1	1
FOD3-2	Dry – Fresh White Birch Deciduous Forest Type	Greater than 60% tree cover: dominated by White Birch with Red Maple and Trembling Aspen. The sub canopy consists of White Birch and Red Maple.	The shrub layer consists of Red Maple and Northern Wild Raisin.	The ground layer consists of Eastern Bracken-fern, Bunchberry and Star-flower.		19.1	<1
FOD4	Dry – Fresh Deciduous Forest Ecosite	Greater than 60% canopy cover: dominated by Red Maple with some Trembling Aspen, White Birch, Eastern White Pine, Red Pine, Balsam Fir and Yellow Birch.	The shrub layer is dominated by Red Maple, Trembling Aspen, Balsam Fir and Beaked Hazel.	The ground layer consists of Wild Lily of-the-valley, Yellow Dog's-tooth Violet, Eastern Bracken-fern, sedges and club mosses.		25.5	<1
FOD5	Dry – Fresh Sugar Maple Deciduous Forest Ecosite	Greater than 60% tree cover: dominated by Red Maple with variable amounts of White Birch, Red Oak, Eastern White Pine, and Black Ash. The sub canopy consists of Red Maple, White Birch and Red Oak.	The shrub layer consists of Red Maple, Speckled Alder and Winterberry.	The ground layer contains Eastern Bracken-fern, a variety of forbs such as Bunchberry and Star-flower, and mosses.		12.7	<1
FOD5-1	Dry – Fresh Sugar Maple Deciduous Forest Type	Greater than 60% tree cover: dominated by Sugar Maple with some Red Oak, Black Cherry and Red Maple.	The shrub layer consists of Sugar Maple, Beaked Hazel and Viburnum species.	The ground layer consists of Wild Lily of-the-valley, Wild Sarsaparilla and Eastern Bracken-fern.		1.3	<1
FOD5-2	Dry – Fresh Sugar Maple – Beech Deciduous Forest Type	Greater than 60% tree cover: consists mainly of Sugar Maple with American Beech. Some Red Oak and Yellow Birch also present. Sugar Maple, American Beech, and American Basswood dominate the sub canopy.	Shrub layer consists of saplings of the dominant trees as well as White Elm. Dominant shrub species include Beaked Hazel and Northern Wild Raisin.	Ground cover variable but dominated by Wild Lily-of-the-valley, Wild Sarsaparilla, and White Trillium.		7.6	<1
FOD5-9	Dry – Fresh Sugar Maple – Red Maple Deciduous Forest Type	Greater than 60% tree cover: dominated by deciduous species such as Red Maple, White Birch and Large-tooth Aspen; some Jack Pine also present. Sub canopy also dominated by Red Maple and White Birch.	Shrub layer exceeds 60% and consists mainly of Beaked Hazel and Low Sweet Blueberry.	Greater than 60% ground cover dominated by Eastern Bracken-fern, Wild Sarsaparilla, and Wild Lily-of-the-valley.		11.1	<1
FOD5-10	Dry – Fresh Sugar Maple – White Birch – Poplar Deciduous Forest Type	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a); vegetation type dominated by Sugar Maple.				34.5	<1
FOD6-5	Fresh – Moist Sugar Maple - Hardwood Deciduous Forest Type	Greater than 60% tree cover: dominated by Sugar Maple with Red Oak and Trembling Aspen. More uncommon associations with Sugar Maple on moist soils may include Beech, American Basswood, Oak and Red Maple.	The shrub layer consists of Speckled Alder, Sugar Maple, Wild Red Currant, and White Birch.	The ground layer consists of Eastern Bracken-fern and Wild Sarsaparilla.		30.3	<1
FOD7-1	Fresh – Moist White Elm Lowland Deciduous Forest Type	Greater than 60% tree cover: dominated by White Elm. Black Ash and Trembling Aspen also present.	Greater than 25% shrub cover consisting mainly of Red Raspberry. Some Speckled Alder and Red-osier Dogwood also present.	Greater than 25% ground cover dominated by Pointed Broom Sedge, together with Reed Canary Grass. Ferns such as Sensitive Fern, and Spinulose Wood Fern, as well as, Buttercups, and Virginia Strawberry also present.		0.5	<1
FOD7-2	Fresh – Moist Ash Lowland Deciduous Forest Type	Greater than 60% tree cover: consists of Black Ash, Trembling Aspen and Red Maple.	The shrub layer consists of Beaked Hazel, Trembling Aspen and Red Maple.	The ground layer consists of Aster species and Wild Sarsaparilla.		15.2	<1
FOD8	Fresh – Moist Poplar – Sassafras Deciduous Forest Ecosite	Greater than 60% tree cover: consists of Red Maple and White Birch with some White Spruce and Eastern White Pine. The sub canopy is dominated by Red Maple.	The shrub layer consists of Beaked Hazel and Red Maple saplings.	The ground layer consists of Eastern Bracken-fern and mosses.		8.9	<1

Table 3-1: Vegetation Communities Identified within 120 m of the HIWEC Location

ELC Code	ELC Name	Tree Canopy	Shrub Layer	Ground Layer	Comments	Total Area (ha)	Total Percentage (%)
FOD8-1	Fresh – Moist Poplar Deciduous Forest Type	Greater than 60% tree cover: dominated by Trembling Aspen. The sub canopy is dominated by Eastern White Pine and White Spruce with White Birch.	The shrub layer is dominated by Speckled Alder.	The ground layer consists of Eastern Bracken-fern.		124.2	<1
Mixed Forest (FOM)						732.4	8
FOM	Mixed Forest Community Series	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).			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).	342.5	4
FOM2	Dry – Fresh White Pine – Maple – Oak Mixed Forest Ecosite	Greater than 60% tree cover: consisting of White Spruce with small amounts of Red Maple and Black Spruce. The sub canopy consists of Red Maple and Black Spruce.	Shrub cover variable but typically less than 60% and dominated by Low Sweet Blueberry, Velvet-leaf Blueberry and Northern Wild Raisin.	The ground layer contains Spinulose Wood Fern, Eastern Bracken-fern and Star-Flower.		5.7	<1
FOM2-1	Dry – Fresh White Pine – Oak Mixed Forest Type	Greater than 60% tree cover: consisting of Eastern White Pine and Red Oak with small amounts of White Birch and Red Maple. The sub canopy consists of Red Maple, Red Oak and Eastern White Pine.	The shrub layer consists of Low Sweet Blueberry.	The ground layer contains a variety of forbs including Wintergreen and Eastern Bracken-fern.		85.8	1
FOM2-2	Dry – Fresh White Pine – Sugar Maple Mixed Forest Type	Greater than 60% tree cover: two (2) dominant species, Eastern White Pine and Red Maple, comprising at least 25% of total tree cover. American Beech, Red Oak, Trembling Aspen, and White Birch also occur in varying proportions. The sub canopy is also dominated by these species along with some Balsam Fir, Large-tooth Aspen and American Elm.	Shrub cover variable but typically less than 60% and dominated by Beaked Hazel, Speckled Alder, Blueberry species, and Northern Wild Raisin together with saplings of Eastern White Pine, Balsam Fir, Red Oak and Red Maple.	Ground cover also variable but typically less than 60% and dominated by Eastern Bracken-fern, Wild Lily-of-the-valley, Bunchberry, Wintergreen, lichens and Haircap Moss.		21.0	<1
FOM5	Dry – Fresh White Birch – Poplar – Conifer Mixed Forest Ecosite	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).				1.8	<1
FOM5-1	Dry – Fresh White Birch Mixed Forest Type	Greater than 60% tree cover: dominated by Eastern White Pine and White Birch with some Jack Pine and Large-tooth Aspen.	The shrub layer consists of variable saplings of canopy species. Red Maple saplings are abundant in some stands.	None recorded.	Due to the late season timing of the vascular plant survey, only woody vegetation was recorded and only when herbaceous species could easily be identified were they recorded.	30.4	<1
FOM5-2	Dry – Fresh Poplar Mixed Forest Type	Greater than 60% tree cover: generally co-dominated by Trembling Aspen or Large-tooth Aspen and some combination of Balsam Fir, Eastern White Pine, Jack Pine or White Spruce.	The shrub layer consists of variable saplings of canopy species, and some Speckled Alder. Red Maple saplings are abundant in some stands.	The ground layer consists of Eastern Bracken-fern, Wintergreen, Bunchberry and asters.	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).	132.4	1
FOM6	Fresh – Moist Hemlock Mixed Forest Ecosite	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).				32.0	<1
FOM6-2	Fresh – Moist Hemlock – Hardwood Mixed Forest Type	Greater than 60% tree cover: dominated by Eastern Hemlock, Balsam Fir, Trembling Aspen and Black Ash. The sub canopy consists of Red Maple and White Birch.	The shrub layer consists of Speckled Alder.	The ground layer is dominated by ferns and grasses.		5.7	<1
FOM7-2	Fresh – Moist White Cedar – Hardwood Mixed Forest Type	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a); vegetation type dominated by Eastern White Cedar, together with deciduous species such as Black Ash, Trembling Aspen, White and Yellow Birch, and Red Maple.				4.7	<1
FOM8-1	Fresh – Moist Poplar Mixed Forest Type	Greater than 60% tree cover: consisting of Balsam Fir, Trembling Aspen and Sugar Maple.	The shrub layer consists of Sugar Maple.	The ground layer includes Wild Lily-of-the-valley.	Typically an early successional forest following a disturbance (Lee <i>et al.</i> , 1998).	60.4	1
FOM8-2	Fresh – Moist White Birch Mixed Forest Type	Greater than 60% tree cover: dominated by White Spruce, Red Maple or White Birch.	The shrub layer consists of Beaked Hazel and White Birch.	Greater than 25% ground cover: includes Prickly Tree Club-moss and Wild Lily-of-the-valley.		10.1	<1

Table 3-1: Vegetation Communities Identified within 120 m of the HIWEC Location

ELC Code	ELC Name	Tree Canopy	Shrub Layer	Ground Layer	Comments	Total Area (ha)	Total Percentage (%)	
Swamp Communities						877.7	10	
Coniferous Swamp (SWC)						371.6	4	
SWC	Coniferous Swamp Community Series	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).			Coniferous swamps are characterized by having greater than 75% coniferous tree cover, and variable flooding regimes with less than 2 m water depths, often standing water or vernal pooling (Lee <i>et al.</i> , 1998). Mineral and peaty phase mineral (organic accumulations less than 40 cm) substrates are present (Lee <i>et al.</i> , 1998). Deep organic soils (greater than 40 cm) are present.	65.1	1	
SWC1	White Cedar Mineral Coniferous Swamp Ecosite	Greater than 25% tree cover: dominated by Balsam Fir.	The shrub layer is dominated by Eastern Bracken-fern.	The ground later is dominated by Bunchberry.		1.6	<1	
SWC2-1	White Pine Mineral Coniferous Swamp Type	Greater than 25% tree cover: dominated by Eastern White Pine with some White Birch and Black Spruce.	The shrub layer consists of Speckled Alder, Northern Wild Raisin and Sheep Laurel.	Greater than 25% ground cover: dominated by Goldthread.		14.7	<1	
SWC3-2	White Cedar – Conifer Organic Coniferous Swamp Type	Greater than 25% tree cover: dominated by Eastern White Cedar. Some Balsam Fir, Red Maple and White Spruce are present in the sub canopy.	The shrub layer is sparse due to the dense canopy.	The ground layer is often sparse due to the dense canopy. Bunchberry is often present as well as Sphagnum moss.		1.5	<1	
SWC4	Tamarack – Black Spruce Organic Coniferous Swamp Ecosite	Greater than 25% tree cover: dominated by Tamarack with Eastern White Pine and Black Spruce. The sub canopy consists of Tamarack and Eastern White Pine.	The shrub layer consists mainly of Winterberry.	The ground layer is dominated by Canada Bluejoint and Royal Fern. Sphagnum moss forms a nearly continuous layer.		103.1	1	
SWC4-1	Tamarack – Black Spruce Organic Coniferous Swamp Type	Greater than 25% tree cover: consisting of Tamarack and Black Spruce with some Jack Pine. The sub canopy is dominated by Speckled Alder.	The shrub layer consists of Mountain-holly, Labrador-tea and Northern Wild Raisin.	The ground layer includes Wintergreen. Sphagnum moss forms a nearly continuous layer.		81.1	<1	
SWC4-2	Tamarack Organic Coniferous Swamp Type	Greater than 25% tree cover: dominated by Tamarack with Red Maple. The sub canopy mainly consists of Tamarack.	The shrub layer consists of Leatherleaf, Speckled Alder, Winterberry, and Sheep Laurel.	The ground layer contains Beaked Sedge and Royal Fern. Sphagnum moss forms a nearly continuous layer.		3.6	<1	
SWC4-3	Black Spruce Organic Coniferous Swamp Type	Greater than 25% tree cover: dominated by Black Spruce with Tamarack, Jack Pine and / or White Birch.	The shrub layer consists of Leatherleaf, Mountain-holly and Black Huckleberry.	The ground layer consists of Sphagnum moss with Small Cranberry, Three-leaved Solomon's Seal and Large Cranberry.		100.9	1	
Deciduous Swamp (SWD)						135.2	1	
SWD	Deciduous Swamp Community Series	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).			Deciduous swamps are characterized by having greater than 25% tree cover, and deciduous species greater than 75% of tree cover (Lee <i>et al.</i> , 1998). Organic soils may be present but are less than 40 cm deep. Typically flooded in spring but dry out in summer.	53.7	1	
SWD1-2	Bur Oak Mineral Deciduous Swamp Type	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a); vegetation type dominated by Bur Oak; other Oak species may also occur, together with Hickory species, Green Ash, and Red and Swamp Maple.				0.2	<1	
SWD2-1	Black Ash Mineral Deciduous Swamp Type	Greater than 25% tree cover: dominated by Black Ash. May contain some Red Maple, Trembling Aspen or Balsam Fir.	The shrub layer may contain some Speckled Alder and Winterberry as well as Ash saplings.	The ground layer consists of wetland forbs, sedges and grasses.		27.0	<1	
SWD3-1	Red Maple Mineral Deciduous Swamp Type	Greater than 25% tree cover: consisting of Red Maple with some White Birch and Trembling Aspen.	The shrub layer may consist of Speckled Alder and Winterberry as well as deciduous tree saplings.	The ground layer is dominated by ferns.		35.8	<1	
SWD4-3	White Birch – Poplar Mineral Deciduous Swamp Type	Greater than 25% tree cover: dominated by Trembling Aspen with White Birch and small amounts of Red Maple. The sub canopy consists of Trembling Aspen, White Birch and Eastern White Pine.	The shrub layer consists of Speckled Alder and saplings of Red Maple.	The ground layer consists of Eastern Bracken-fern and often some club mosses.		3.6	<1	
SWD5	Ash Organic Deciduous Swamp	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).				Deep organic soils (greater than 40 cm) are present.	4.1	<1
SWD5-1	Black Ash Organic Deciduous Swamp Type	Greater than 25% tree cover: dominated by Black Ash, often with some White Birch and Trembling Aspen. The sub canopy may contain some Eastern White Cedar and Red Maple.	The shrub layer consists of Winterberry, Speckled Alder, Alleghany Blackberry, Red-osier Dogwood and Northern Wild Raisin.	The ground layer consists of Bunchberry, ferns, grasses and Sphagnum moss.			6.5	<1
SWD6	Maple Organic Deciduous Swamp Ecosite	Greater than 25 but less than 60% tree cover: comprised mostly of Red Maple together with some White Birch.	Greater than 60% shrub cover dominated by Winterberry.	Greater than 25% ground cover consisting of various sedges as well as Bunchberry.	0.8		<1	

Table 3-1: Vegetation Communities Identified within 120 m of the HIWEC Location

ELC Code	ELC Name	Tree Canopy	Shrub Layer	Ground Layer	Comments	Total Area (ha)	Total Percentage (%)
SWD6-1	Red Maple Organic Deciduous Swamp Type	Greater than 25% tree cover: consisting largely of Red Maple with some White Birch and Trembling Aspen.	The shrub layer often contains Winterberry and Red Maple saplings.	The ground layer consists of a variety of wetland forbs, sedges and grasses.		3.3	<1
Mixed Swamp (SWM)						122.5	1
SWM	Mixed Swamp Community Series	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).			Mixed swamps are characterized by having both deciduous and coniferous species, each making up at least 25% of tree cover (Lee <i>et al.</i> , 1998). Mixed swamps have variable flooding regimes with water depths of less than 2 m and there is standing water or vernal pooling present. Organic soils less than 40 cm deep.	67.1	1
SWM1-1	White Cedar Hardwood Mineral Mixed Swamp Type	Greater than 60% tree cover: generally dominated by White Cedar mixed with Black Spruce, Black Ash, White Birch and Red Maple.	Greater than 25% shrub cover: including Red Maple, Involucrated Fly Honeysuckle and Balsam Fir.	Greater than 60% ground cover: including Fowl Meadow Grass, Wild Lily-of-the-valley, Crested Wood Fern and Wild Calla.		2.6	<1
SWM2-1	Red Maple – Conifer Mineral Mixed Swamp Type	Greater than 25% tree cover: dominated by Red Maple with Eastern White Pine, Black Spruce and / or Balsam Fir.	The shrub layer contains a mix of Speckled Alder, Mountain-holly and Northern Wild Raisin.	The ground layer contains Bunchberry, Wild Lily-of-the-valley and Star-flower.		29.9	<1
SWM2-2	Swamp Maple – Conifer Mineral Mixed Swamp Type	Greater than 25% tree cover: dominated by Red Maple with Eastern White Pine, Black Spruce and / or Balsam Fir.	The shrub layer contains a mix of Speckled Alder, Mountain-holly and Northern Wild Raisin.	The ground layer contains Bunchberry, Wild Lily-of-the-valley and Star-flower.		4.3	<1
SWM3	Birch – Poplar Mineral Mixed Swamp Ecosite	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).				0.6	<1
SWM3-1	Birch – Conifer Mineral Mixed Swamp Type	Greater than 25% tree cover: generally dominated by Eastern White Pine with some White Birch and Red Maple.	The shrub layer consists of Winterberry, with some saplings of Eastern White Pine and Black Spruce.	The ground layer contains Bunchberry and Goldthread. Sphagnum moss is abundant.		11.8	<1
SWM3-2	Poplar – Conifer Mineral Mixed Swamp Type	Greater than 60% tree cover: dominated by Trembling Aspen, Jack Pine, White Birch and Red Maple.	Greater than 60% shrub cover: consists of Speckled Alder, White Birch and Narrow-leaved Meadow-sweet.	Greater than 60% ground cover: dominated by Low Sweet Blueberry and Three-leaved Solomon's Seal. Sphagnum moss is abundant.		1.2	<1
SWM5-1	Red Maple – Conifer Organic Mixed Swamp Type	Greater than 25% tree cover: dominated by Red Maple with Trembling Aspen, White Birch, Eastern White Pine and White Spruce.	The shrub layer consists of Northern Wild Raisin, Winterberry and Speckled Alder.	The ground layer is dominated by Sphagnum moss. Wood Ferns, grasses, Bunchberry and Virginia Strawberry are present.	Organic soils greater than 40 cm deep are present.	1.1	<1
SWM6-2	Poplar – Conifer Organic Mixed Swamp Type	Greater than 60% tree cover: dominated by Trembling Aspen, Black Spruce, and White Birch, which also dominate the sub canopy.	Shrub cover exceeds 60% and consists mainly of Mountain-holly, Speckled Alder, and some Red Raspberry.	The ground layer (in excess of 60%) is dominated by Sphagnum moss along with Canada Goldenrod, Bunchberry, and Wild Lily-of-the-valley.		3.9	<1
Thicket Swamp (SWT)						248.5	3
SWT	Thicket Swamp Community Series	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).			Thicket swamps are characterized by having tree cover less than 25% and hydrophytic shrub cover 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.	69.7	1
SWT1	Bedrock Thicket Swamp Ecosite	Less than 25% tree cover, comprised almost entirely of Tamarack.	Greater than 60% shrub cover dominated by Speckled Alder.	Greater than 60% ground cover comprised primarily of Sphagnum mosses, various grasses, and Low Sweet Blueberry.		2.5	<1
SWT2-1	Alder Mineral Thicket Swamp Type	Greater than 10% tree cover: some White Birch and Black Ash.	Greater than 60% shrub cover: dominated by Speckled Alder and Mountain-holly.	Greater than 60% ground cover: including sedge species.		104.3	1
SWT2-6	Meadowsweet Mineral Thicket Swamp Type	Generally none present.	Greater than 60% shrub cover: dominated by Narrow-leaved Meadow-sweet, Leatherleaf and Mountain-holly.	Greater than 60% ground cover: consists of Sedge species, Wool-grass, Canada Bluejoint and Dwarf Raspberry.	Organic soils less than 40 cm deep are present.	0.8	<1
SWT3	Organic Thicket Swamp Ecosite	No canopy or sub canopy present.	Greater than 25% shrub cover dominated by Skunk Currant and Red Raspberry; some Tall Meadow-rue also present.	The ground layer, which exceeds 60% in cover, consists mainly of grasses, particularly Canada Bluejoint, together with Common Burdock, Virgin's-bower and Spotted Touch-me-not.	These Thicket Swamps occurs on organic substrates and are dominated by hydrophytic plants (Lee <i>et al.</i> 1998).	1.5	<1
SWT3-1	Alder Organic Thicket Swamp Type	Less than 25% tree cover: some Tamarack and Black Ash may be present.	Greater than 25% shrub cover: dominated by Speckled Alder, often dense. Some Winterberry may be present, as well as a low shrub layer of Sheep Laurel.	The ground layer is dominated by a mix of forbs and graminoids including Canada Bluejoint, sedge species, aster species and Small Cranberry.	These tall thicket swamps occur on deep organic soils (greater than 40 cm).	67.0	1
SWT3-7	Winterberry Organic Thicket Swamp Type	Less than 25% tree cover: may contain some Black Ash, Tamarack or White Birch.	Greater than 25% shrub cover: dominated by Winterberry. May also include some Speckled Alder and Mountain-holly.	The ground layer is dominated by a variety of wetland forbs that may include Royal Fern, Virginia Cotton-grass and Sedge species.		1.1	<1

Table 3-1: Vegetation Communities Identified within 120 m of the HIWEC Location

ELC Code	ELC Name	Tree Canopy	Shrub Layer	Ground Layer	Comments	Total Area (ha)	Total Percentage (%)
SWT3-8	Mountain Holly Organic Thicket Swamp Type	Generally none present.	Greater than 25% shrub cover: dominated by Mountain-holly with Speckled Alder.	The ground layer is dominated by variable cover of emergent herbaceous species including Sensitive Fern, Royal Fern and Sedge species.	Occurs on deep organic soils (greater than 40 cm).	1.5	<1
Fen Communities						676.0	7
FE	Fen Community Class	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).			Fens are characterized by having greater plant diversity than bogs, and greater than 40 cm depth of organic soils (brown moss or sedge peat) that are slightly alkaline to mildly acidic (Lee <i>et al.</i> , 1998). Water flow is slow through these wetlands. Fens are saturated and may contain some open water.	2.8	<1
Open Fen (FEO)						307.8	3
FEO	Open Fen Community Series	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).			Fens are characterized by having greater plant diversity than bogs, and greater than 40 cm depth of organic soils (brown moss or sedge peat) that are slightly alkaline to mildly acidic (Lee <i>et al.</i> , 1998). Water flow is slow through these wetlands. Fens are saturated and may contain some open water.	19.3	<1
FEO1	Open Fen Ecosite	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).				191.2	2
FEO1-2	Slender Sedge Open Fen Type	Less than 10% tree cover: where present, mainly consist of Jack Pine, Eastern White Pine and Tamarack.	Less than 25% shrub cover: mainly Leatherleaf with some Sheep Laurel.	Greater than 25% ground cover: consists of Cotton-grass and sedge species, with small amounts of Small Cranberry and Bog Rosemary. Sphagnum moss is common but not continuous.		64.1	2
FEO1-2 / SA	Slender Sedge Open Fen Type / Shallow Water Community Class Mosaic	None present.	Shrub layer consists of Sweet Gale and Leatherleaf. Some Red Raspberry also present.	Ground cover greater than 60% and consists mainly of Sphagnum moss and Slender Sedge, together with Lake-bank Sedge, Canada Goldenrod, Sensitive Fern, and Small Cranberry. Water-shield, Water-milfoil, Bladderwort, and Fragrant Water-lily are present in the Shallow Water patches interspersed throughout.		4.8	<1
FEO1-5	Beaked Sedge Open Fen Type	Generally none present.	Greater than 25% shrub cover: dominated by Leatherleaf. May contain some Willow species.	Greater than 60% ground cover: dominated by Beaked Sedge with Sphagnum moss.		25.7	<1
Shrub Fen (FES)						122.7	1
FES	Shrub Fen Community Series	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).			Fens are characterized by having greater plant diversity than bogs, and greater than 40 cm depth of organic soils (brown moss or sedge peat) that are slightly alkaline to mildly acidic (Lee <i>et al.</i> , 1998). Water flow is slow through these wetlands. Fens are saturated and may contain some open water.	8.5	<1
FES1	Shrub Fen Ecosite	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).				26.3	<1
FES1-1	Sweet Gale Shrub Fen Type	Generally none present.	Greater than 60% shrub cover: dominated by Sweet Gale, and may contain some Mountain-holly and Black Huckleberry.	Greater than 60% ground cover: dominated by Three-leaved Solomon's Seal and Low Sweet Blueberry.		0.9	<1
FES1-4	Leatherleaf – Forb Shrub Fen Type	Less than 10% tree cover: where present, may consist of Jack Pine, Tamarack or Black Spruce.	Greater than 25% shrub cover: mainly Leatherleaf with some Sheep Laurel.	Greater than 25% ground cover: consists of forbs and graminoids including Cotton-grass species. Large Cranberry is common. Frequent hummocks of Sphagnum moss are present.		83.8	1
FES1-6	Mountain Holly Shrub Fen Type	Less than 10% tree cover: consists of Tamarack and Black Spruce.	Greater than 25% shrub cover: consists mainly of Mountain-holly.	Greater than 25% ground cover: includes Three-leaved Solomon's Seal, with abundant Sphagnum moss.		3.3	<1
Treed Fen (FET)						245.3	3
FET	Treed Fen Community Series	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).			Fens are characterized by having greater plant diversity than bogs, and greater than 40 cm depth of organic soils (brown moss or sedge peat) that are slightly alkaline to mildly acidic (Lee <i>et al.</i> , 1998). Water flow is slow through these wetlands. Fens are saturated and may contain some open water.	34.8	<1
FET1	Treed Fen Ecosite	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).				131.5	1
FET1-1	Tamarack Treed Fen Type	Ten (10) to 25% tree cover: mainly Tamarack.	The variable tall shrub layer consists of Tamarack saplings, Speckled Alder and Winterberry. The low shrub layer consists of Leatherleaf and Sheep Laurel.	The ground layer is dominated by Sphagnum moss and forbs which may include Virginia Chain Fern, Pitcher-plant and Royal Fern as well as sedge species.		79.0	1

Table 3-1: Vegetation Communities Identified within 120 m of the HIWEC Location

ELC Code	ELC Name	Tree Canopy	Shrub Layer	Ground Layer	Comments	Total Area (ha)	Total Percentage (%)
Bog Communities						89.2	1
Open Bog (BOO)						6.0	<1
BOO1	Open Bog Ecosite	Less than 10% tree cover: where present, consists mainly of Tamarack, Black Spruce or pine species.	Less than 25% shrub cover: mainly consists of Leatherleaf and Sheep Laurel.	Greater than 25% ground cover: dominated by Beaked Sedge with a nearly continuous layer of Sphagnum moss, as well as small amounts of Small Cranberry.	Bogs are characterized by having a low diversity of plant species and greater than 40 cm depth of organic soils with moderate to high acidity (Lee <i>et al.</i> , 1998). Bogs have constrained water flow. They are usually not flooded but are always saturated with water.	0.3	<1
BOO1-1	Few-seeded Sedge Open Bog Type	Less than 10% tree cover: where present, consists mainly of Tamarack or Black Spruce with occasional pine species.	Less than 25% shrub cover: mainly consists of Leatherleaf and some Sheep Laurel.	Greater than 25% ground cover: dominated by Few-seeded Sedge with a nearly continuous layer of Sphagnum moss.		3.4	<1
BOO1-2	Cotton-grass Open Bog Type	Less than 10% tree cover: where present, consists mainly of Tamarack or Black Spruce with occasional pine species.	Less than 25% shrub cover: mainly consists of Leatherleaf and some Sheep Laurel. Occasional Speckled Alder may be present.	Greater than 25% ground cover: consists of cotton-grass species and sedge species.		2.3	<1
Shrub Bog (BOS)						8.9	<1
BOS	Shrub Bog Community Series	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).			Bogs are characterized by having a low diversity of plant species and greater than 40 cm depth of organic soils with moderate to high acidity (Lee <i>et al.</i> , 1998). Bogs have constrained water flow. They are usually not flooded but are always saturated with water.	1.6	<1
BOS1-1	Leatherleaf Shrub Bog Type	Less than 10% tree cover: where present, consists mainly of Tamarack with occasional pine species.	Greater than 25% shrub cover: consists mainly of Leatherleaf and some Sheep Laurel.	The ground layer consists largely of sedge species and cotton-grass species, with a nearly continuous layer of Sphagnum moss. Virginia Chain Fern is sometimes abundant.		7.3	<1
Treed Bog (BOT)						74.3	1
BOT	Treed Bog Community Series	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).			Bogs are characterized by having a low diversity of plant species and greater than 40 cm depth of organic soils with moderate to high acidity (Lee <i>et al.</i> , 1998). Bogs have constrained water flow. They are usually not flooded but are always saturated with water.	31.9	<1
BOT1	Treed Bog Ecosite	Ten (10) to 25% tree cover: mainly Eastern White Pine, Tamarack, Black Spruce and / or Jack Pine. May be some White Birch.	Greater than 25% shrub cover: consists of saplings of Tamarack, Black Spruce, Speckled Alder and pine species, as well as Leatherleaf, Sheep Laurel and Black Huckleberry.	The ground layer consists largely of Cotton-grass species and Sedge species with a dense layer of Sphagnum moss. Virginia Chain Fern, Pitcher-plant and / or Bog Rosemary may be present.		11.5	<1
BOT1-1	Black Spruce Treed Bog Type	Ten (10) to 25% tree cover: dominated by Black Spruce. May be some Tamarack and Eastern White Pine present.	The variable tall shrub layer consists of Wild Raisin, Mountain-holly and /or Winterberry. The low shrub layer consists of Leatherleaf, Labrador-tea and / or Sheep Laurel.	The ground layer consists largely of sedge species and cotton-grass species, with a nearly continuous layer of Sphagnum moss. Virginia Chain Fern is sometimes abundant.		30.9	<1
Marsh Communities						269.6	3
MA	Marsh Community Class	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).			Marsh communities are characterized by consisting of less than 25% tree or shrub cover with variable flooding regimes (Lee <i>et al.</i> , 1998).	0.5	<1
Meadow Marsh (MAM)						162.6	2
MAM	Meadow Marsh Community Series	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).			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).	50.7	1
MAM2-2	Reed-canary Grass Mineral Meadow Marsh Type	Generally none present	Less than 25% shrub cover: often with Narrow-leaved Meadow-sweet.	Greater than 60% ground cover: dominated by Reed Canary Grass.		1.6	<1
MAM2-5	Narrow-Leaved Sedge Mineral Meadow Marsh Type	Generally none present.	Less than 25% shrub cover: often with Broad-leaved Meadow-sweet.	Greater than 60% ground cover: includes Water Sedge and Common Cattail.		5.4	<1
MAM2-6	Broad-leaved Sedge Mineral Meadow Marsh Type	Generally none present.	Generally none present.	The ground layer is dominated by broad-leaved sedge species, especially Beaked Sedge, with some other species such as bulrushes present.		21.1	<1
MAM2-10	Mixed Forb Mineral Meadow Marsh Type	Generally none present.	Less than 25% shrub cover: often some Narrow-leaved Meadow-sweet and Red Raspberry.	Greater than 60% ground cover: consists of grasses and forbs including Tall Meadow-rue, Canada Anemone and Sensitive Fern.		9.3	<1
MAM3	Organic Meadow Marsh Ecosite	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).				57.9	1

Table 3-1: Vegetation Communities Identified within 120 m of the HIWEC Location

ELC Code	ELC Name	Tree Canopy	Shrub Layer	Ground Layer	Comments	Total Area (ha)	Total Percentage (%)
MAM3-1	Bluejoint Organic Meadow Marsh Type	Generally none present but may contain dead trees.	Less than 25% shrub cover: usually much less but may contain some Speckled Alder.	The ground layer is dominated by Canada Bluejoint. Some forbs are mixed in, especially around the fringes.	Organic soil greater than 40 cm deep. Typically occurs on former Beaver ponds after dam has failed, as well as along some stream floodplains and shorelines.	0.4	<1
MAM3-5	Narrow-leaved Sedge Organic Meadow Marsh Type	Generally none present.	Generally none present although some Tomentose Meadow-sweet may occur.	The ground layer exceeds 60% in cover and is dominated by narrow-leaved sedge species, particularly Lake-bank Sedge. Sphagnum moss, Marsh Violet, and Common St. John's-wort are also present.	Characterized by organic soil greater than 40 cm deep, dominated by emergent hydrophytic macrophytes, and species less tolerant of prolonged flooding (Lee <i>et al.</i> 1998).	3.3	<1
MAM3-6	Broad-leaved Sedge Organic Meadow Marsh Type	Generally none present.	Generally none present.	The ground layer is dominated by broad-leaved sedge species, especially Beaked Sedge, with some other species such as bulrushes present.		13.0	<1
Shallow Meadow (MAS)						106.5	1
MAS	Shallow Marsh Community Series	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).			Shallow marshes are characterized by standing or flowing water up to 2 m deep (Lee <i>et al.</i> , 1998).	21.6	<1
MAS1	Bedrock Shallow Marsh Ecosite	Generally none present.	Less than 25% shrub cover: some Sheep Laurel present.	The ground layer consists of Slender Sedge, Lake-bank Sedge, and Canada Bluejoint.	Meadow marsh on shallow organic or mineral soil (less than 30 cm) over bedrock.	3.5	
MAS2-1	Cattail Mineral Shallow Marsh Type	Generally none present but may contain some Trembling Aspen.	Less than 25% shrub cover: some Northern Wild Raisin present.	The ground layer is dominated by cattails with some sedge species.	Dominated by graminoids with hydrophytic emergent macrophyte cover greater than 25% and standing water up to 2 m deep (Lee <i>et al.</i> , 1998).	1.2	<1
MAS2-3	Narrow-leaved Sedge Mineral Shallow Marsh Type	Generally none present.	Less than 25% shrub cover: often with Narrow-leaved Meadow-sweet and Speckled Alder.	Greater than 25% ground cover: includes Water Sedge.	Shallow marshes are characterized by standing or flowing water up to 2 m deep (Lee <i>et al.</i> , 1998).	6.6	<1
MAS2-4	Broad-leaved Sedge Mineral Shallow Marsh Type	Generally none present.	Less than 25% shrub layer: often with Meadow-sweet and Leatherleaf.	Greater than 60% ground cover: consists of sedge species such as Tussock Sedge and Lake-bank Sedge.		5.8	<1
MAS3	Organic Shallow Marsh Ecosite	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).				30.4	<1
MAS3-1	Cattail Organic Shallow Marsh Type	Less than 25% tree cover: usually much less and may contain dead trees.	Less than 25% shrub cover: usually much less but may contain some Speckled Alder or Winterberry.	The ground layer is dominated by Broad Cattail or Hybrid Cattail. Some forbs may be present.	Deep organic soils (greater than 40 cm) and often standing water present. Often good interspersions with cattail stands scattered among open water.	20.6	<1
MAS3-3	Narrow-leaved Sedge Organic Shallow Marsh Type	Less than 25% tree cover: usually much less and may contain dead trees.	Less than 25% shrub cover: where present, consists largely of scattered Leatherleaf.	Greater than 25% ground cover: dominated by narrow-leaved sedge species such as Tussock Sedge. Some other graminoids and forbs may be present.	Shallow marshes are characterized by standing or flowing water up to 2 m deep (Lee <i>et al.</i> , 1998).	7.2	<1
MAS3-4	Broad-leaved Sedge Organic Shallow Marsh Type	Less than 25% tree cover: usually much less and may contain dead trees.	Less than 25% shrub cover: usually much less but may contain some Speckled Alder or Winterberry. Some Sheep Laurel is present in the low shrub layer.	The ground layer is dominated by Beaked Sedge with some Wool-grass, Canada Bluejoint and forbs such as aster species. Small Cranberry is frequently present. Sphagnum moss is common.		9.5	<1
Open Water Communities						109.1	1
OA	Open Aquatic	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).			Open aquatic communities are characterized by water depths greater than 2 m, with sparse or no submerged aquatic plant cover (Lee <i>et al.</i> , 1998).	80.0	1
Open Aquatic (OAO)						29.0	<1
OAO	Open Aquatic Community Series	None present.	None present.	None present.	Open aquatic communities are characterized by water depths greater than 2 m, with sparse or no submerged aquatic plant cover (Lee <i>et al.</i> , 1998).	29.0	<1
Shallow Water Communities						337.2	4
SA	Shallow Water Community Class	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).			Shallow aquatic communities are characterized by the presence of submerged and floating leaved aquatic vegetation with no tree or shrub cover (Lee <i>et al.</i> , 1998).	214.0	2
SA / FES	Shallow Water Community Class / Shrub Fen Community Series Mosaic	Community identified by Alternative Site Investigation. Identified by Stantec in 2013 (AECOM, 2015a).				69.0	1

Table 3-1: Vegetation Communities Identified within 120 m of the HIWEC Location

ELC Code	ELC Name	Tree Canopy	Shrub Layer	Ground Layer	Comments	Total Area (ha)	Total Percentage (%)
Submerged Shallow Aquatic (SAS)						2.9	<1
SAS1	Submerged Shallow Aquatic Ecosite	Generally none present; less than 10% tree cover consisting of White Spruce may occur.	Shrub layer is mostly absent but may occasionally consist of wetland plants such as Swamp Black Currant.	Over 25% ground cover consisting of sedges and rushes; however, submerged plants, such as Water-starworts are abundant.	Submerged shallow aquatic communities are dominated by submerged macrophytes and may have some emergent vegetation, as well as water depths greater than 2 m (Lee <i>et al.</i> , 1998).	2.9	<1
Mixed Shallow Aquatic (SAM)						9.0	<1
SAM1-2	Duckweed Mixed Shallow Aquatic Type	None present.	None present.	Between 25 and 60% ground cover dominated by Lesser Duckweed, together with Water Smartweed and Bulhead Pond-lily.	Mixed shallow marsh communities are dominated by a mixture of submerged and floating-leaved macrophytes in up to 2 m of permanent water (Lee <i>et al.</i> , 1998).	5.9	<1
SAM1-4	Pondweed Mixed Shallow Aquatic Type	None present.	None present.	Greater than 25% ground cover: consists of both floating-leaved and submerged macrophytes including pondweeds and water-lilies.		3.1	<1
Floating-leaved Shallow Aquatic (SAF)						42.3	<1
SAF1	Floating-leaved Shallow Aquatic Ecosite	None present.	Less than 10% shrub cover consisting mainly of Sweet Gale.	Over 60% cover is constituted by floating-leaved species such as Water-shield, Fragrant Water-lily, and Bulhead Pond-lily. Water-milfoil, Marsh Cinquefoil, Slender Sedge, Sphagnum moss, and pondweeds are found along the margins of the shallow water.	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).	8.0	<1
SAF1-1	Water Lily – Bullhead Lily Floating-leaved Shallow Aquatic Type	None present.	None present.	Greater than 25% ground cover: consists of floating-leaved macrophytes that include Water Shield, White Water-lily and Yellow Pond-lily.		34.3	<1

3.2 Conservation Reserves

The North Georgian Bay Shoreline and Islands Conservation Reserve is located within the HIWEC study area, and within 19 m of a proposed WTG, along the south side of the HIFN I.R. #2 lands (MNRF, 2014c). This conservation reserve stretches along the coastline and inland environments that support numerous wetlands and wildlife habitat, including habitats for the Massassauga Rattlesnake and Caspian Tern (*Hydroprogne caspia*) (MNRF, 2006b).

Within 120 m of the HIWEC location, the North Georgian Bay Shoreline and Islands Conservation Reserve contains the following ELC communities: Dry Acidic Open Rock Barren Type (RBO3-1), Common Juniper Acidic Shrub Rock Barren Type (RBS3-2), Jack Pine Acidic Treed Rock Barren Type (RBT3-2), Fresh – Moist Poplar – Sassafras Deciduous Forest Ecosite (FOD8), Dry – Fresh Poplar Deciduous Forest Type (FOD3-1), Tamarack – Black Spruce Organic Coniferous Swamp Type (SWC4-1), Alder Mineral Thicket Swamp Type (SWT2-1) and Shallow Water (SA).

The location of the North Georgian Bay Shoreline and Islands Conservation Reserve is shown on **Figure 3-1**. The North Georgian Bay Shoreline and Islands Conservation Reserve was carried forward to the EOI.

3.3 Wetlands

A total of 2,445 ha of wetlands were identified as occurring within the HIWEC study area through a combination of aerial photography interpretation and field studies. Following MNRF OWES complexing rules (MNRF, 2014a), a total of four (4) wetland features were identified as occurring at least partially within 120 m of the HIWEC location through the Site Investigation (WET-001, WET-002, WET-003 and WET-004). **Figure 3-3** shows the location of these identified wetland features. A description of the attributes, composition, and functions of each wetland feature, as well as the minimum distance from each wetland feature to the nearest HIWEC component, is presented in **Table 3-2** below.

The identified wetland features are composed of a mosaic of bog, fen, marsh and swamp wetland types. All four (4) site types were found throughout the HIWEC study area. The HIWEC study area contains lacustrine wetlands influenced by Henvey Inlet and Georgian Bay, riverine wetlands influenced by the Key River, isolated bogs relying on atmospheric moisture, and palustrine wetlands influenced by surface flow and watercourses.

Of the identified 2,445 ha of wetland within the HIWEC study area, 816 ha or 33% of wetlands observed are located within 120 m of the HIWEC location, 385 ha or 47% of which are classified as swamp wetland type. Fen wetland type comprises 205 ha or 25%, marsh wetland type makes up 173 ha or 21% and bog wetland type accounts for the remaining 53 ha or 7% of the wetlands within 120 m of the HIWEC location. Each of these wetlands can be further divided into palustrine, lacustrine, isolated or riverine site types, with palustrine being the most commonly observed site type and making up 1,605 ha or 67% of wetlands within the HIWEC study area.

Swamps were the most abundant wetland type observed within the HIWEC study area. These wetlands consisted of dominant vegetation including Black Spruce (*Picea mariana*), Tamarack (*Larix laricina*), Speckled Alder (*Alnus incana*), American Mountain Ash (*Nemopanthus mucronatus*), Leatherleaf (*Chamaedaphne calyculata*), Labrador Tea (*Ledum groenlandicum*), Canada Mayflower (*Mainthemum canadense*), Three-leaved False Solomon's Seal (*Mainthemum trifolium*) and Peat Moss (*Sphagnum* spp.).

Fen wetlands types were also abundant. Dominant plant species within these wetlands included Tamarack, Sheep Laurel (*Kalmia angustifolia*), Leatherleaf, a variety of sedge species (*Carex* spp.) and peat mosses.

Table 3-2: Wetland Features Identified Through the Site Investigation

Wetland Feature ID	Minimum Distance to HIWEC Location (m) ²	Attributes			Composition	Function
		Total Size (ha)	Wetland Type	Site Type		
WET-001	0 (access road and collector line, WTG, WTG construction footprint, transmission line and transformer station)	1,158.8	Bog (5%) Fen (34%) Marsh (26%) Swamp (35%)	Isolated (6%) Lacustrine (8%) Palustrine (79%) Riverine (7%)	<ul style="list-style-type: none"> This wetland feature is comprised of the following wetland vegetation communities (refer to Table 3-1 for species compositions of vegetation communities): <ul style="list-style-type: none"> mF: Moss dominant fen (FEO1, FES1-4, FET1-1); IsF: Low shrub dominant fen (FES1-4, FET1-1); neM: Narrow-leaved emergent dominant marsh (MAM3-6, MAS3-1, MAS3-4); cS: Coniferous treed swamp (SWC3-2, SWC4-1, SWC4-3, SWM1-1, SWM3-1); fW: Floating plants dominant open water (SAF1-1); suW: Submergent plant dominant open water (OAO, SAS1); tsS: Tall shrubs dominant swamp (SWC4-1, SWT2-1, SWT3-1); neB: Narrow-leaved emergent dominant bog (BOS1-1, BOT1-1); cB: Coniferous treed bog (BOT1-1); mB: Moss dominant bog (BOO); IsB: Low shrub dominant bog (BOS1-1, BOT1-1); IsS: Low shrub dominant swamp (SWT3-1); and hS: Deciduous dominant swamp (SWD2-1, SWD4-3, SWD5-1). 	<ul style="list-style-type: none"> Flood attenuation; Water quality improvements (e.g., pollution interception, sediment trap, biogeochemical cycling); Habitat and resources for wetland flora and fauna; Habitats for Species at Risk (SAR) were identified within this wetland complex, including: <ul style="list-style-type: none"> Massasauga Rattlesnake (<i>Sistrurus catenatus</i>); Blanding's Turtle (<i>Emydoidea blandingii</i>); Restricted species³; Habitats for Species of Conservation Concern (SOCC) were identified within this wetland complex, including: <ul style="list-style-type: none"> Olive-sided flycatcher (<i>Contopus cooperi</i>); Canada Warbler (<i>Cardellina canadensis</i>); Snapping Turtle (<i>Chelydra serpentina</i>); and Milksnake (<i>Lampropeltis triangulum</i>).
WET-002	0 (access road and collector line, WTG and WTG construction footprint)	254.2	Bog (5%) Fen (28%) Marsh (30%) Swamp (36%)	Isolated (9%) Lacustrine (12%) Palustrine (79%)	<ul style="list-style-type: none"> This wetland feature is comprised of the following wetland vegetation communities (refer to Table 3-1 for species compositions of vegetation communities): <ul style="list-style-type: none"> gcS: Ground cover dominant Swamp (SWT2-1); mF: Moss dominant fen (FET1-1, FES1-4); cS: Coniferous treed swamp (SWC4-3, SWC4); reM: Robust emergent dominant marsh (MAS2-1); fW: Floating plants dominant open water (SAF1-1); mS: Moss dominant swamp (SWC4-1); cb: Conifer dominant bog (BOT1); hS: Deciduous treed swamp (SWD5-1, SWM5-1); IsF: Low shrub dominant fen (FET1-1, FES1-4); mB: Moss dominant bog (BOT1); neM: Narrow-leaved emergent dominant marsh (MAS3-4, MAS3-3); neS: Narrow-leaved emergent dominant Swamp (SWT3-1); tsS: Tall shrubs dominant swamp (SWC4-1, SWT2-1, SWT2-6, SWT3-1); and tsW: Tall shrubs dominant open aquatic (SA). 	<ul style="list-style-type: none"> Flood attenuation; Water quality improvements (e.g., pollution interception, sediment trap, biogeochemical cycling); Habitat and resources for wetland flora and fauna; Habitats for SAR were identified within this wetland complex, including: <ul style="list-style-type: none"> Massasauga Rattlesnake (<i>Sistrurus catenatus</i>); Blanding's Turtle (<i>Emydoidea blandingii</i>); Habitats for SOCC were identified within this wetland complex, including: <ul style="list-style-type: none"> Canada Warbler (<i>Cardellina canadensis</i>); Snapping Turtle (<i>Chelydra serpentina</i>); and Eastern Wood-pewee (<i>Contopus virens</i>).
WET-003	0 (access road and collector line, WTG, WTG construction footprint, transmission line and transformer station)	957.0	Bog (1%) Fen (26%) Marsh (38%) Swamp (34%)	Isolated (1%) Lacustrine (1%) Palustrine (98%)	<ul style="list-style-type: none"> This wetland feature is comprised of the following wetland vegetation communities (refer to Table 3-1 for species compositions of vegetation communities): <ul style="list-style-type: none"> gcS: Ground cover dominant swamp (SWM2-1, SWD2-1, SWD3-1); mF: Moss dominant fen (FET1-1); cS: Coniferous treed dominant swamp (SWM2-1, SWC4-2, SWC2-1); tsM: Tall shrub dominant marsh (MAM2-2); fW: Floating plants dominant open water (SAF1-1); mS: Moss dominant swamp (SWC2-1, SWT3-1, SWC4-1); mM: Moss dominant marsh (MAS2-4, MAM2-5); cf: Coniferous treed fen (FET1-1); cB: Coniferous treed bog (BOT1); hS: Deciduous treed dominant Swamp (SWD3-1, SWD5-1, SWD2-1, SWD4-3) IsS: Low shrub dominant Swamp (SWC4-1, SWM2-1) IsF: Low shrub dominant fen (IFES1-4, FET1-1); mB: Moss dominant bog (BOO1-2, BOS1-1); neM: Narrow-leaved emergent dominant marsh (MAS2-4, MAM2-6, MAS3-3); neS: Narrow-leaved emergent dominant swamp (SWT2-6, SWT3-1); nef: Narrow-leaved emergent dominant fen (FEO1); tsS: Tall shrubs dominant swamp (SWT3-1, SWC4-3, SWT2-1); reS: Robust emergent dominant swamp (SWT2-1); and IsB: Low shrub dominant bog (BOS1-1). 	<ul style="list-style-type: none"> Flood attenuation; Water quality improvements (pollution interception, sediment trap, biogeochemical cycling); Habitat and resources for wetland flora and fauna; Habitats for SAR were identified within this wetland complex, including: <ul style="list-style-type: none"> Massasauga Rattlesnake (<i>Sistrurus catenatus</i>); Blanding's Turtle (<i>Emydoidea blandingii</i>); Restricted species³; Habitats for SOCC were identified within this wetland complex, including: <ul style="list-style-type: none"> Canada Warbler (<i>Cardellina canadensis</i>); and Snapping Turtle (<i>Chelydra serpentina</i>).

2. Reflects distance between feature and disturbance area associated with project infrastructure.

3. 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.

Table 3-2: Wetland Features Identified Through the Site Investigation

Wetland Feature ID	Minimum Distance to HIWEC Location (m) ²	Attributes			Composition	Function
		Total Size (ha)	Wetland Type	Site Type		
WET-004	0 (access road and collector line and transmission line)	74.5	Fen (3%) Marsh (65%) Swamp (34%)	Palustrine (96%) Riverine (4%)	<ul style="list-style-type: none"> • This wetland feature is comprised of the following wetland vegetation communities (refer to Table 3-1 for species compositions of vegetation communities): <ul style="list-style-type: none"> ▪ fw: Floating plants dominant open water (SAM2-1); ▪ hS: Deciduous treed swamp (SWD2-1); ▪ neF: Narrow-leaved emergent dominant fen (SWD2-1); ▪ neM: Narrow-leaved emergent dominant marsh (MAS3-4); and ▪ tsS: Tall shrubs dominant swamp (SWT2-1, SWT2-1). 	<ul style="list-style-type: none"> • Flood attenuation; • Water quality improvements (e.g., pollution interception, sediment trap, biogeochemical cycling); • Habitat and resources for wetland flora and fauna; • Habitats for SAR species were identified within this wetland complex, including: <ul style="list-style-type: none"> ▪ Blanding's Turtle (<i>Emydoidea blandingii</i>); and • Habitats for SOCC were identified within this wetland complex, including: <ul style="list-style-type: none"> ▪ Snapping Turtle (<i>Chelydra serpentina</i>).

Marsh wetlands were scattered throughout all wetland complexes although were particularly abundant within WET-003 and WET-004. Marshes, including open water marshes, contained a dominant mixture of sedge species as well as robust emergent plants (e.g., *Typha latifolia*), floating (e.g., *Nuphar variegatum*) and free floating (e.g., *Lemna minor*) species.

Bogs were noted to occur within wetland features WET-001, WET-002, and WET-003 although not abundant given the available overland flow across the HIWEC study area. Bogs within the HIWEC study area were composed of dominant plant species including Leatherleaf, a variety of sedge species and Peat Mosses.

All four (4) wetland features were carried forward to the EOI.

3.4 Wooded Areas

As described in the Records Review Report, no woodland features meeting the definition under the provincial NHA process (i.e., located south and east of the Canadian Shield; MNR, 2012a), are present within 120 m of the HIWEC location. Therefore, no woodland features were carried forward to the EOI. Nonetheless, the HIWEC study area is predominately covered in wooded areas which otherwise meet the definition of woodland features but are located on the Canadian Shield. Wooded areas occurring at least partially within 120 m of the HIWEC location were characterized and mapped given their contribution to understanding IWH and SAR habitat.

A total of 72 wooded areas were identified within 120 m of the HIWEC location through a combination of aerial photography interpretation and field studies. The location and boundaries of these wooded areas are shown on **Figure 3-4**. A description of the attributes, composition, and functions of each wooded area, as well as the distance from each wooded area to the nearest HIWEC component, is provided in **Table 3-3**.

3.5 Important Wildlife Habitat

The presence of Candidate Important Wildlife Habitat (IWH) and Generalized Candidate IWH features within 120 m of the HIWEC location was confirmed through the Site Investigation. A description of how a determination was made of the presence or absence of each type of Candidate and Generalized Candidate IWH features identified through the Records Review and Site Investigation is provided in the sections that follow. The locations of Candidate and Generalized Candidate IWH features carried forward to the EOI are shown on **Figure 3-5a to 3-5y**.

Table 3-3: Wooded Areas Identified Through the Site Investigation

Woodland Feature ID	Minimum Distance to HIWEC Location (m)	Attributes		Composition	Functions
		Total Size (ha)	Forest Community Type		
WOOD-004	0 (WTG, WTG construction footprint and access road and collector line in feature)	177.0	Coniferous Forest, Mixed Forest, Treed Rock Barren, Coniferous Swamp, Deciduous Swamp, Mixed Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> ▪ Dry – Fresh Pine Coniferous Forest Ecosite (FOC1); ▪ Dry Jack Pine Coniferous Forest Type (FOC1-1); ▪ Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOC1-2); ▪ Mixed Forest Community Series (FOM); ▪ Dry – Fresh Poplar Mixed Forest Type (FOM5-2); ▪ Jack Pine Acidic Treed Rock Barren Type (RBT3-2); ▪ White Pine Mineral Coniferous Swamp Type (SWC2-1); ▪ Tamarack – Black Spruce Organic Coniferous Swamp Ecosite (SWC4); ▪ Tamarack – Black Spruce Organic Coniferous Swamp Type (SWC4-1); ▪ Black Ash Mineral Deciduous Swamp Type (SWD2-1); ▪ Black Ash Organic Deciduous Swamp Type (SWD5-1); and ▪ Mixed Swamp Community Series (SWM). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-005	0 (WTG, WTG construction footprint and access road and collector line in feature)	275.5	Coniferous Forest, Mixed Forest, Treed Rock Barren, Coniferous Swamp, Deciduous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> ▪ Dry – Fresh Pine Coniferous Forest Ecosite (FOC1); ▪ Dry Jack Pine Coniferous Forest Type (FOC1-1); ▪ Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOC1-2); ▪ Mixed Forest Community Series (FOM); ▪ Dry – Fresh White Pine – Maple – Oak Mixed Forest Ecosite (FOM2); ▪ Acidic Treed Rock Barren Ecosite (RBT3); ▪ Jack Pine Acidic Treed Rock Barren Type (RBT3-2); ▪ Tamarack – Black Spruce Organic Coniferous Swamp Ecosite (SWC4); and ▪ Black Ash Organic Deciduous Swamp Type (SWD5-1). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-006	47 (WTG construction footprint)	0.9	Mixed Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> ▪ Mixed Swamp Community Series (SWM). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-007	111 (WTG construction footprint)	1.8	Coniferous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> ▪ Tamarack – Black Spruce Organic Coniferous Swamp Ecosite (SWC4). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-008	32 (access road and collector line)	3.3	Coniferous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> ▪ Tamarack – Black Spruce Organic Coniferous Swamp Ecosite (SWC4). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-010	0 (WTG, WTG construction footprint and access road and collector line in feature)	437.7	Coniferous Forest, Deciduous Forest, Mixed Forest, Treed Rock Barren, Coniferous Swamp, Deciduous Swamp, Mixed Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> ▪ Coniferous Forest Community Series (FOC); ▪ Dry – Fresh Pine Coniferous Forest Ecosite (FOC1); ▪ Deciduous Forest Community Series (FOD); ▪ Dry – Fresh Poplar Deciduous Forest Type (FOD3-1); ▪ Dry – Fresh White Birch Deciduous Forest Type (FOD3-2); ▪ Dry – Fresh Deciduous Forest Ecosite (FOD4); ▪ Dry – Fresh White Birch Mixed Forest Type (FOM5-1); ▪ Jack Pine Acidic Treed Rock Barren Type (RBT3-2); ▪ Tamarack – Black Spruce Organic Coniferous Swamp Ecosite (SWC4); ▪ Tamarack – Black Spruce Organic Coniferous Swamp Type (SWC4-1); ▪ Tamarack Organic Coniferous Swamp Type (SWC4-2); ▪ Deciduous Swamp Community Series (SWD); and ▪ Mixed Swamp Community Series (SWM). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-011	68 (meteorological tower)	2.0	Coniferous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> ▪ Coniferous Swamp Community Series (SWC). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-013	0 (access road and collector line, WTG and WTG construction footprint in feature)	1.5	Mixed Forest, Coniferous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> ▪ Dry – Fresh White Birch Mixed Forest Type (FOM5-1); and ▪ Black Spruce Organic Coniferous Swamp Type (SWC4-3). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.

Table 3-3: Wooded Areas Identified Through the Site Investigation

Woodland Feature ID	Minimum Distance to HIWEC Location (m)	Attributes		Composition	Functions
		Total Size (ha)	Forest Community Type		
WOOD-015	79 (WTG construction footprint)	1.5	Treed Rock Barren	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Jack Pine Acidic Treed Rock Barren Type (RBT3-2). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-017	93 (access road and collector line)	0.6	Treed Rock Barren	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Jack Pine Acidic Treed Rock Barren Type (RBT3-2). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-018	0 (WTG, WTG construction footprint and access road and collector line in feature)	6.0	Cultural Woodland, Coniferous Forest, Treed Rock Barren	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Bedrock Cultural Woodland Ecosite (CUW2); Dry – Fresh Pine Coniferous Forest Ecosite (FOC1); and Jack Pine Acidic Treed Rock Barren Type (RBT3-2). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-020	0 (WTG and WTG construction footprint in feature)	0.5	Coniferous Forest	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Dry – Fresh Pine Coniferous Forest Ecosite (FOC1). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-021	0 (WTG, WTG construction footprint and access road and collector line in feature)	3.9	Mixed Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Poplar – Conifer Organic Mixed Swamp Type (SWM6-2). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-023	0 (WTG, WTG construction footprint and access road and collector line in feature)	27.5	Mixed Forest, Treed Rock Barren, Coniferous Swamp, Mixed Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Fresh – Moist Poplar Mixed Forest Type (FOM8-1); Jack Pine Acidic Treed Rock Barren Type (RBT3-2); Coniferous Swamp Community Series (SWC); White Pine Mineral Coniferous Swamp Type (SWC2-1); and Red Maple – Conifer Mineral Mixed Swamp Type (SWM2-1). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-025	117 (WTG construction footprint)	1.2	Treed Rock Barren	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Jack Pine Acidic Treed Rock Barren Type (RBT3-2). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-026	0 (WTG, WTG construction footprint and access road and collector line in feature)	5.1	Coniferous Forest, Treed Rock Barren, Coniferous Swamp, Deciduous Swamp, Mixed Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Fresh – Moist Hemlock Coniferous Forest Ecosite (FOC3); Jack Pine Acidic Treed Rock Barren Type (RBT3-2); Coniferous Swamp Community Series (SWC); White Birch – Poplar Mineral Deciduous Swamp Type (SWD4-3); and Mixed Swamp Community Series (SWM). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-029	114 (WTG construction footprint)	5.8	Mixed Forest, Treed Rock Barren, Coniferous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Mixed Forest Community Series (FOM); Jack Pine Acidic Treed Rock Barren Type (RBT3-2); and Tamarack – Black Spruce Organic Coniferous Swamp Ecosite (SWC4). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-030	0 (WTG, construction footprint and access road and collector line in feature)	0.6	Coniferous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Black Spruce Organic Coniferous Swamp Type (SWC4-3). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-031	0 (access road and collector line in feature)	3.6	Mixed Forest	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Dry – Fresh White Birch Mixed Forest Type (FOM5-1). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-034	0 (WTG, WTG construction footprint and access road and collector line in feature)	99.7	Deciduous Forest, Mixed Forest, Treed Rock Barren, Coniferous Swamp, Deciduous Swamp, Mixed Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Deciduous Forest Community Series (FOD); Dry – Fresh Oak – Red Maple Deciduous Forest Type (FOD2-1); Dry – Fresh Poplar Deciduous Forest Type (FOD3-1); Dry – Fresh Deciduous Forest Ecosite (FOD4); Dry – Fresh Sugar Maple – Beech Deciduous Forest Type (FOD5-2); Dry – Fresh Sugar Maple – Red Maple Deciduous Forest Type (FOD5-9); Mixed Forest Community Series (FOM); Treed Rock Barren Community Series (RBT); Jack Pine Acidic Treed Rock Barren Type (RBT3-2); Acidic Treed Rock Barren Ecosite (RBT3); 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.

Table 3-3: Wooded Areas Identified Through the Site Investigation

Woodland Feature ID	Minimum Distance to HIWEC Location (m)	Attributes		Composition	Functions
		Total Size (ha)	Forest Community Type		
				<ul style="list-style-type: none"> Coniferous Swamp Community Series (SWC); Tamarack – Black Spruce Organic Coniferous Swamp Type (SWC4-1); Deciduous Swamp Community Series (SWD); Black Ash Mineral Deciduous Swamp Type (SWD2-1); Black Ash Organic Deciduous Swamp Type (SWD5-1); and Mixed Swamp Community Series (SWM). 	
WOOD-035	103 (access road and collector line)	9.7	Mixed Forest, Treed Rock Barren, Coniferous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): Mixed Forest Community Series (FOM); Jack Pine Acidic Treed Rock Barren Type (RBT3-2); and Coniferous Swamp Community Series (SWC). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-036	0 (WTG and WTG construction footprint in feature)	6.8	Coniferous Forest, Treed Rock Barren, Mixed Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): Dry – Fresh Pine Coniferous Forest Ecosite (FOC1); Jack Pine Acidic Treed Rock Barren Type (RBT3-2); and Birch – Poplar Mineral Mixed Swamp Ecosite (SWM3). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-038	0 (WTG construction footprint and access road and collector line in feature)	1.1	Deciduous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): White Birch – Poplar Mineral Deciduous Swamp Type (SWD4-3). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-039	30 (access road and collector line)	5.5	Treed Rock Barren, Coniferous Swamp, Mixed Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): Jack Pine Acidic Treed Rock Barren Type (RBT3-2); Tamarack – Black Spruce Organic Coniferous Swamp Ecosite (SWC4); and Mixed Swamp Community Series (SWM). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-040	100 (WTG construction footprint)	4.3	Treed Rock Barren, Coniferous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): Jack Pine Acidic Treed Rock Barren Type (RBT3-2); and Coniferous Swamp Community Series (SWC). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-042	70 (WTG construction footprint)	1.7	Coniferous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): Coniferous Swamp Community Series (SWC). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-043	30 (WTG construction footprint)	1.9	Coniferous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): Coniferous Swamp Community Series (SWC). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-045	0 (WTG, WTG construction footprint and access road and collector line in feature)	26.4	Deciduous Forest, Treed Rock Barren, Deciduous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): Dry – Fresh Poplar Deciduous Forest Type (FOD3-1); Jack Pine Acidic Treed Rock Barren Type (RBT3-2); Jack Pine Acidic Treed Rock Barren Type (RBT3-2); and Black Ash Organic Deciduous Swamp Type (SWD5-1). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-046	0.5 (access road and collector line)	1.1	Mixed Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): Mixed Swamp Community Series (SWM). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-047	0 (WTG construction footprint in feature)	4.9	Deciduous Forest, Treed Rock Barren	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): Dry – Fresh Deciduous Forest Ecosite (FOD4); and Jack Pine Acidic Treed Rock Barren Type (RBT3-2). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-048	0 (WTG, WTG construction footprint and access road and collector line in feature)	12.1	Deciduous Forest, Treed Rock Barren	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): Dry – Fresh Deciduous Forest Ecosite (FOD4); and Jack Pine Acidic Treed Rock Barren Type (RBT3-2). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-050	0 (WTG, WTG construction footprint and access road and collector line in feature)	6.1	Coniferous Forest, Mixed Forest, Deciduous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): Coniferous Forest Community Series (FOC); Mixed Forest Community Series (FOM); and Red Maple Mineral Deciduous Swamp Type (SWD3-1). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.

Table 3-3: Wooded Areas Identified Through the Site Investigation

Woodland Feature ID	Minimum Distance to HIWEC Location (m)	Attributes		Composition	Functions
		Total Size (ha)	Forest Community Type		
WOOD-051	0 (WTG, WTG construction footprint, transmission line, transformer station and access road and collector line in feature)	2,425.5	Coniferous Forest, Deciduous Forest, Mixed Forest, Treed Rock Barren, Coniferous Swamp, Deciduous Swamp, Mixed Swamp	<ul style="list-style-type: none"> • This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> ▪ Coniferous Forest Community Series (FOC); ▪ Dry – Fresh Pine Coniferous Forest Ecosite (FOC1); ▪ Dry Jack Pine Coniferous Forest Type (FOC1-1); ▪ Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOC1-2); ▪ Fresh – Moist Hemlock Coniferous Forest Ecosite (FOC3); ▪ Fresh – Moist White Cedar – Balsam Fir Coniferous Forest Type (FOC4-3); ▪ Deciduous Forest Community Series (FOD); ▪ Dry – Fresh Oak – Red Maple Deciduous Forest Type (FOD2-1); ▪ Dry – Fresh Poplar Deciduous Forest Type (FOD3-1); ▪ Dry – Fresh White Birch Deciduous Forest Type (FOD3-2); ▪ Dry – Fresh Deciduous Forest Ecosite (FOD4); ▪ Dry – Fresh Sugar Maple Deciduous Forest Ecosite (FOD5); ▪ Dry – Fresh Sugar Maple Deciduous Forest Type (FOD5-1); ▪ Dry – Fresh Sugar Maple – White Birch - Poplar Deciduous Forest Type (FOD5-10); ▪ Fresh – Moist Sugar Maple – Hardwood Deciduous Forest Type (FOD6-5); ▪ Fresh – Moist Ash Lowland Deciduous Forest Type (FOD7-2); ▪ Fresh – Moist Poplar Deciduous Forest Type (FOD8-1); ▪ Fresh – Moist Poplar – Sassafras Deciduous Forest Ecosite (FOD8); ▪ Mixed Forest Community Series (FOM); ▪ Dry – Fresh White Pine – Oak Mixed Forest Type (FOM2-1); ▪ Dry – Fresh White Pine – Sugar Maple Mixed Forest Type (FOM2-2); ▪ Dry – Fresh White Pine – Maple – Oak Mixed Forest Ecosite (FOM2) ▪ Dry – Fresh White Birch – Poplar – Conifer Mixed Forest Ecosite (FOM5); ▪ Dry – Fresh White Birch Mixed Forest Type (FOM5-1); ▪ Dry – Fresh Poplar Mixed Forest Type (FOM5-2); ▪ Fresh – Moist Hemlock – Hardwood Mixed Forest Type (FOM6-2); ▪ Fresh – Moist White Cedar – Hardwood Mixed Forest Type (FOM7-2); ▪ Fresh – Moist Poplar Mixed Forest Type (FOM8-1); ▪ Fresh – Moist White Birch Mixed Forest Type (FOM8-2); ▪ Treed Rock Barren Community Series (RBT); ▪ Oak – Red Maple – Pine Basic Treed Rock Barren Type (RBT2-1); ▪ Acidic Treed Rock Barren Ecosite (RBT3); ▪ Jack Pine Acidic Treed Rock Barren Type (RBT3-2); ▪ Tamarack – Black Spruce Organic Coniferous Swamp Ecosite (SWC4); ▪ Tamarack – Black Spruce Organic Coniferous Swamp Type (SWC4-1); ▪ Tamarack Organic Coniferous Swamp Type (SWC4-2); ▪ Black Spruce Organic Coniferous Swamp Type (SWC4-3); ▪ Deciduous Swamp Community Series (SWD); ▪ Black Ash Mineral Deciduous Swamp Type (SWD2-1); ▪ Red Maple Mineral Deciduous Swamp Type (SWD3-1). ▪ White Birch – Poplar Mineral Deciduous Swamp Type (SWD4-3); ▪ Black Ash Organic Deciduous Swamp Type (SWD5-1); ▪ Maple Organic Deciduous Swamp Ecosite (SWD6); ▪ Red Maple Organic Deciduous Swamp Type (SWD6-1); ▪ Mixed Swamp Community Series (SWM); ▪ Red Maple – Conifer Mineral Mixed Swamp Type (SWM2-1); ▪ Swamp Maple – Conifer Mineral Mixed Swamp Type (SWM2-2); and ▪ Birch – Conifer Mineral Mixed Swamp Type (SWM3-1). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-052	14 (access road and collector line)	2.1	Deciduous Forest	<ul style="list-style-type: none"> • This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> ▪ Dry – Fresh Sugar Maple – Red Maple Deciduous Forest Type (FOD5-9). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.

Table 3-3: Wooded Areas Identified Through the Site Investigation

Woodland Feature ID	Minimum Distance to HIWEC Location (m)	Attributes		Composition	Functions
		Total Size (ha)	Forest Community Type		
WOOD-057	107 (WTG construction footprint)	10.4	Deciduous Forest, Coniferous Swamp, Mixed Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Deciduous Forest Community Series (FOD); Coniferous Swamp Community Series (SWC); and Mixed Swamp Community Series (SWM). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-058	0 (WTG, WTG construction footprint and access road and collector line in feature)	11.9	Treed Rock Barren, Deciduous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Jack Pine Acidic Treed Rock Barren Type (RBT3-2); and Red Maple Mineral Deciduous Swamp Type (SWD3-1). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-059	50 (WTG construction footprint)	0.7	Treed Rock Barren	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Jack Pine Acidic Treed Rock Barren Type (RBT3-2). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-063	101 (access road and collector line)	56.9	Deciduous Forest, Treed Rock Barren	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Fresh – Moist Poplar Deciduous Forest Type (FOD8-1); Jack Pine Acidic Treed Rock Barren Type (RBT3-2); and Acidic Treed Rock Barren Ecosite (RBT3); 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-066	0 (access road and collector line in feature)	1.2	Coniferous Swamp, Mixed Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Black Spruce Organic Coniferous Swamp Type (SWC4-3); and Birch – Conifer Mineral Mixed Swamp Type (SWM3-1). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-068	9 (WTG construction footprint)	1.9	Treed Rock Barren	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Jack Pine Acidic Treed Rock Barren Type (RBT3-2). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-069	114 (access road and collector line)	7.1	Treed Rock Barren, Mixed Forest	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Jack Pine Acidic Treed Rock Barren Type (RBT3-2); and Mixed Forest Community Series (FOM). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-070	0 (transmission line in feature)	198.3	Coniferous Forest, Deciduous Forest, Mixed Forest, Treed Rock Barren, Coniferous Swamp, Mixed Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Coniferous Forest Community Series (FOC); Deciduous Forest Community Series (FOD); Fresh – Moist Sugar Maple – Hardwood Deciduous Forest Type (FOD6-5); Fresh – Moist Poplar Deciduous Forest Type (FOD8-1); Mixed Forest Community Series (FOM) Dry – Fresh White Birch – Poplar – Conifer Mixed Forest Ecosite (FOM5); Fresh – Moist Hemlock Mixed Forest Ecosite (FOM6); Oak – Red Maple – Pine Basic Treed Rock Barren Type (RBT2-1); Acidic Treed Rock Barren Ecosite (RBT3); Jack Pine Acidic Treed Rock Barren Type (RBT3-2); Coniferous Swamp Community Series (SWC); and Red Maple – Conifer Organic Mixed Swamp Type (SWM5-1). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-071	0 (access road and collector line in feature)	125.5	Coniferous Forest, Deciduous Forest, Mixed Forest, Treed Rock Barren, Coniferous Swamp, Mixed Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Coniferous Forest Community Series (FOC); Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOC1-2); Deciduous Forest Community Series (FOD); Mixed Forest Community Series (FOM); Dry – Fresh Poplar Mixed Forest Type (FOM5-2); Fresh – Moist Poplar Mixed Forest Type (FOM8-1); Fresh – Moist White Birch Mixed Forest Type (FOM8-2); Acidic Treed Rock Barren Ecosite (RBT3); Jack Pine Acidic Treed Rock Barren Type (RBT3-2); Coniferous Swamp Community Series (SWC); White Cedar – Conifer Organic Coniferous Swamp Type (SWC3-2); Tamarack – Black Spruce Organic Coniferous Swamp Ecosite (SWC4); and White Cedar – Hardwood Mineral Mixed Swamp Type (SWM1-1). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.

Table 3-3: Wooded Areas Identified Through the Site Investigation

Woodland Feature ID	Minimum Distance to HIWEC Location (m)	Attributes		Composition	Functions
		Total Size (ha)	Forest Community Type		
WOOD-074	0 (access road and collector line and transmission line in feature)	4.1	Coniferous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Black Spruce Organic Coniferous Swamp Type (SWC4-3). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-075	0 (access road and collector line and transmission line in feature)	22.7	Mixed Forest, Treed Rock Barren, Deciduous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Fresh – Moist Hemlock – Hardwood Mixed Forest Type (FOM6-2); Fresh – Moist Poplar Mixed Forest Type (FOM8-1); Acidic Treed Rock Barren Ecosite (RBT3); Jack Pine Acidic Treed Rock Barren Type (RBT3-2); Black Ash Mineral Deciduous Swamp Type (SWD2-1); and Black Spruce Organic Deciduous Swamp Type (SWD5-1). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-076	0 (access road and collector line in feature)	1.8	Coniferous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Black Spruce Organic Coniferous Swamp Type (SWC4-3). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-087	0 (transmission line in feature)	11.2	Treed Rock Barren	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Acidic Treed Rock Barren Ecosite (RBT3). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-088	0 (WTG, WTG construction footprint and access road and collector line in feature)	34.2	Mixed Forest, Treed Rock Barren, Coniferous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Dry – Fresh White Birch Mixed Forest Type (FOM5-1); Jack Pine Acidic Treed Rock Barren Type (RBT3-2); and Black Spruce Organic Coniferous Swamp Type (SWC4-3). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-091	0 (access road and collector line and WTG construction footprint in feature)	3.1	Treed Rock Barren	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Jack Pine Acidic Treed Rock Barren Type (RBT3-2). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-093	0 (access road and collector line in feature)	0.7	Mixed Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Poplar – Conifer Mineral Mixed Swamp Type (SWM3-2). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-097	0 (access road and collector line in feature)	2.2	Coniferous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Tamarack – Black Spruce Organic Coniferous Swamp Type (SWC4-1). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-101	0 (WTG, WTG construction footprint, and access road and collector line in feature)	3.3	Coniferous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Tamarack – Black Spruce Organic Coniferous Swamp Type (SWC4-1); and Black Spruce Organic Coniferous Swamp Type (SWC4-3). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-103	0 (WTG construction footprint in feature)	1.5	Mixed Forest, Coniferous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Fresh – Moist Poplar Mixed Forest Type (FOM8-1); and Tamarack – Black Spruce Organic Coniferous Swamp Ecosite (SWC4). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-107	0 (WTG, WTG construction footprint and access road and collector line in feature)	95.2	Treed Rock Barren, Coniferous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Jack Pine Acidic Treed Rock Barren Type (RBT3-2); Tamarack – Black Spruce Organic Coniferous Swamp Ecosite (SWC4); and Black Spruce Organic Coniferous Swamp Type (SWC4-3). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-109	0 (access road and collector line in feature)	1.6	Coniferous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Tamarack – Black Spruce Organic Coniferous Swamp Type (SWC4-1). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-111	0 (WTG and WTG construction footprint in feature)	7.8	Treed Rock Barren, Coniferous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Jack Pine Acidic Treed Rock Barren Type (RBT3-2); and Black Spruce Organic Coniferous Swamp Type (SWC4-3). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-113	116 (WTG construction footprint)	0.5	Treed Rock Barren	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Jack Pine Acidic Treed Rock Barren Type (RBT3-2). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.

Table 3-3: Wooded Areas Identified Through the Site Investigation

Woodland Feature ID	Minimum Distance to HIWEC Location (m)	Attributes		Composition	Functions
		Total Size (ha)	Forest Community Type		
WOOD-114	0 (WTG, WTG construction footprint and access road and collector line in feature)	17.1	Treed Rock Barren, Coniferous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Jack Pine Acidic Treed Rock Barren Type (RBT3-2); and Black Spruce Organic Coniferous Swamp Type (SWC4-3). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-115	108 (WTG construction footprint)	0.7	Treed Rock Barren	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Jack Pine Acidic Treed Rock Barren Type (RBT3-2). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-125	104 (access road and collector line)	1.6	Treed Rock Barren	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Jack Pine Acidic Treed Rock Barren Type (RBT3-2). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-126	91 (access road and collector line)	0.6	Treed Rock Barren	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Jack Pine Acidic Treed Rock Barren Type (RBT3-2). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-127	0 (WTG, WTG construction footprint and access road and collector line in feature)	380.1	Coniferous Forest, Mixed Forest, Treed Rock Barren, Coniferous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Dry – Fresh Pine Coniferous Forest Ecosite (FOC1); Mixed Forest Community Series (FOM); Dry – Fresh White Birch Mixed Forest Type (FOM5-1); Dry – Fresh Poplar Mixed Forest Type (FOM5-2); Fresh – Moist White Birch Mixed Forest Type (FOM8-2); Jack Pine Acidic Treed Rock Barren Type (RBT3-2); Coniferous Swamp Community Series (SWC); Tamarack – Black Spruce Organic Coniferous Swamp Ecosite (SWC4); Tamarack – Black Spruce Organic Coniferous Swamp Type (SWC4-1); and Black Spruce Organic Coniferous Swamp Type (SWC4-3). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-128	0 (WTG, WTG construction footprint and access road and collector line in feature)	10.2	Coniferous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Tamarack – Black Spruce Organic Coniferous Swamp Ecosite (SWC4); and Tamarack – Black Spruce Organic Coniferous Swamp Type (SWC4-1). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-129	0 (access road and collector line in feature)	6.0	Treed Rock Barren, Coniferous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Jack Pine Acidic Treed Rock Barren Type (RBT3-2); and Tamarack – Black Spruce Organic Coniferous Swamp Type (SWC4-1). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-130	0 (access road and collector line and WTG construction footprint in feature)	2.6	Mixed Forest, Treed Rock Barren, Coniferous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Fresh – Moist White Birch Mixed Forest Type (FOM8-2); Jack Pine Acidic Treed Rock Barren Type (RBT3-2); and Tamarack – Black Spruce Organic Coniferous Swamp Type (SWC4-1). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-131	0 (access road and collector line in feature)	2.7	Mixed Forest, Treed Rock Barren, Mixed Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Fresh – Moist White Birch Mixed Forest Type (FOM8-2); Jack Pine Acidic Treed Rock Barren Type (RBT3-2); and Mixed Swamp Community Series (SWM). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-132	0 (WTG, WTG construction footprint and access road and collector line in feature)	1.8	Mixed Forest, Treed Rock Barren	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Fresh – Moist White Birch Mixed Forest Type (FOM8-2); and Jack Pine Acidic Treed Rock Barren Type (RBT3-2). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-134	98 (WTG construction footprint)	2.3	Treed Rock Barren	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Jack Pine Acidic Treed Rock Barren Type (RBT3-2). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-135	87 (WTG construction footprint)	6.4	Treed Rock Barren	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Jack Pine Acidic Treed Rock Barren Type (RBT3-2). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-137	4 (WTG construction footprint)	0.8	Coniferous Swamp	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Tamarack – Black Spruce Organic Coniferous Swamp Ecosite (SWC4). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.

Table 3-3: Wooded Areas Identified Through the Site Investigation

Woodland Feature ID	Minimum Distance to HIWEC Location (m)	Attributes		Composition	Functions
		Total Size (ha)	Forest Community Type		
WOOD-138	14 (WTG)	6.0	Mixed Forest	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Mixed Forest (FOM); Dry – Fresh White Birch Mixed Forest Type (FOM5-1); and 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.
WOOD-139	0 (access road and collector line in feature)	1.2	Mixed Forest	<ul style="list-style-type: none"> This wooded area is comprised of the following vegetation communities (refer to Table 3.1 for detailed vegetation species compositions): <ul style="list-style-type: none"> Dry – Fresh Poplar Mixed Forest Type (FOM5-2). 	Provides habitat for woodland plants and animals, carbon storage, and water and soil retention.

3.6 Seasonal Concentration Areas of Animals

Seasonal concentration areas of animals are described in the *Significant Wildlife Habitat Technical Guide (SWHTG; MNRF, 2000)* and *Draft Ecoregion 5E Criterion Schedule Addendum to the SWHTG (MNRF, 2012b)*. The following seasonal concentration areas of animals were identified as potentially occurring in the HIWEC study area through the Records Review:

- Waterfowl Stopover and Staging Areas (Aquatic);
- Shorebird Migratory Stopover Areas;
- Bat Hibernacula;
- Bat Maternity Colonies;
- Turtle Wintering Areas;
- Reptile Hibernacula;
- Colonially-Nesting Bird Breeding Habitat (Bank and Cliff);
- Colonially-Nesting Bird Breeding Habitat (Trees / Shrubs);
- Colonially-Nesting Bird Breeding Habitat (Ground); and
- Deer Yarding Areas.

A description of the Site Investigation results pertaining to each type of seasonal concentration areas of animals follows. The boundaries of IWH features were mapped in accordance with MNRF guidance (2012b), including buffer areas to be included as part of the feature for some IWH types.

3.6.1 Waterfowl Stopover and Staging Areas (Aquatic)

Waterfowl prefer and tend to congregate in larger wetlands and those associated with shorelines. Marsh habitats where a combination of open water and emergent plant cover is present tend to be higher quality sites because they provide an optimum mix of food and cover. Aquatic waterfowl stopover and staging areas may be found within ponds, marshes and shallow water vegetation communities with fairly extensive areas of shallow open water. The potential for stopover areas of Canada Goose, Snow Goose, American Black Duck, American Wigeon, Green-winged Teal, Blue-winged Teal, Hooded Merganser, Common Merganser, Lesser Scaup, Long-tailed Duck, Surf Scoter, White-winged Scoter, Black Scoter, Ring-necked Duck, Common Goldeneye, Bufflehead, Redhead and Red-breasted Merganser to occur within the HIWEC study area was identified during the Records Review. All extensive areas (i.e., five (5) ha in size or greater) containing shallow water and at least partially occurring within 120 m of the HIWEC location were considered to contain suitable habitat for staging waterfowl.

Aerial photography interpretation was used to search for extensive areas containing shallow water as part of an Alternative Site Investigation for those areas within 120 m of the HIWEC location, in addition to those that were surveyed through field investigations during the Site Investigation. A total of 32 features were identified within 120 m of the HIWEC location to contain extensive areas of shallow water potentially suitable for staging waterfowl. Each feature consists of one (1) or more immediately adjacent qualifying vegetation communities. The compositions, attributes and functions of these features are summarized in **Table 3-4**. In accordance with the *Draft Ecoregion 5E Criterion Schedule Addendum to the SWHTG (MNRF, 2012b)*, a 100 m buffer was applied to the ELC vegetation communities containing extensive areas of shallow water identified for each feature in order to define the boundaries of each Candidate IWH feature. Minimum distances to the HIWEC location were measured from the edge of the 100 m buffer included as part of the feature. When a 100 m buffer is applied to the identified features (MNRF, 2012b), all 32 features are overlapped by the HIWEC location and were therefore carried forward to the EOI as Candidate IWH. The locations of these features are shown on **Figure 3-5a**.

Table 3-4: Waterfowl Stopover and Staging Areas (Aquatic)

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m) ⁴	Rationale for carrying feature forward to EOI
WFS-01	Shallow Marsh (MAS), Open Water (OA) and Floating-leaved Shallow Aquatic Ecosite (SAF1)	8.7 ha in size	May provide staging and foraging habitat for migrating waterfowl.	0 (transmission line in feature)	All of these features are wetlands containing extensive areas (at least 5 ha) of shallow water.
WFS-03	Meadow Marsh (MAM) and Open Water (OA)	5.1 ha in size; feature identified through Alternative Site Investigation		0 (transmission line in feature)	
WFS-09	Meadow Marsh (MAM); Open Aquatic (OAO) and Shallow Water (SA)	5.4 ha in size; feature identified through Alternative Site Investigation		0 (access road and collector line in feature)	
WFS-10	Mineral Meadow Marsh Ecosite (MAM2); Organic Shallow Marsh Ecosite (MAS3) and Open Water (OA)	55.1 ha in size		0 (access road and collector line, and transmission line in feature)	
WFS-101	Open Aquatic (OAO) and Shallow Water (SA) / Shrub Fen (FES)	13.1 ha in size; feature identified through Alternative Site Investigation		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
WFS-108	Organic Meadow Marsh Type (MAM3); Shallow Water (SA) and Shallow Water (SA) / Shrub Fen (FES)	12.5 ha in size; feature identified through Alternative Site Investigation		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
WFS-13	Meadow Marsh (MAM); Open Aquatic (OAO), Shallow Water (SA) and Shallow Water (SA) / Shrub Fen (FES)	20.7 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
WFS-20	Organic Shallow Marsh Ecosite (MAS3), Shallow Water (SA) and Shallow Water (SA) / Shrub Fen (FES)	14.3 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
WFS-21	Organic Meadow Marsh Ecosite (MAM3); Shallow Marsh (MAS); Open Water (OA); Shallow Water (SA) and Shallow Water (SA) / Shrub Fen (FES)	28.7 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
WFS-24	Organic Meadow Marsh Ecosite (MAM3); Shallow Marsh (MAS); Open Water (OA) and Shallow Water (SA)	6.2 ha in size; feature identified through Alternative Site Investigation		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
WFS-26	Shallow Water (SA) and Shallow Water (SA) / Shrub Fen (FES)	9.9 ha in size; feature identified through Alternative Site Investigation	0 (WTG, WTG construction footprint, and access road and collector line in feature)		

4. In accordance with the Draft Ecoregion 5E Criterion Schedule Addendum to the SWHTG (MNR, 2012b), a 100 m buffer was applied to the ELC vegetation communities containing extensive areas of shallow water identified for each feature. Minimum distances to the HIWEC location were measured from the edge of the 100 m buffer included as part of the habitat for each feature.

Table 3-4: Waterfowl Stopover and Staging Areas (Aquatic)

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m) ⁴	Rationale for carrying feature forward to EOI
WFS-29	Broad-leaved Sedge Mineral Meadow Marsh Type (MAM2-6) and Shallow Water (SA)	16.4 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
WFS-33	Meadow Marsh (MAM) and Open Aquatic (OA)	5.2 ha in size; feature identified through Alternative Site Investigation		0 (access road and collector line in feature)	
WFS-35	Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4) and Water Lily-Bullhead Lily Floating-leaved Shallow Aquatic Type (SAF1-1)	9.9 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
WFS-46	Meadow Marsh (MAM)	5.7 ha in size; feature identified through Alternative Site Investigation		0 (access road and collector line in feature)	
WFS-50	Shallow Water (SA)	6.5 ha in size; feature identified through Alternative Site Investigation		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
WFS-51	Shallow Water (SA)	8.2 ha in size; feature identified through Alternative Site Investigation		0 (WTG construction footprint in feature)	
WFS-58	Cattail Organic Shallow Marsh Type (MAS3-1)	5.4 ha in size; feature identified through Alternative Site Investigation		0 (access road and collector line in feature)	
WFS-59	Organic Meadow Marsh Ecosite (MAM3); Organic Shallow Marsh Ecosite (MAS3) and Shallow Water (SA)	30.5 ha in size		0 (access road and collector line in feature)	
WFS-66	Narrow-leaved Sedge Organic Shallow Marsh Type (MAS3-3)	6.5 ha in size		0 (WTG, WTG construction footprint, access road and collector line, and transmission line in feature)	
WFS-67	Broad-leaved Sedge Organic Meadow Marsh Type (MAM3-6)	5.9 ha in size; feature identified through Alternative Site Investigation		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
WFS-70	Open Aquatic (OAO) and Shallow Water (SA) / Shrub Fen (FES)	27.3 ha in size; feature identified through Alternative Site Investigation		0 (WTG, WTG construction footprint, access road and collector line, and meteorological tower in feature)	
WFS-71	Meadow Marsh (MAM), Mineral Shallow Marsh Ecosite (MAS2); Shallow Water (SA) and Shallow Water (SA) / Shrub Fen (FES)	9.6 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	

Table 3-4: Waterfowl Stopover and Staging Areas (Aquatic)

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m) ⁴	Rationale for carrying feature forward to EOI
WFS-73	Organic Meadow Marsh Ecosite (MAM3) and Shallow Water (SA)	9.2 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
WFS-75	Water Lily-Bullhead Lily Floating-leaved Shallow Aquatic Type (SAF1-1)	15.9 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
WFS-79	Meadow Marsh (MAM); Shallow Marsh (MAS); Open Aquatic (OAO); Shallow Water (SA) and Shallow Water (SA) / Shrub Fen (FES)	22.8 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
WFS-83	Mineral Meadow Marsh (MAM2); Organic Meadow Marsh Ecosite (MAM3) and Shallow Water (SA)	18.5 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
WFS-87	Organic Meadow Marsh (MAM3); Shallow Marsh (MAS); Open Water (OA) and Shallow Water (SA)	9.2 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
WFS-88	Mineral Shallow Marsh Ecosite (MAS2); Organic Shallow Marsh Ecosite (MAS3); Open Aquatic (OAO) and Shallow water (SA)	6.5 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
WFS-91	Floating-leaved Shallow Aquatic Ecosite (SAF1)	5.0 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
WFS-93	Organic Meadow Marsh Ecosite (MAM3); Shallow Water (SA), and Shallow Water (SA) / Shrub Fen (FES)	10.4 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
WFS-99	Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4) and Shallow Water (SA)	5.0 ha in size; feature identified through Alternative Site Investigation		0 (WTG, WTG construction footprint, and access road and collector line in feature)	

3.6.2 Shorebird Migratory Stopover Areas

Shorebirds use stopover areas to rest and refuel along their migration route. Natural areas that function as migration stopover areas for shorebirds typically provide a stretch of undisturbed, unvegetated shoreline and relatively abundant invertebrate food. These habitats can be found along the shorelines of lakes, rivers and wetlands, including beach areas, bars, seasonally flooded shoreline, mudflats, rock groynes, and other forms of armour rock lakeshore. The potential for stopover areas for Greater Yellowlegs, Lesser Yellowlegs, Spotted Sandpiper and Pectoral Sandpiper to occur within the HIWEC study area was identified during the Records Review. All beach / bar, sand dune and meadow marsh communities located along shorelines and at least partially within 120 m of the HIWEC location were assessed to determine whether they contain suitable habitat for staging shorebirds.

Of the qualifying vegetation communities, only meadow marsh is present in the HIWEC study area. A total of eight (8) meadow marsh communities larger than 0.5 ha in size and located within 500 m of Georgian Bay, Henvey Inlet, or the Key River shoreline were identified within the 120 m HIWEC location (**Figure 3-5b**). The compositions, attributes and functions of these features are summarized in **Table 3-5**. In accordance with the *Draft Ecoregion 5E Criterion Schedule Addendum to the SWHTG* (MNR, 2012b), a 100 m buffer was applied to the ELC vegetation communities containing meadow marshes identified for each feature in order to define the boundaries of each Candidate IWH feature. Minimum distances to the HIWEC location were measured from the edge of the 100 m buffer included as part of the feature. When a 100 m buffer is applied to the identified features (MNR, 2012b), seven (7) are either within 120 m of a proposed WTG or overlapped by another HIWEC component; thus, these features were considered Candidate IWH and carried forward to the EOI. The remaining feature was considered Generalized Candidate IWH and was carried forward to the EOI.

3.6.3 Bat Hibernacula

In Ontario, bats overwinter in hibernacula which may be found in abandoned mine shafts, caves, underground foundations and karst. Bat hibernacula may also be found in crevice (CCR1 and CCR2) and cave (CCA1 and CCA2) Ecosites. The potential for hibernacula of Big Brown Bat, Little Brown Bat, Tri-colored Bat, Northern Myotis and Eastern Small-footed Myotis to occur within the HIWEC study area was identified during the Records Review. All of these features were searched for within 120 m of the HIWEC location and, if found, assessed to determine whether they contain suitable habitat for hibernating bats.

One (1) abandoned mine was identified through the Records Review as potentially providing suitable habitat for hibernating bats. It is located more than 400 m from the HIWEC location and, as such, is considered neither Candidate nor Generalized Candidate IWH.

Crevice and cave Ecosites were not identified within 120 m of the HIWEC location. A single (1) feature was identified as potentially providing suitable habitat for hibernating bats within 120 m of the HIWEC location. The suitability of this feature is based on its potential to provide a hibernaculum in the form of a potential cave that could maintain temperature and humidity suitable for hibernating bats (2 to 10°C and 80%) (Anderson and Robert, 1971; COSEWIC, 2013a). While it is difficult to determine precisely which features could maintain the required temperature and humidity, shallow and more shelf-like features, and those with very large openings and which are likely to fill with snow were not considered as potential Bat Hibernacula. One (1) feature, BH-004, was identified as Candidate IWH as it is located within 120 m of a WTG or overlapped by other HIWEC components and was carried forward to the EOI. In accordance with the *Draft Ecoregion 5E Criterion Schedule Addendum to the SWHTG* (MNR, 2012b), a 1,000 m buffer was applied around the entrance of the potential bat hibernaculum in order to define the boundaries for this Candidate IWH feature. The minimum distance to the HIWEC location was measured from the edge of the 1,000 m buffer included as part of the feature. The composition, attributes and functions of this feature are summarized in **Table 3-6**. The location of this feature is shown on **Figure 3-5c**.

Table 3-5: Shorebird Migratory Stopover Areas

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m) ⁵	Rationale for carrying feature forward to EOI
SSA-01	Meadow Marsh (MAM)	4.0 ha in size; near Key River shoreline; feature identified through Alternative Site Investigation.	May provide stopover and staging habitat for migrating shorebirds.	0 (WTG, WTG construction footprint, and access road and collector line in feature)	All of these features are meadow marsh communities larger than 0.5 ha and within 500 m of Georgian Bay, Henvey Inlet or Key River Shoreline.
SSA-02	Meadow Marsh (MAM), and Organic Meadow Marsh Ecosite (MAM3)	5.7 ha in size; near Key River shoreline; feature identified through Alternative Site Investigation.		0 (access road and collector line in feature)	
SSA-03	Organic Meadow Marsh Ecosite (MAM3)	2.5 ha in size; near Key River shoreline; feature identified through Alternative Site Investigation.		107 (WTG construction footprint)	
SSA-04	Broad-leaved Sedge Organic Meadow Marsh Type (MAM3-6)	3.1 ha in size; near Key River shoreline; feature identified through Alternative Site Investigation.		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
SSA-06	Narrow-leaved Sedge Mineral Meadow Marsh Type (MAM2-5)	3.0 ha in size; near Henvey Inlet shoreline.		0 (access road and collector line in feature)	
SSA-07	Broad-leaved Sedge Organic Meadow Marsh Type (MAM3-6)	1.3 ha in size; near Henvey Inlet shoreline.		0 (WTG, WTG construction footprint, access road and collector line, and transmission line in feature)	
SSA-08	Meadow Marsh (MAM)	1.5 ha in size; near Henvey Inlet shoreline; feature identified through Alternative Site Investigation.		0 (access road and collector line in feature)	
Generalized Candidate IWH	Meadow Marsh (MAM)	1.9 ha in size; near Henvey Inlet shoreline; feature identified through Alternative Site Investigation.		Greater than 120 m from nearest WTG and no HIWEC infrastructure in feature	

5. In accordance with the Draft Ecoregion 5E Criterion Schedule Addendum to the SWHTG (MNR, 2012b), the shorebird migratory stopover habitat includes a 100 m radius buffer around the qualifying ELC vegetation community. Minimum distances to the HIWEC location were measured from the edge of the 100 m buffer.

Table 3-6: Bat Hibernacula

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m) ⁶	Rationale for carrying feature forward to EOI
BH-004	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	Cave with several openings in the rock face at approximately 1 m above ground level. The openings are approximately 0.15 m wide and greater than 3 m deep. There are openings at the top of the rock barren which lead down to the cave openings.	May provide suitable habitat for hibernating bats	0 (WTG, WTG construction footprint, and access road and collector line in feature) (Cave entrance is 61 m from turbine construction foot print)	This feature is a cave which may provide suitable habitat, including the required temperature and humidity, for hibernating bats.

6. As per the Draft Ecoregion 5E Criterion Schedule Addendum to the SWHTG (MNRF, 2012b) Bat Hibernacula sites include a 1000 m radius around the entrance of the hibernaculum. Minimum distance to the HIWEC location was measured from the edge of the 1000 m buffer.

3.6.4 Bat Maternity Colonies

In the summer, reproductive female bats form maternity colonies in a wide variety of structures including snags and tree cavities in deciduous and mixed forests. Maternity colonies can also be found in man-made structures such as attics, abandoned buildings and barns but these are not considered to be IWH (MNRF, 2012b). Female bats prefer trees that have a large diameter-at-breast-height (DBH; *i.e.*, ≥ 25 cm) and exhibit early stages of decay, such as decay classes one (1) to three (3) (Watt and Caceres, 1999). Suitable tree cavities can include cracks, scars, knot holes or woodpecker cavities (MNRF, 2014b). The potential for maternity colonies of Big Brown Bat, Little Brown Bat, Silver-haired Bat and Northern Myotis to occur within the HIWEC study area was identified during the Records Review.

Bat habitat surveys to determine the presence and density of suitable snag / cavity trees were completed within the HIWEC location during the Site Investigation. Deciduous or mixed forest vegetation communities with calculated snag densities of \geq ten (10) snags / cavity trees per hectare of trees with DBH ≥ 25 cm were carried forward to the EOI as either Candidate IWH or Generalized Candidate IWH depending on their location in relation to qualifying infrastructure. Additionally, all deciduous or mixed forest vegetation communities identified through the Alternative Site Investigation were assumed to contain a sufficient number of suitable cavity trees for bat maternity colonies.

In total, 82 candidate bat maternity colonies were identified within 120 m of the HIWEC location. Of the identified features, 64 are located within 120 m of a proposed WTG or at least partially overlapped by another HIWEC component and were therefore carried forward to the EOI as Candidate IWH. The remaining 18 features were carried forward to the EOI as Generalized Candidate IWH. The composition, attributes and functions of these features are summarized in **Table 3-7** below. The locations of these features are shown on **Figure 3.5d**.

3.6.5 Turtle Wintering Areas

Turtles overwinter in permanent water bodies including deep rivers, large wetlands, and bogs or fens with adequate dissolved oxygen, soft mud substrates that they can burrow into, and water deep enough so that it doesn't freeze completely in the winter. The potential for overwintering areas of Midland Painted Turtle, Northern Map Turtle and Snapping Turtle to occur within the HIWEC study area was identified during the Records Review. All open fen, open bog, swamp, marsh, open aquatic and shallow aquatic communities containing permanent open water habitats and occurring at least partially within 120 m of the HIWEC location were assessed to determine whether they contain suitable habitat for turtle wintering.

There are a large number of open bog, open fen, marsh, swamp, shallow water, and open aquatic communities within 120 m of the HIWEC location. Where 2014 or 2015 Site Investigation field data were available (*i.e.*, within the HIWEC location), any qualifying vegetation communities that were noted by staff as suitable turtle wintering habitat or that contained deep water and soft mud substrates were considered suitable habitat. Vegetation communities identified through the Alternative Site Investigation that are greater than 0.05 ha in size and by definition include the presence of standing water (*i.e.*, shallow marsh (MAS), shallow water (SA), or open water (OAO) communities) were also considered potentially suitable turtle wintering areas. A total of 152 features within 120 m of the HIWEC location were identified as areas that potentially provide turtles with wintering habitat. A total of 65 of these features are overlapped by the HIWEC location and were therefore carried forward to the EOI as Candidate IWH. The remaining 87 features were carried forward to the EOI as Generalized Candidate IWH. The composition, attributes and functions of these features are summarized in **Table 3-8**. The locations of these features are shown on **Figure 3-5e**.

Table 3-7: Bat Maternity Colonies

Feature ID	Composition	Snag / Cavity Tree Density per Hectare (ha)	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
BMC-01	Dry-Fresh Poplar Deciduous Forest Type (FOD3-1)	26.7	May provide habitat for bat maternity colonies.	0 (access road and collector line, WTG and WTG construction footprint in feature)	All of these features contain at least ten (10) large snags (≥ 25 cm DBH) per hectare.
BMC-02	Dry-Fresh Poplar Deciduous Forest Type (FOD3-1)	15.0		0 (WTG and WTG construction footprint in feature)	
BMC-03	Dry-Fresh Poplar Mixed Forest Type (FOM5-2)	20.0		0 (access road and collector line, and transmission line in feature)	
BMC-04	Dry-Fresh White Birch Mixed Forest Type (FOM5-1); Dry-Fresh White Birch Mixed Forest Type (FOM5-1)	12.0		0 (WTG and WTG construction footprint in feature)	
BMC-05	Dry-Fresh Oak-Red Maple Deciduous Forest Type (FOD2-1)	20.0		0 (access road and collector line, WTG and WTG construction footprint in feature)	
BMC-06	Dry-Fresh Sugar Maple Deciduous Forest Ecosite (FOD5)	60		0 (access road and collector line in feature)	
BMC-07	Dry-Fresh Deciduous Forest Ecosite (FOD4)	28.6		0 (access road and collector line, WTG, transmission line and WTG construction footprint in feature)	
BMC-08	Dry-Fresh Sugar Maple Deciduous Forest Type (FOD5-1)	180.0		0 (access road and collector line, and transmission line in feature)	
BMC-09	Dry-Fresh White Birch Mixed Forest Type (FOM5-1)	60.0		0 (access road and collector line, WTG and WTG construction footprint in feature)	
BMC-10	Fresh-Moist Poplar Mixed Forest Type (FOM8-1)	34.3		0 (access road and collector line, and transmission line in feature)	
BMC-11	Dry-Fresh White Birch Mixed Forest Type (FOM5-1)	50.0		0 (access road and collector line, and transmission line in feature)	
BMC-12	Dry-Fresh White Birch Mixed Forest Type (FOM5-1)	15.0		0 (access road and collector line in feature)	
BMC-13	Dry-Fresh Poplar Deciduous Forest Type (FOD3-1)	29.2		0 (access road and collector line in feature)	
BMC-14	Dry-Fresh White Pine-Oak Mixed Forest Type (FOM2-1)	26.7		0 (WTG and WTG construction footprint in feature)	

Table 3-7: Bat Maternity Colonies

Feature ID	Composition	Snag / Cavity Tree Density per Hectare (ha)	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
BMC-15	Dry-Fresh Poplar Mixed Forest Type (FOM5-2)	23.3		0 (access road and collector line in feature)	
BMC-16	Fresh-Moist Poplar Mixed Forest Type (FOM8-1)	42.2		0 (access road and collector line in feature)	
BMC-17	Dry-Fresh Poplar Deciduous Forest Type (FOD3-1)	40.0		0 (WTG construction footprint in feature)	
BMC-18	Dry-Fresh Poplar Mixed Forest Type (FOM5-2)	20.0		0 (access road and collector line in feature)	
BMC-19	Dry-Fresh White Pine-Oak Mixed Forest Type (FOM2-1)	13.3		0 (access road and collector line in feature)	
BMC-20	Fresh-Moist White Birch Mixed Forest Type (FOM8-2); Fresh-Moist White Birch Mixed Forest Type (FOM8-2)	40.0		0 (access road and collector line in feature)	
BMC-21	Dry-Fresh Poplar Mixed Forest Type (FOM5-2)	12.0		0 (access road and collector line, and transmission line in feature)	
BMC-22	Dry-Fresh Poplar Deciduous Forest Type (FOD3-1)	40.0		0 (access road and collector line in feature)	
BMC-23	Dry-Fresh Poplar Mixed Forest Type (FOM5-2)	20.0		0 (access road and collector line in feature)	
BMC-24	Dry-Fresh Deciduous Forest Ecosite (FOD4)	18.5		0 (access road and collector line, WTG, transmission line and WTG construction footprint in feature)	
BMC-25	Dry-Fresh Sugar Maple-Beech Deciduous Forest Type (FOD5-2)	17.1		0 (access road and collector line in feature)	
BMC-26	Dry-Fresh Poplar Mixed Forest Type (FOM5-2)	24.0		0 (access road and collector line and transmission line in feature)	
BMC-27	Dry-Fresh White Pine-Oak Mixed Forest Type (FOM2-1)	60.0		0 (access road and collector line in feature)	
BMC-28	Dry-Fresh Sugar Maple Deciduous Forest Ecosite (FOD5)	15.0		0 (access road and collector line in feature)	
BMC-29	Dry-Fresh Poplar Deciduous Forest Type (FOD3-1)	16.7		0 (access road and collector line in feature)	
BMC-30	Fresh-Moist White Birch Mixed Forest Type (FOM8-2); Fresh-Moist White Birch Mixed Forest Type (FOM8-2)	80.0		0 (WTG construction footprint, and access road and collector line in feature)	

Table 3-7: Bat Maternity Colonies

Feature ID	Composition	Snag / Cavity Tree Density per Hectare (ha)	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
BMC-31	Dry-Fresh White Birch Mixed Forest Type (FOM5-1)	38.0		0 (access road and collector line, and transmission line in feature)	
BMC-32	Dry-Fresh Poplar Mixed Forest Type (FOM5-2)	40.0		0 (access road and collector line in feature)	
BMC-33	Dry-Fresh White Pine-Sugar Maple Mixed Forest Type (FOM2-2)	16.0		0 (access road and collector line in feature)	
BMC-34	Dry-Fresh Poplar Mixed Forest Type (FOM5-2)	42.5		0 (access road and collector line in feature)	
BMC-35	Fresh-Moist White Birch Mixed Forest Type (FOM8-2)	20.0		0 (WTG construction footprint, and access road and collector line in feature)	
BMC-36	Fresh-Moist White Birch Mixed Forest Type (FOM8-2)	20.0		0 (WTG construction footprint, and access road and collector line in feature)	
BMC-37	Dry-Fresh Poplar Mixed Forest Type (FOM5-2)	10.0		0 (access road and collector line, and transmission line in feature)	
BMC-38	Dry-Fresh Poplar Mixed Forest Type (FOM5-2)	40.0		0 (access road and collector line, and transmission line in feature)	
BMC-39	Dry-Fresh White Pine-Oak Mixed Forest Type (FOM2-1)	29.1		0 (access road and collector line, WTG and WTG construction footprint in feature)	
BMC-40	Dry-Fresh White Birch Deciduous Forest Type (FOD3-2)	20.0		0 (access road and collector line, and transmission line in feature)	
BMC-41	Dry-Fresh Sugar Maple Deciduous Forest Ecosite (FOD5)	20.0		0 (access road and collector line, WTG, WTG construction footprint and transmission in feature)	
BMC-42	Fresh-Moist Hemlock-Hardwood Mixed Forest Type (FOM6-2)	26.7		0 (access road and collector line, and transmission line in feature)	
BMC-43	Dry-Fresh Sugar Maple-White Birch-Poplar Deciduous Forest Type (FOD5-10)	50.0		0 (access road and collector line, and transmission line in feature)	
BMC-44	Fresh-Moist Ash Lowland Deciduous Forest Type (FOD7-2)	13.3		0 (transmission line in feature)	

Table 3-7: Bat Maternity Colonies

Feature ID	Composition	Snag / Cavity Tree Density per Hectare (ha)	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
BMC-45	Fresh-Moist Sugar Maple-Hardwood Deciduous Forest Type (FOD6-5)	80.0		0 (transmission line in feature)	
BMC-46	Fresh-Moist Hemlock Mixed Forest Ecosite (FOM6)	50.9		0 (transmission line in feature)	
BMC-47	Fresh-Moist Poplar Mixed Forest Type (FOM8-1)	13.3		0 (access road and collector line, and transmission line in feature)	
BMC-48	Dry-Fresh Poplar Deciduous Forest Type (FOD3-1)	20.0		0 (access road and collector line, and transmission line in feature)	
BMC-49	Dry-Fresh Poplar Deciduous Forest Type (FOD3-1)	20.0		0 (access road and collector line, and transmission line in feature)	
BMC-50	Dry-Fresh Deciduous Forest Ecosite (FOD4)	10.0		0 (access road and collector line in feature)	
BMC-51	Dry-Fresh Sugar Maple-Red Maple Deciduous Forest Type (FOD5-9)	20.0		0 (access road and collector line in feature)	
BMC-58	Mixed Forest (FOM)	Feature identified through Alternative Site Investigation.		16 (WTG construction footprint) (55 m from WTG)	
BMC-59	Dry-Fresh Poplar Mixed Forest Type (FOM5-2)	Feature identified through Alternative Site Investigation.		0 (transmission line in feature)	
BMC-60	Mixed Forest (FOM)	Feature identified through Alternative Site Investigation.		10 (WTG construction footprint) (60 m from WTG)	
BMC-65	Mixed Forest (FOM)	Feature identified through Alternative Site Investigation.		37 (WTG construction footprint) (54 m from WTG)	
BMC-66	Dry-Fresh Poplar Deciduous Forest Type (FOD3-1)	Feature identified through Alternative Site Investigation.		0 (access road and collector line, WTG and WTG construction footprint in feature)	
BMC-68	Dry-Fresh Poplar Deciduous Forest Type (FOD3-1)	Feature identified through Alternative Site Investigation.		0 (access road and collector line in feature)	
BMC-69	Mixed Forest (FOM)	Feature identified through Alternative Site Investigation.		0 (access road and collector line in feature)	
BMC-70	Dry-Fresh White Birch Mixed Forest Type (FOM5-1)	Feature identified through Alternative Site Investigation.		0 (WTG and WTG construction footprint in feature)	

Table 3-7: Bat Maternity Colonies

Feature ID	Composition	Snag / Cavity Tree Density per Hectare (ha)	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
BMC-71	Mixed Forest (FOM)	Feature identified through Alternative Site Investigation.		0 (access road and collector line in feature)	
BMC-73	Mixed Forest (FOM)	Feature identified through Alternative Site Investigation.		29 (access road and collector line) (57 m from WTG)	
BMC-75	Deciduous Forest (FOD)	Feature identified through Alternative Site Investigation		0 (access road and collector line in feature)	
BMC-76	Dry – Fresh Poplar Deciduous Forest Type (FOD3-1)	Feature identified through Alternative Site Investigation		0 (WTG and WTG construction footprint in feature)	
BMC-77	Dry – Fresh White Birch – Poplar – Conifer Mixed Forest Ecosite (FOM5)	20.0		0 (transmission line in feature)	
Generalized Candidate IWH	Variety of qualifying deciduous or mixed forest vegetation communities	A total of 18 features identified through Alternative Site Investigation		Varied; all > 120 m from nearest WTG and no infrastructure in features	

Table 3-8: Turtle Wintering Areas

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
TWH-001	Organic Shallow Marsh Ecosite (MAS3)	4.0 ha in size; feature identified through Alternative Site Investigation.	May provide turtles with overwintering habitat.	0 (WTG construction footprint in feature)	All of these features may contain deep water and soft mud substrates in which turtles can burrow and avoid freezing temperatures.
TWH-002	Shallow Water (SA)	1.8 ha in size; identified as suitable turtle wintering habitat in the field.		0 (access road and collector line in feature)	
TWH-003	Organic Shallow Marsh Ecosite (MAS3); Open Water (OA)	25.8 ha in size; feature identified through Alternative Site Investigation.		0 (transmission line in feature)	
TWH-004	Open Aquatic (OAO); Organic Shallow Marsh Ecosite (MAS3)	2.1 ha in size; feature identified through Alternative Site Investigation.		0 (transmission line in feature)	
TWH-005	Shallow Water (SA)	5.0 ha in size; feature identified through Alternative Site Investigation.		0 (access road and collector line in feature)	
TWH-006	Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4)	0.9 ha in size; suitable substrate		0 (WTG construction footprint, and transmission line in feature)	
TWH-007	Open Aquatic (OAO)	0.1 ha in size; unknown substrate		0 (access road and collector line in feature)	
TWH-008	Pondweed Mixed Shallow Aquatic Type (SAM1-4)	3.1 ha in size; unknown substrate		0 (access road and collector line in feature)	
TWH-009	Water Lily-Bullhead Lily Floating-leaved Shallow Aquatic Type (SAF1-1)	1.7 ha in size; suitable substrate		0 (WTG construction footprint in feature)	
TWH-011	Broad-leaved Sedge Mineral Meadow Marsh Type (MAM2-6)	14.6 ha in size; suitable substrate		0 (WTG construction footprint, and access road and collector line in feature)	
TWH-012	Water Lily-Bullhead Lily Floating-leaved Shallow Aquatic Type (SAF1-1)	9.5 ha in size; unknown substrate		0 (access road and collector line in feature)	
TWH-013	Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4)	0.4 ha in size; suitable substrate		0 (access road and collector line in feature)	
TWH-014	Open Aquatic (OAO)	0.2 ha in size; unknown substrate		0 (access road and collector line in feature)	
TWH-015	Broad-leaved Sedge Organic Meadow Marsh Type (MAM3-6)	0.3 ha in size; suitable substrate		0 (access road and collector line in feature)	

Table 3-8: Turtle Wintering Areas

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
TWH-016	Broad-leaved Sedge Organic Meadow Marsh Type (MAM3-6)	1.3 ha in size; suitable substrate		0 (WTG construction footprint in feature)	
TWH-017	Water Lily-Bullhead Lily Floating-leaved Shallow Aquatic Type (SAF1-1)	1.1 ha in size; unknown substrate		0 (transmission line in feature)	
TWH-018	Submerged Shallow Aquatic (SAS1)	0.8 ha in size; unknown substrate		0 (transmission line in feature)	
TWH-019	Submerged Shallow Aquatic Ecosite (SAS1)	0.1 ha in size; unknown substrate		0 (transmission line in feature)	
TWH-020	Cattail Mineral Shallow Marsh Type (MAS2-1)	0.1 ha in size; unknown substrate		0 (transmission line in feature)	
TWH-021	Cattail Organic Shallow Marsh Type (MAS3-1), Open Aquatic (OAO), and Shallow Water (SA)	6.7 ha; unknown substrate		0 (WTG construction footprint in feature)	
TWH-022	Shallow Water (SA)	9.1 ha in size; feature identified through Alternative Site Investigation.		0 (WTG construction footprint in feature)	
TWH-023	Open Aquatic (OAO)	0.1 ha; feature identified through Alternative Site Investigation.		0 (access road and collector line in feature)	
TWH-024	Cattail Organic Shallow Marsh Type (MAS3-1)	0.5 ha; feature identified through Alternative Site Investigation.		0 (transmission in feature)	
TWH-025	Shallow Marsh (MAS)	0.3 ha; feature identified through Alternative Site Investigation.		0 (transmission in feature)	
TWH-026	Shallow Marsh (MAS)	1.6 ha; feature identified through Alternative Site Investigation.		0 (access road and collector line in feature)	
TWH-027	Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4)	3.6 ha; feature identified through Alternative Site Investigation.		0 (WTG construction footprint in feature)	
TWH-028	Open Aquatic (OAO) and Broad-leaved Sedge Mineral Shallow Marsh Type (MAS2-4)	0.3 ha; feature identified through Alternative Site Investigation.		0 (WTG construction footprint, and access road and collector line in feature)	
TWH-029	Open Aquatic (OAO)	2.3 ha; feature identified through Alternative Site Investigation.		0 (WTG construction footprint in feature)	

Table 3-8: Turtle Wintering Areas

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
TWH-030	Open Aquatic (OAO)	0.8 ha; feature identified through Alternative Site Investigation.		0 (WTG construction footprint in feature)	
TWH-031	Organic Shallow Marsh Ecosite (MAS3)	2.9 ha; feature identified through Alternative Site Investigation.		0 (access road and collector line in feature)	
TWH-032	Cattail Organic Shallow Marsh Type (MAS3-1) and Shallow Water (SA)	5.4 ha; feature identified through Alternative Site Investigation.		0 (access road and collector line in feature)	
TWH-033	Shallow Water (SA)	5.0 ha; feature identified through Alternative Site Investigation.		0 (WTG construction footprint in feature)	
TWH-034	Shallow Water (SA)	8.6 ha; feature identified through Alternative Site Investigation.		0 (WTG construction footprint in feature)	
TWH-035	Broad-leaved Sedge Mineral Shallow Marsh Type (MAS2-4)	2.6 ha in size; suitable substrate		0 (WTG construction footprint in feature)	
TWH-036	Alder Mineral Thicket Swamp Type (SWT2-1), Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4) and Shallow Water(SA)	6.0 ha in size; suitable substrate		0 (WTG and WTG construction footprint in feature)	
TWH-039	Water Lily-Bullhead Lily Floating-leaved Shallow Aquatic Type (SAF1-1)	1.1 ha in size; unknown substrate		0 access road and collector line in feature)	
TWH-040	Narrow-leaved Sedge Organic Meadow Marsh Type (MAM3-5)	3.3 ha in size; suitable substrate		0 (access road and collector line in feature)	
TWH-042	Broad-leaved Sedge Mineral Shallow Marsh Type (MAS2-4)	0.1 ha in size; suitable substrate		0 (access road and collector line in feature)	
TWH-043	Shallow Water (SA)	0.1 ha in size; unknown substrate		0 (access road and collector line in feature)	
TWH-044	Broad-leaved Sedge Mineral Shallow Marsh Type (MAS2-4)	0.4 ha in size; suitable substrate		0 (access road and collector line in feature)	
TWH-045	Alder Organic Thicket Swamp Type (SWT3-1)	0.4 ha in size; unknown substrate		0 (WTG and WTG construction footprint in feature)	
TWH-046	Slender Sedge Open Fen Type (FEO1-2), Shallow Aquatic (SA), Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4)	4.8 ha in size; suitable substrate		0 (access road and collector line in feature)	

Table 3-8: Turtle Wintering Areas

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
TWH-047	Broad-leaved Sedge Mineral Shallow Marsh Type (MAS2-4)	0.4 ha in size; suitable substrate		0 (WTG construction footprint, and access road and collector line in feature)	
TWH-048	Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4)	0.1 ha in size; feature identified through Alternative Site Investigation.		0 (access road and collector line in feature)	
TWH-049	Broad-leaved Sedge Mineral Shallow Marsh Type (MAM2-6)	6.5 ha in size; suitable substrate		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
TWH-050	Shallow Water (SA)	0.1 ha in size; unknown substrate		0 (WTG construction footprint in feature)	
TWH-051	Water Lily-Bullhead Lily Floating-leaved Shallow Aquatic Type (SAF1-1)	5.0 ha in size; suitable substrate		0 (WTG and WTG construction footprint in feature)	
TWH-052	Floating-leaved Shallow Aquatic Ecosite (SAF1)	8.0 ha in size; suitable substrate		0 (WTG construction footprint in feature)	
TWH-053	Water Lily-Bullhead Lily Floating-leaved Shallow Aquatic Type (SAF1-1)	15.9 ha in size; unknown substrate		0 (WTG construction footprint in feature)	
TWH-055	Broad-leaved Sedge Mineral Shallow Marsh Type (MAS2-4)	1.3 ha in size; suitable substrate		0 (WTG construction footprint, and access road and collector line in feature)	
TWH-056	Narrow-leaved Sedge Organic Shallow Marsh Type (MAS3-3)	6.5 ha in size; suitable substrate		0 (WTG construction footprint in feature)	
TWH-057	Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4)	1.1 ha in size; suitable substrate		0 (WTG, WTG construction footprint and access road and collector line in feature)	
TWH-058	Alder Mineral Thicket Swamp Type (SWT2-1)	0.5 ha in size; suitable substrate		0 (access road and collector line in feature)	
TWH-059	Open Fen Ecosite (FEO1)	1.3 ha in size; suitable substrate		0 (WTG construction footprint in feature)	
TWH-060	Open Aquatic (OAO)	1.5 ha in size; suitable substrate		0 (WTG construction footprint, and access road and collector line in feature)	
TWH-061	Open Fen Ecosite (FEO1)	1.2 ha in size; suitable substrate		0 (access road and collector line in feature)	
TWH-062	Slender Sedge Open Fen Type (FEO1-2)	2.4 ha in size; suitable substrate		0 (access road and collector line in feature)	

Table 3-8: Turtle Wintering Areas

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
TWH-063	Slender Sedge Open Fen Type (FEO1-2)	33.3 ha in size; suitable substrate		0 (WTG construction footprint in feature)	
TWH-064	Beaked Sedge Open Fen Type(FEO1-5)	19.0 ha in size; suitable substrate		0 (WTG construction footprint in feature)	
TWH-065	Narrow-leaved Sedge Organic Shallow Marsh Type (MAS3-3)	0.7 ha in size; unknown substrate		0 (WTG construction footprint, and access road and collector line in feature)	
TWH-066	Submerged Shallow Aquatic Ecosite (SAS1)	1.1 ha in size; unknown substrate		0 (access road and collector line, and transmission line in feature)	
TWH-067	Broad-leaved Sedge Mineral Shallow Marsh Type (MAS2-4)	0.6 ha in size; suitable substrate		0 (WTG construction footprint in feature)	
TWH-069	Narrow-leaved Sedge Mineral Meadow Marsh Type (MAM2-5) and Shallow Water (SA)	0.4 ha in size; suitable substrate		0 (access road and collector line in feature)	
TWH-070	Narrow-leaved Sedge Mineral Meadow Marsh Type (MAM2-5)	1.2 ha in size; suitable substrate		0 (access road and collector line in feature)	
TWH-071	Open Aquatic (OAO)	4.1 ha in size; unknown substrate		0 (WTG construction footprint in feature)	
Generalized IWH	Variety of qualifying vegetation communities	Total of 87 features of sufficient size and containing standing water were identified		Varied; all within 120 m of the HIWEC location and no infrastructure in features	All of these features may contain deep water and soft mud substrates in which turtles can burrow and avoid freezing temperatures.

3.6.6 Reptile Hibernacula

Burrows, rock crevices and areas of broken and fissured rock allow snakes to enter the ground below the frost line and provide protection from harsh winter temperatures, which facilitates overwinter survival. Some snake species may hibernate in large groups, while other species tend to hibernate in isolation. Wetlands such as conifer or shrub swamps, poor fens, or depressions in bedrock with Sphagnum moss or sedge hummock ground cover can also provide important overwintering habitat for snakes (MNRFF, 2012b). Once spring has arrived, snakes will typically come out of hibernation, bask in the sun's warmth on sunny days in close proximity, and then return to their hibernating sites at night. They may remain in the vicinity of their hibernaculum for a week or so before moving out to their summer range. The potential for hibernacula of Eastern Gartersnake, Northern Watersnake, Red-bellied Snake, Dekay's Brownsnake, Smooth Greensnake, Ring-necked Snake, Milksnake, Eastern Ribbonsnake and Five-lined Skink to occur within the HIWEC study area was identified during the Records Review. All of these features were searched for within 120 m of the HIWEC location during the Site Investigation and, if found, assessed to determine whether they contain suitable habitat for hibernating snakes.

A total of 99 features were identified through the Site Investigations that reptiles may use as hibernacula (refer to **Figure 3-5f** for locations). Typically, the identified features consisted of rock piles, fissures or crevices in exposed bedrock, or Sphagnum moss hummocks (refer to **Table 3-9** for attributes, compositions and functions). In accordance with the *Draft Ecoregion 5E Criterion Schedule Addendum to the SWHTG* (MNRFF, 2012b), a 30 m buffer was applied to the hibernaculum for each feature in order to define the boundaries of each Candidate IWH feature. Minimum distances to the HIWEC location were measured from the edge of the 30 m buffer included as part of the feature. When a 30 m buffer was applied to the location of the potential reptile hibernacula (MNRFF, 2012b), 98 occurred within 120 m of a proposed WTG or access road, or were overlapped by another HIWEC component. The majority of the identified features were therefore carried forward to the EOI as Candidate IWH. The remaining feature is greater than 120 m from a proposed WTG or access road and was carried forward to the EOI as Generalized Candidate IWH.

3.6.7 Colonially-Nesting Bird Breeding Habitat (Bank and Cliff)

Nesting colonies of Bank Swallows can be found on exposed eroding banks such as shoreline bluffs, river banks sand piles and abandoned pits, and steep slopes. Cliff Swallows will nest on steep rock faces such as cliffs but they can also nest on man-made structures such as bridges and barns, which do not qualify as IWH (MNRFF, 2012b). The potential for nesting colonies of Bank Swallows, Cliff Swallows and Northern Rough-winged Swallows to occur within the HIWEC study area was identified during the Records Review. All cultural, bluff and cliff communities occurring at least partially within 120 m of the HIWEC location were assessed to determine whether they contain suitable habitat for colonially-nesting birds (bank and cliff).

No exposed eroding banks, sand piles or abandoned pits suitable for Bank Swallows were identified during the Site Investigation within 120 m of HIWEC location. Additionally, no cultural communities with eroding banks, and no bluff or cliff communities were identified. However, a few isolated Cliff and Talus Slope features were identified within 120 m of the HIWEC location. Cliff Swallows generally build nests in the junction between a vertical cliff face and a horizontal overhang (Brown and Brown, 1995). This species generally avoids dense forests and requires an open area near a water source where it can forage (Brown and Brown, 1995). Of these isolated Cliff and Talus Slope features, only one (1) cliff was considered to be potentially suitable for Colonially-Nesting Bird Breeding Habitat (Bank and Swallow). However, no nests were observed at this location; therefore, no Candidate IWH or Generalized Candidate IWH features were carried forward to the EOI for this IWH type.

Table 3-9: Reptile Hibernacula

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m) ⁷	Rationale for carrying feature forward to EOI
RH-001	Swamp Maple –Conifer Mineral Mixed Swamp Type (SWM2-2)	South facing rock wall with large fissures and crevices	Hibernacula enable overwinter survival of reptiles.	0 (access road and collector line in feature)	Identified features have the potential provide reptiles with access to below the frost line.
RH-003	Tamarack Treed Fen Type (FET1-1)	South facing exposed bedrock with crevices and fissures, boulders and shrub cover; adjacent to wetland.		0 (access road and collector line in feature)	
RH-004	Acidic Open Rock Barren (RBO3)	Scattered boulders potentially providing access to below the frost line		0 (access road and collector line in feature)	
RH-005	Red Maple-Conifer Mineral Mixed Swamp Type (SWM2-1)	Steep south facing pile of boulders and loose rock with large crevices potentially providing access to below the frost line		0 (WTG and WTG construction footprint in feature)	
RH-006	White Cedar-Conifer Organic Coniferous Swamp Type (SWC3-2)	Sphagnum moss hummocks		0 (access road and collector line in feature)	
RH-008	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	Fissured rocks and boulders on a 3 m cliff		0 (access road and collector line in feature)	
RH-009	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	Pile of broken bedrock and boulders on southwest facing slope; observed basking Massasauga Rattlesnake.		0 (access road and collector line, WTG and WTG construction footprint in feature)	
RH-010	Fresh-Moist Poplar Mixed Forest Type (FOM8-1)	Loose rock with deep cracks that appear to extend below the frost line		0 (access road and collector line in feature)	
RH-011	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	Fissures and broken rock between rock barren and swamp		0 (access road and collector line in feature)	
RH-012	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	South facing area of broken bedrock and boulders		0 (access road and collector line in feature)	
RH-013	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	Scattered boulder and fissures.		0 (access road and collector line, WTG and WTG construction footprint in feature)	

7. In accordance with the Draft Ecoregion 5E Criterion Schedule Addendum to the SWHTG (MNRF, 2012b), a 30 m radius buffer centered on the feature is included as part of the habitat because of high site fidelity and other life cycle processes that occur in close proximity to hibernacula. Minimum distances to the HIWEC location were measured from the edge of the 30 m buffer.

Table 3-9: Reptile Hibernacula

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m) ⁷	Rationale for carrying feature forward to EOI
RH-017	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	Rock barren adjacent to bog, extensive exposed bedrock with deep crevices that appear to extend below the frost line, woody debris and shrubs		0 (access road and collector line, WTG and WTG construction footprint in feature)	
RH-019	Black Spruce Organic Coniferous Swamp Type (SWC4-3)	Deep crevice that appears to extend below the frost line		0 (access road and collector line, WTG and WTG construction footprint in feature)	
RH-020	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	Irregular jumble of rocks with crevices		0 (access road and collector line, WTG and WTG construction footprint in feature)	
RH-022	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	Southeast facing crevice		0 (access road and collector line in feature)	
RH-023	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	Deep crevice with jumbled boulders inside		0 (access road and collector line in feature)	
RH-024	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	Bedrock with fissures and cracks on south facing slope		47 (access road and collector line)	
RH-025	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	Crevice in southeast facing slope		30 (access road and collector line)	
RH-030	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	Pile of boulders on west facing slope		17 (access road and collector line)	
RH-031	Black Spruce Organic Coniferous Swamp Type (SWC4-3)	Southeast rocky slope with several crevices that appear to extend below the frost line		0 (access road and collector line in feature)	
RH-032	Dry Acidic Open Rock Barren Type (RBO3-1)	Rocky south facing slope with numerous cracks		0 (access road and collector line, WTG and WTG construction footprint in feature)	
RH-033	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	Several deep crevices that appear to extend below the frost line		0 (access road and collector line, WTG and WTG construction footprint in feature)	
RH-034	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	Several southeast facing deep crevices that appear to extend below the frost line		0 (WTG construction footprint in feature)	
RH-035	Black Spruce Organic Coniferous Swamp Type (SWC4-3)	Sphagnum moss hummocks		0 (access road and collector line, WTG and WTG construction footprint in feature)	
RH-036	Black Spruce Organic Coniferous Swamp Type (SWC4-3)	Sphagnum moss hummocks		0 (access road and collector line in feature)	

Table 3-9: Reptile Hibernacula

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m) ⁷	Rationale for carrying feature forward to EOI
RH-037	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	South facing rock pile with deep crevices and 50% vegetation cover		0 (access road and collector line and WTG construction footprint in feature)	
RH-039	Tamarack-Black Spruce Organic Coniferous Swamp Type (SWC4-1)	Sphagnum moss hummocks		0 (access road and collector line in feature)	
RH-040	Dry Acidic Open Rock Barren Type (RBO3-1)	Deep cracks in rocks adjacent to shed Eastern Gartersnake skin		13 (transformer station)	
RH-041	Tamarack Treed Fen Type (FET1-1)	Sphagnum moss hummocks		0 (access road and collector line in feature)	
RH-042	Alder Mineral Thicket Swamp Type (SWT2-1)	Southwest facing rock pile		2 (access road and collector line in feature)	
RH-043	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	Crevice on slope that appear to extend below the frost line		0 (access road and collector line in feature)	
RH-044	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	West / southwest facing slope with boulders		0 (access road and collector line, WTG and WTG construction footprint in feature)	
RH-045	Dry Acidic Open Rock Barren Type (RBO3-1)	Southeast facing cracks that appear to extend below the frost line		0 (transmission line in feature)	
RH-046	Dry Acidic Open Rock Barren Type (RBO3-1)	Several crevices that appear to extend below frost line		0 (access road and collector line in feature)	
RH-047	Dry-Fresh White Pine-Oak Mixed Forest Type (FOM2-1)	South facing rock pile in forest opening with crevices that appear to extend below the frost line		0 (WTG and WTG construction footprint in feature)	
RH-048	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	South facing slope with boulders and crevices		0 (access road and collector line in feature)	
RH-049	Dry-Fresh Oak-Red Maple Deciduous Forest Type (FOD2-1)	Slope of rock outcrop with crevices that appear to extend below the frost line		0 (access road and collector line, WTG and WTG construction footprint in feature)	
RH-050	Dry-Fresh Sugar Maple-Red Maple Deciduous Forest Type (FOD5-9)	Southeast facing rock pile on rock outcrop with crevices and fissures that appear to extend below the frost line		0 (access road and collector line in feature)	
RH-052	Dry-Fresh White Pine-Sugar Maple Mixed Forest Type (FOM2-2)	Bedrock with cracks, fissures and pile of boulders		0 (access road and collector line in feature)	

Table 3-9: Reptile Hibernacula

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m) ⁷	Rationale for carrying feature forward to EOI
RH-053	White Pine Mineral Coniferous Swamp Type (SWC2-1)	Burrows created by roots appear to provide refuge below the frost line		0 (access road and collector line in feature)	
RH-054	Fresh-Moist Poplar Mixed Forest Type (FOM8-1)	Pile of boulders where 15 cm. Massasauga Rattlesnake was observed.		6 (access road and collector line)	
RH-056	Acidic Shrub Rock Barren (RBS3)	Rock pile		0 (access road and collector line in feature)	
RH-057	Dry-Fresh White Pine-Maple-Oak Mixed Forest (FOM2)	Broken bedrock outcrop with open canopy and cover provided by shrubs, boulders and blow-down. Basking Eastern Gartersnake observed.		0 (access road and collector line in feature)	
RH-058	Dry-Fresh White Pine-Red Pine Coniferous Forest Type (FOC1-2)	Boulders on south side of bedrock slope with vegetation cover		0 (access road and collector line in feature)	
RH-060	Fresh-Moist Poplar Mixed Forest Type (FOM8-1)	Bedrock outcrop with pile of boulders and open canopy		0 (access road and collector line in feature)	
RH-065	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	3 m cliff with deep crevices that appear to extend below the frost line		0 (access road and collector line in feature)	
RH-066	Black Spruce Treed Bog Type (BOT1-1)	Sphagnum moss hummocks		0 (access road and collector line, WTG and WTG construction footprint in feature)	
RH-067	Black Spruce Treed Bog Type (BOT1-1)	Sphagnum moss hummocks		0 (WTG and WTG construction footprint in feature)	
RH-068	Black Spruce Treed Bog Type (BOT1-1)	Jumbled rocks on bedrock		0 (access road and collector line, WTG and WTG construction footprint in feature)	
RH-069	Blueberry Acidic Shrub Rock Barren Type (RBS3-1)	Sphagnum moss hummocks		0 (access road and collector line, WTG and WTG construction footprint in feature)	
RH-070	Tamarack Treed Fen Type (FET1-1)	Sphagnum moss hummocks		0 (access road and collector line, WTG and WTG construction footprint in feature)	
RH-071	Black Spruce Treed Bog Type (BOT1-1)	Sphagnum moss hummocks		1 (access road and collector line)	

Table 3-9: Reptile Hibernacula

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m) ⁷	Rationale for carrying feature forward to EOI
RH-072	Dry-Fresh White Pine-Red Pine Coniferous Type Forest (FOC1-2)	Sphagnum moss hummocks		0 (access road and collector line in feature)	
RH-073	Jack Pine Acidic Treed Rock Type Barren (RBT3-2)	Bedrock with gaps		0 (access road and collector line, and WTG construction footprint in feature)	
RH-074	Blueberry Acidic Shrub Rock Type Barren (RBS3-1)	Irregular rock fissure under vegetation		0 (access road and collector line, and transmission line in feature)	
RH-075	Blueberry Acidic Shrub Rock Type Barren (RBS3-1)	Rock and fallen tree on rock barren		0 (access road and collector line, and transmission line in feature)	
RH-076	Blueberry Acidic Shrub Rock Type Barren (RBS3-1)	Fissure and large boulders on barren; several nearby rock piles		0 (access road and collector line in feature)	
RH-077	Alder Organic Thicket Swamp Type (SWT3-1)	Hummocks		0 (access road and collector line in feature)	
RH-078	Fresh-Moist Hemlock Coniferous Forest Ecosite (FOC3)	Hummocks		0 (access road and collector line in feature)	
RH-079	Dry Acidic Open Rock Barren Type (RBO3-1)	Sphagnum moss hummocks		0 (WTG and WTG construction footprint in feature)	
RH-080	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	Fissured rocks		0 (WTG construction footprint in feature)	
RH-081	Black Spruce Treed Bog Type (BOT1-1)	Crack that appears to extend below the frost line		0 (access road and collector line, WTG and WTG construction footprint in feature)	
RH-082	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	Fissured rock		0 (access road and collector line, WTG and WTG construction footprint in feature)	
RH-083	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	Fissured rock		0 (access road and collector line, WTG and WTG construction footprint in feature)	
RH-084	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	Recorded as suitable reptile hibernacula		40 (access road and collector line)	
RH-085	Black Spruce Treed Bog Type (BOT1-1)	Sphagnum moss hummocks		0 (access road and collector line, WTG and WTG construction footprint in feature)	

Table 3-9: Reptile Hibernacula

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m) ⁷	Rationale for carrying feature forward to EOI
RH-086	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	Large boulders with crevices		0 (WTG and WTG construction footprint in feature)	
RH-087	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	Recorded as suitable reptile hibernacula		0 (access road and collector line, and WTG construction footprint in feature)	
RH-088	Deciduous Swamp (SWD)	Sphagnum moss hummocks and tree roots		5 (WTG construction footprint) (21 m from WTG)	
RH-089	Black Spruce Treed Bog Type (BOT1-1)	Sphagnum moss hummocks		0 (WTG and WTG construction footprint in feature)	
RH-090	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	Sphagnum moss hummocks		0 (access road and collector line in feature)	
RH-091	Fresh-Moist Sugar Maple-Hardwood Deciduous Forest Type (FOD6-5)	Southwest facing rock outcrop in forest.		0 (transmission line in feature)	
RH-092	Acidic Shrub Rock Barren Ecosite (RBS3)	Boulders and pile of rocks at the bottom of an old quarry.		0 (transmission line in feature)	
RH-093	Fresh-Moist Hemlock Mixed Forest Ecosite (FOM6)	Deep, south facing cavity in rock outcrop.		0 (transmission line in feature)	
RH-094	Coniferous Forest (FOC)	Deep openings in southwest facing, elevated rock outcrop.		0 (transmission line in feature)	
RH-095	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	Fissured rock and Sphagnum moss present.		0 (access road and collector line, WTG and WTG construction footprint in feature)	
RH-096	Black Spruce Treed Bog Type (BOT1-1)	Rock island may provide access to below frost line.		0 (access road and collector line, WTG and WTG construction footprint in feature)	
RH-098	Dry-Fresh Poplar Deciduous Forest Type (FOD3-1)	Slabs of granite along rock wall. High potential for below frost line access. Close proximity to wetland; west facing.		0 (access road and collector line in feature)	
RH-099	Fresh-Moist White Birch Mixed Forest Type (FOM8-2)	Cracks in west facing cliff that appear to extend below the frost line		0 (access road and collector line in feature)	
RH-100	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	Crevice on east facing slope that appears to extend below frost line		0 (access road and collector line in feature)	

Table 3-9: Reptile Hibernacula

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m) ⁷	Rationale for carrying feature forward to EOI
RH-101	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	Cluster of boulders at bottom of west facing slope		0 (access road and collector line in feature)	
RH-104	Red Maple Mineral Deciduous Swamp Type (SWD3-1)	Large boulders along west facing rock wall near swamp, appears extend below frost line		0 (access road and collector line, and WTG construction footprint in feature)	
RH-105	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	Cracks in west facing slope that appear to provide access below the frost line		0 (access road and collector line in feature)	
RH-109	Dry Acidic Open Rock Barren Type (RBO3-1)	Clusters of boulders, deep crevices; high shrub cover and Sphagnum moss in depressions.		0 (access road and collector line, WTG and WTG construction footprint in feature)	
RH-111	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	Treed rock barren with low shrubs and fallen woody debris, some small boulders and rock shelves and crevices. Northern Watersnake observed basking in adjacent wetland.		0 (access road and collector line in feature)	
RH-113	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	Rock barren with logs, shrubs, and crevices in rock. Large wetland on east side of feature.		0 (access road and collector line in feature)	
RH-114	Dry Acidic Open Rock Barren Type (RBO3-1)	Rock barren with shrubs, exposed bedrock, woody debris. Southeast facing slope with cracks below frost line.		0 (access road and collector line in feature)	
RH-115	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	Rock barren with exposed rock, shrubs present. Crevices may access below permafrost.		0 (access road and collector line in feature)	
RH-116	Blueberry Acidic Shrub Rock Barren Type (RBS3-1)	Rock with broken rocks, crevices, and fissures.		0 (WTG and WTG construction footprint in feature)	
RH-117	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	Rock barren adjacent to gramminoid marsh with open water; crevices and loose rock present.		0 (WTG and WTG construction footprint in feature)	
RH-118	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	Rock barren with woody debris, deep crevices and boulders on south facing slope.		0 (access road and collector line, WTG and WTG construction footprint in feature)	

Table 3-9: Reptile Hibernacula

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m) ⁷	Rationale for carrying feature forward to EOI
RH-119	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	Elevated rock barren with exposed bedrock, shrub cover, crevices, boulder piles and woody debris. Wetland present to the west of feature.		0 (access road and collector line in feature)	
RH-120	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	Rock barren with woody debris and shrubs; near waterbody, wetlands and mixed forest. Deep crevices in bedrock, south facing slope with boulders and cracks extending below frost line.		0 (WTG and WTG construction footprint in feature)	
RH-121	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	Rock barren mosaic with fen, boulders, rock shelves and crevices present.		48 (access road and collector line in feature)	
RH-123	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	Large south facing rock barren with cracks and scattered boulders. Woody debris abundant; varied structure and rolling open areas.		0 (access road and collector line in feature)	
RH-124	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	Rock barren with fallen logs. Large crevice that may extend below the frost line.		0 (access road and collector line in feature)	
RH-125	Common Juniper Acidic Shrub Rock barren (RBS3-2)	Shrub rock barren dominated by Common Juniper. Small rocks and cracks which may provide access to below the frost line.		0 (transmission line in feature)	
RH-126	Dry Acidic Open Rock Barren Type (RBO3-1)	Large rock barren with high shrub cover (mostly Common Juniper but high percentage of blueberry shrubs and exposed bedrock). Opportunities for refuge provided by rock piles, crevices, and shrubs.		0 (transmission line in feature)	
Generalized Candidate IWH	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	Total of one (1) site identified as a potential reptile hibernaculum		Greater than 120 m from nearest WTG or access road and not overlapped by HIWEC infrastructure	

3.6.8 Colonially-Nesting Bird Breeding Habitat (Trees / Shrubs)

Nesting colonies of herons generally occur within live or dead standing trees in treed wetlands such as mixed or deciduous swamps or treed fen habitats, lakes, islands and peninsulas (MNRF, 2012b). Colonies are specific sites where herons congregate to build nests and raise young, but herons need to fly out and forage widely from the colony in all directions over many square kilometres. Most Great Blue Herons nest approximately 11 to 15 m from the ground and near the top of the tree. All suitable ELC communities for this IWH type located at least partially within 120 m of the HIWEC location were searched for heron nests.

No evidence of Black-crowned Night Heron breeding within the HIWEC study area was recorded in the OBBA (BSC *et al.*, 2006) or during breeding bird surveys completed in 2011, 2012 or 2013 (AECOM, 2015b).

As described in the Records Review Report, an aerial survey completed within the HIWEC study area in 2011 identified 12 potential Great Blue Heron nests of which two (2) were occupied by herons, one (1) Great Blue Heron stick nest was recorded in the HIWEC study area in 2013, and the MNRF provided a map indicating the locations of three (3) Great Blue Heron stick nests in the HIWEC study area. AECOM also completed three (3) aerial surveys on November 14, 2014, April 24 and May 13, 2015 within the HIWEC study area to identify new heron stick nests and confirm whether the nests identified through the Records Review were still present. Since Great Blue Heron nests are large and very noticeable, they are easily observed from great distances and even outside of the breeding season. The locations of all stick nests observed during the aerial surveys, as well as during the Site Investigation within the HIWEC location, were recorded.

All known records, both historical and recent, of Great Blue Heron nests located within 120 m of the HIWEC location were identified and mapped. Nests located more than 120 m from the HIWEC location but still within the margin of error for GPS accuracy were also included. As AECOM was not provided with co-ordinates of the 12 potential Great Blue Heron nests identified in 2011, these nests could not be mapped. However, if these nests were still present in 2014 and 2015, they likely would have been recorded through the aerial survey and / or Site Investigation.

Great Blue Heron nests were identified at eight (8) different locations within 120 m of the HIWEC location. The composition, attributes and functions of these features are summarized in **Table 3-10** and the locations are mapped on **Figures 3-5g**. Between one (1) and three (3) stick nests were observed at each location. Of the nests that were identified by AECOM in 2015, the majority were observed to be active and occupied by Great Blue Herons at the time of the Site Investigation. In accordance with the *Draft Ecoregion 5E Criterion Schedule Addendum to the SWHTG* (MNRF, 2012b), a 300 m buffer was applied to the stick nest location identified for each feature in order to define the boundaries of each Candidate IWH feature. Minimum distances to the HIWEC location were measured from the edge of the 300 m buffer included as part of the feature. None of the nests are located within the HIWEC location. However, after applying a 300 m buffer and including this as part of the feature, all eight (8) locations are overlapped by the HIWEC location and were therefore identified as Candidate IWH and carried forward to the EOI.

3.6.9 Colonially-Nesting Bird Breeding Habitat (Ground)

Colonies of ground-nesting birds may occur on any rocky island or peninsula (natural or artificial) within marshy areas, lakes or large rivers. The potential for nesting colonies of Herring Gulls, Great Black-backed Gulls, Ring-billed Gulls, Common Terns and Caspian Terns to occur within the HIWEC study area was identified during the Records Review. All bedrock meadow marsh (MAM1), cultural communities and rocky islands or peninsulas that are located at least partially within 120 m of the HIWEC location were assessed to determine whether they contain suitable habitat for colonially-nesting birds (ground).

Table 3-10: Colonially-Nesting Bird Breeding Habitat (Trees / Shrubs)

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m) ⁸	Rationale for carrying feature forward to EO
BIRD-01	Stick nest located in Water Lily – Bullhead Lily Floating – leaved Shallow Aquatic Type (SAF1-1) community	One (1) occupied stick nest by one (1) adult Great Blue Heron observed from aerial survey conducted on May 13, 2015. Stantec indicated the presence of an Osprey nest in this general location in 2013; however, it is likely the same Great Blue Heron nest observed by AECOM in 2015.	May or do provide nesting habitat for Great Blue Herons.	0 (WTG, WTG construction footprint, and access road and collector line in feature) (Nests are 120 m from WTG construction footprint)	Presence of stick nests that may or do provide nesting habitat for Great Blue Herons.
BIRD-02	Stick nests located in Open Aquatic (OAO) community	Two (2) stick nests were recorded by AECOM staff in 2014 in 2015 in the field. The same two (2) stick nests were observed during aerial surveys conducted on April 24 and May 13, 2015. Three (3) pairs of adult Great Blue Herons were observed on April 15, 2015 from the ground; two (2) nests were visible but likely a third nest is present nearby that was not visible.		0 (WTG, WTG construction footprint, access road and collector line, and transmission line in feature) (Nest are 62 m from WTG construction footprint)	
BIRD-05	Stick nests located in Open Aquatic (OAO) community	Two (2) stick nests occupied by two (2) adult Great Blue Herons observed during aerial survey conducted on May 13, 2015. MNRF and Stantec each indicated presence of Great Blue Heron nest(s) in this general location. Assumed to be the same stick nests observed by AECOM in 2015.		0 (WTG, WTG construction footprint, and access road and collector line in feature) (Nests are 129 m from WTG construction footprint)	

8. In accordance with the Draft Ecoregion 5E Criterion Schedule Addendum to the SWHTG (MNRF, 2012b), a 300 m buffer was applied to the point location where each heron nest was recorded. Minimum distances to the HIWEC location were measured from the edge of the 300 m buffer included as part of the habitat.

Table 3-10: Colonially-Nesting Bird Breeding Habitat (Trees / Shrubs)

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m) ⁸	Rationale for carrying feature forward to EOI
BIRD-07	Stick nests located in Open Aquatic (OAO) community	Three (3) unoccupied Great Blue Heron stick nests observed during Site Investigation surveys completed in 2015. MNRF indicated presence of an Osprey nest in this general location; however, it is likely the same Great Blue Heron nests observed by AECOM in 2015.		0 (WTG, WTG construction footprint, and access road and collector line in feature) (Nests are 227 m from access road and collector line)	
BIRD-08	Stick nest located in Shallow Aquatic / Shrub Fen (SA / FES) community	One (1) unoccupied Great Blue Heron nest observed during aerial survey conducted on April 24, 2015.		0 (access road and collector line in feature) (Nests are 147 m from access road and collector line)	
BIRD-09	Stick nest located in Water Lily – Bullhead Lily Floating – leaved Shallow Aquatic Type (SAF1-1) community	Great Blue Heron stick nest identified by MNRF.		0 (WTG construction footprint, and access road and collector line in feature) (Nests are 130 m from access road and collector line)	
BIRD-10	Stick nest located in a Water Lily – Bullhead Lily Floating-leaved Shallow Aquatic Type (SAF1-1) community	Great Blue Heron stick nest identified by MNRF.		0 (WTG, WTG construction footprint, and access road and collector line in feature) (Nests are 48 m from WTG construction footprint)	
BIRD-11	Stick nest located in Shallow Water (SA) community	One (1) occupied Great Blue Heron nest in a snag observed during field studies conducted in 2015.		0 (WTG, WTG construction footprint, and access road and collector line in feature) (Nests are 142 m from WTG construction footprint)	

Brewer's Blackbirds require open fields or pastures with scattered trees or bushes in close proximity to watercourses. There are no bedrock meadow marshes (MAM1), cultural thickets (CUT), cultural savannahs (CUS) or agricultural fields identified within 120 m of the HIWEC location. One (1) small cultural meadow (CUM) is located off Bekanon Road and is surrounded by a few ponds. However, this cultural meadow is not considered to be suitable habitat because it is intersected by a road which decreases the quality of this habitat. Furthermore, there are no records of Brewer's Blackbird in the HIWEC study area from the OBBA (BSC *et al.*, 2006) and it was not recorded during breeding bird surveys conducted in 2011, 2012 or 2013 (AECOM, 2015b).

Rocky islands or peninsulas associated with open water, marshes, lakes or large rivers were also searched for within 120 m of the HIWEC location through the Site Investigation and Alternative Site Investigation. A total of 46 features were identified; all of which are located inland. No rocky islands or peninsulas were identified in Henvey Inlet, the Key River or Georgian Bay within 120 m of the HIWEC location. Gulls and terns typically nest in isolated islands offshore, free of mammal predators in larger bodies of water than the beaver ponds and wetlands present within the interior portion of the HIWEC study area. AECOM Biologist observed gull and tern colonies further offshore to the west and outside of the HIWEC study area while conducting Site Investigation surveys in 2015. No potentially suitable features of this IWH type were identified within 120 m of the HIWEC location.

3.6.10 Deer Yarding Areas

Deer Yarding Areas are areas where deer move to suitable woodlands in response to the onset of winter snow and cold in order to reduce or avoid the impacts of winter conditions. This is a behavioural response and deer will establish traditional use areas; as such, Deer Yarding Areas typically have a long history of annual use by deer. Deer Yarding Areas are evaluated by MNRF following methods outlined in *Selected Wildlife and Habitat Features: Inventory Manual* (MNRF, 1997). To be considered IWH, woodlots will typically be greater than 100 ha in size; however woodlots less than 100 ha may be considered important based on MNRF studies or assessment. Large woodlots greater than 100 ha and up to 1,500 ha are known to be used annually by densities of deer that range from 0.1 to 1.5 deer / ha. Woodlots with high densities of deer due to artificial feeding, however, are not considered important (MNRF, 2012b).

Coniferous forest, mixed forest, and mixed swamp communities with a combined area of greater than 100 hectares were considered to be potentially suitable Deer Yarding Areas. Communities with a high abundance of Eastern White Cedar, Eastern Hemlock or White Spruce were considered most likely to provide suitable habitat. Evidence of concentrations of deer, such as tracks or scat observed during the Site Investigation, was also considered to be a qualifying criterion. Forest stands within 120 m of the HIWEC location were searched by field staff for suitable habitat, as part of the Site Investigation; the Alternative Site Investigation also included a review of aerial photography. In total, four (4) Deer Yarding Area features are overlapped by the HIWEC location and therefore were identified as Candidate IWH. The locations of these features are shown on **Figure 3-5h**. **Table 3-11** summarizes the compositions, attributes, and functions of these Deer Yarding Areas determined to be Candidate IWH.

Table 3-11: Deer Yarding Areas

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
DYA-02	Dry – Fresh Pine Coniferous Forest Ecosite (FOC1), Mixed Forest (FOM), Dry – Fresh White Pine – Maple – Oak Mixed Forest Ecosite (FOM2), Mixed Swamp (SWM), Dry – Fresh White Pine – Sugar Maple Mixed Forest Type (SWM2-2) and Birch – Conifer Mineral Mixed Swamp Type (SWM3-1)	122.6 ha in size	May provide overwintering deer with a source of food and shelter from the elements	0 (access road and collector line, and transmission line in feature)	All of these features are forested areas greater than 100 ha in size and may provide suitable overwintering habitat for deer
DYA-04	Coniferous Forest (FOC), Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOC1-2), Fresh – Moist Hemlock Coniferous Forest Ecosite (FOC3), Mixed Forest (FOM), Dry – Fresh White Pine – Oak Mixed Forest Type (FOM2-1), Dry – Fresh Poplar Mixed Forest Type (FOM5-2) and Fresh – Moist Poplar Mixed Forest Type (FOM8-1)	180.9 ha in size		0 (access road and collector line, and transmission line in feature)	
DYA-05	Coniferous Forest (FOC), Dry – Fresh Pine Coniferous Forest Ecosite (FOC1), Fresh – Moist White Cedar – Balsam Fir Coniferous Type (FOC4-3), Mixed Forest (FOM), Dry – Fresh White Pine – Oak Mixed Forest Type (FOM2-1), Dry – Fresh Poplar Mixed Forest Type (FOM5-2), Fresh – Moist Poplar Mixed Forest Type (FOM8-1) and Mixed Swamp (SWM)	236.3 ha in size		0 (WTG, WTG construction footprint, access road and collector line, and transmission line in feature)	
DYA-06	Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOC1-2), Fresh – Moist White Cedar – Balsam Fir Coniferous Type (FOC4-3), Mixed Forest (FOM), Dry – Fresh White Pine – Sugar Maple Mixed Forest Type (FOM2-2), Dry – Fresh White Birch Mixed Forest Type (FOM5-1), Fresh – Moist Hemlock – Hardwood Mixed Forest Type(FOM6-2), Fresh – Moist White Birch Mixed Forest Type (FOM8-2), Mixed Swamp (SWM) and Red Maple – Conifer Mineral Mixed Swamp Type (SWM2-1)	116 ha in size		0 (WTG, WTG construction footprint, access road and collector line, transformer station and transmission line in feature)	

3.7 Rare Vegetation Communities

Rare vegetation communities are described in the *Significant Wildlife Habitat Technical Guide (SWHTG; MNRF, 2000)* and *Draft Ecoregion 5E Criterion Schedule Addendum to the SWHTG (MNRF, 2012b)*. The following rare vegetation communities were identified as potentially occurring in the HIWEC Study Area through the Records Review and Site Investigation:

- Shallow Atlantic Coastal Marsh;
- Cliffs and Talus Slopes;
- Precambrian Rock Barren;
- Sand Barren;
- Old-growth Forests;
- Bog; and
- Rare Forests (Red Spruce and White Oak).

A description of the Site Investigation results pertaining to each of these types of rare vegetation communities follows.

3.7.1 Shallow Atlantic Coastal Marsh

The shallow Atlantic coastal marsh community type is provincially rare and almost entirely restricted to Ecoregion 5E (MNRF, 2012b). These shallow marshes occur on shallow mineral or mineral organic shorelines subject to low wave energy (MNRF, 2012b). Typical locations include inland lakes and beaver ponds, particularly those that experience fluctuating water levels from year to year, resulting in some years where the shoreline is exposed in the summer and fall months (MNRF, 2012b). The potential for shallow Atlantic coastal marshes to occur within the HIWEC study area was identified during the Records Review.

A number of shallow marsh (MAS) communities were identified within 120 m of the HIWEC study area. However, the indicator species for this IWH type (Virginia Meadow-beauty), was not identified in any botanical inventories completed in 2013 (AECOM, 2015a) or during the Site Investigation. Two (2) of the associate species (Brownish Beaksedge and Bog Yellow-eyed Grass), were identified within the HIWEC study area in 2013 (AECOM, 2015a); however, at least five (5) indicator species at one (1) location are required for this IWH type. Therefore, none of the shallow marsh communities were carried forward to the EOI for this IWH type.

3.7.2 Cliffs and Talus Slopes

Cliffs and talus slopes are uncommon to rare habitats within Ecoregion 5E (MNRF, 2012b). A cliff is vertical to near vertical and consists of bedrock (MNRF, 2012b). A talus slope is rock rubble at the base of a cliff made up of coarse rock debris (MNRF, 2012b). Vegetation cover can vary from patchy and barren to up to 60% tree cover. Most of the cliffs and talus slopes within Ecoregion 5E are composed of Precambrian rock and are sparsely vegetated (MNRF, 2012b). The potential for cliffs and talus slopes to occur within the HIWEC study area was identified during the Records Review.

A total of six (6) Cliffs and Talus Slopes were identified within 120 m of the HIWEC location during the Site Investigation (**Table 3-12**). All of these were identified as Candidate IWH as these features are located within 120 m of a proposed access road or overlapped by other HIWEC components and were carried forward to the EOI. The locations of these features are shown on **Figure 3-5i**.

Table 3-12: Cliffs and Talus Slopes

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
CL-001	Cliff	Rock cliff, east facing. Boulders and crevices.	May provide protective cover and nesting habitat to small mammals, birds, and reptiles.	0 (access road and collector line, WTG, and WTG construction footprint in feature)	All of these features consist of vertical bedrock or a cliff at least 3 m in height.
CL-003	Cliff	5 m in height.		0 (access road and collector line in feature)	
CL-004	Cliff	3 m in height; includes fissures and crevices.		0 (access road and collector line in feature)	
CL-005	Cliff	6 m in height; includes small crevices covered in lichen and moss; located at the base of a forested slope.		0 (access road and collector line in feature)	
CL-007	Cliff	3 m in height; includes large crevices and cracks.		0 (access road and collector line in feature)	
CL-008	Cliff	Vertical and near vertical cliffs 3 m in height and taller.		118 (WTG construction footprint)	

3.7.3 Precambrian Rock Barren

Precambrian rock barrens are characterized by extensive areas of exposed, sparsely vegetated granitic bedrock. Vegetation coverage can vary from patchy and barren to up to 60% tree cover (MNRF, 2012b). According to the *Draft Ecoregion 5E Criterion Schedule Addendum to the SWHTG* (MNRF, 2012b), any rock barren area greater than one (1) ha in size is considered to be Candidate IWH. The potential for Precambrian rock barrens to occur within the HIWEC study area was identified during the Records Review.

Open, shrub and treed rock barrens are the predominant vegetation communities within the HIWEC study area, together covering 4,820.1 ha, and generally these contain the characteristic species for this IWH type. Precambrian Rock Barren features were identified within 120 m of the HIWEC location by grouping adjacent open, shrub and treed rock barren vegetation community polygons and determining whether each of these groups covered a combined area greater than one (1) hectare. A total of 88 Precambrian Rock Barren features were identified within 120 m of the HIWEC location (**Table 3-13**). Two (2) Precambrian Rock Barren features were identified as Generalized Candidate IWH and carried forward to the EOI, as these features are not overlapped by any HIWEC components, nor are they located within 120 m of an access road. A total of 86 Precambrian Rock Barren features were identified as Candidate IWH, as these features are located within 120 m of a proposed access road or are overlapped by the HIWEC location, and were carried forward to the EOI. The locations of these features are shown on **Figure 3-5j**.

3.7.4 Sand Barren

Sand barrens are characterized by sparse vegetation and exposed sand substrates, often caused by extended periods of drought or disturbance such as fire or erosion (MNRF, 2012b). The potential for sand barrens to occur within the HIWEC study area was identified during the Records Review.

A total of two (2) sand barren vegetation communities were identified within 120 m of the HIWEC location (**Table 3-14**). Both of these features are overlapped by the HIWEC location and were therefore carried forward to the EOI as Candidate IWH. The locations of these features are shown in **Figure 3-5x**.

3.7.5 Old-growth Forest

Old-growth forest stands have diverse tree structures which consist of a broad range of tree sizes including very large trees, large standing snags and abundant downed wood of variable sizes. Forest stands with many trees that are at least 140 years old and have a diameter-at-breast-height (DBD) of at least 70 cm are considered to be old-growth forests. To be considered IWH, old-growth forest stands must be at least 30 ha in size and / or contain at least ten (10) ha of interior habitat that is at least 100 m from the forest edge (MNRF, 2012b). Those stands that lack evidence of recent disturbances (i.e., logging) are considered to be IWH. The potential for old-growth forest stands to occur within the HIWEC study area was identified during the Records Review.

A total of 139 forest features were identified within 120 m of the HIWEC location containing grouped coniferous, deciduous, and / or mixed forest communities. Of these, six (6) were identified as Candidate IWH, as these features are greater than 30 ha in size, contain mature long-lived species and are structurally complex. All of these features are located within 120 m of an access road or overlapped by the HIWEC location and were therefore carried forward to the EOI as Candidate IWH (**Table 3-15**). The locations of these features are shown on **Figure 3-5k**.

Table 3-13: Precambrian Rock Barren

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
RB-001	Treed Rock Barren (RBT)	1.6 ha in size	May provide specialized plant and wildlife habitat.	0 (transmission line in feature)	All of these features are open, shrub or treed rock barren communities with a combined area greater than one (1) hectare in size.
RB-002	Acidic Shrub Rock Barren Ecosite (RBS3), Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	1.5 ha in size		0 (transmission line in feature)	
RB-004	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	4.6 ha in size; feature identified through Alternative Site Investigation		20 (access road and collector line)	
RB-007	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2), Dry Acidic Open Rock Barren (RBO3-1), Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	131.8 ha in size		0 (access road and collector line in feature)	
RB-008	Dry Acidic Open Rock Barren Type (RBO3-1)	1.2 ha in size		0 (access road and collector line, and transmission line in feature)	
RB-009	Treed Rock Barren (RBT)	1.7 ha in size		0 (transmission line in feature)	
RB-010	Dry Acidic Open Rock Barren Type (RBO3-3); Acidic Treed Rock Barren Ecosite (RBT3)	9.2 ha in size		0 (access road and collector line, and transmission line in feature)	
RB-011	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	4.7 ha in size; feature identified through Alternative Site Investigation		16 (access road and collector line, and transmission line)	
RB-012	Dry Acidic Open Rock Barren Type (RBO3-1), Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	39.3 ha in size		0 (transformer station in feature)	
RB-013	Dry Acidic Open Rock Barren Type (RBO3-1)	1.5 ha in size		0 (access road and collector line, and transmission line in feature)	
RB-014	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2), Dry Acidic Open Rock Barren Type (RBO3-1)	7.2 ha in size		0 (access road and collector line, transmission line and transformer station in feature)	
RB-015	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	16.1 ha in size; feature identified through Alternative Site Investigation		53.1 (access road and collector line)	

Table 3-13: Precambrian Rock Barren

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
RB-016	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2); Acidic Treed Rock Barren (RBT3), Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	309.5 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
RB-017	Jack Pine Acidic Treed Rock Barren Type (RBT3-2); Dry Acidic Open Rock Barren Type (RBO3-1); Common Juniper Acidic Shrub Rock Barren Type (RBS3-2), Blueberry Acidic Shrub Rock Barren Type (RBS3-1)	568.8 ha in size		0 (WTG, WTG construction footprint, transmission line and transformer station in feature)	
RB-018	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	1.5 ha in size; feature identified through Alternative Site Investigation		102 (access road and collector line)	
RB-019	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	27.1 ha in size		0 (WTG, WTG construction footprint, access road and collector line, and meteorological tower in feature)	
RB-020	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	15.9 ha in size; feature identified through Alternative Site Investigation		13 (WTG construction footprint) (95 from access road)	
RB-021	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	7.8 ha in size; feature identified through Alternative Site Investigation		89 (access road and collector line)	
RB-022	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2), Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	37.7 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
RB-023	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	4.0 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
RB-024	Open Rock Barren (RBO), Jack Pine Acidic Treed Rock Barren Type (RBT3-2), Dry Acidic Open Rock Barren Type (RBO3-1); Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	990.3 ha in size		0 (WTG, WTG construction footprint, access road and collector line, and meteorological tower in feature)	

Table 3-13: Precambrian Rock Barren

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
RB-025	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	2.2 ha in size		0 (WTG construction footprint, and access road and collector line in feature)	
RB-026	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	3.3 ha in size; feature identified through Alternative Site Investigation		5 (WTG construction footprint) (78 m from access road)	
RB-027	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2), Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	29.4 ha in size		0 (access road and collector line in feature)	
RB-029	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	28.4 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
RB-030	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	2.0 ha in size; feature identified through Alternative Site Investigation		96 (access road and collector line)	
RB-031	Jack Pine Acidic Treed Rock Barren Type (RBT3-2), Acidic Treed Rock Barren Type (RBT3), Dry Acidic Open Rock Barren Type (RBO3-1)	113.7 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
RB-033	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	1.2 ha in size; feature identified through Alternative Site Investigation		22 (WTG construction footprint) (108 from access road)	
RB-034	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	4.4 ha in size; feature identified through Alternative Site Investigation		78 (WTG construction footprint) (83 m from access road)	
RB-037	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	1.6 ha in size		0 (WTG construction footprint, and access road and collector line in feature)	
RB-038	Jack Pine Acidic Treed Rock Barren Type (RBT3-2), Dry Acidic Open Rock Barren Type (RBO3)	18.5 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
RB-040	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	2.1 ha in size; feature identified through Alternative Site Investigation		101 (access road and collector line)	

Table 3-13: Precambrian Rock Barren

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
RB-041	Dry Acidic Open Rock Barren Type (RBO3-1), Acidic Treed Rock Barren Type (RBT3)	11.2 ha in size		0 (access road and collector line in feature)	
RB-042	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	6.2 ha in size; feature identified through Alternative Site Investigation		19 (access road and collector line)	
RB-043	Dry Acidic Open Rock Barren Type (RBO3-1)	3.8 ha in size		0 (access road and collector line, and transmission line in feature)	
RB-044	Dry Acidic Open Rock Barren Type (RBO3-1)	2.7 ha in size		0 (access road and collector line, and transmission line in feature)	
RB-045	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	2.2 ha in size		0 (access road and collector line, and transmission line in feature)	
RB-046	Treed Rock Barren (RBT)	6.0 ha in size		0 (transmission line in feature)	
RB-048	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	50.5 ha in size		0 (WTG construction footprint, and access road and collector line in feature)	
RB-049	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	59.5 ha in size; feature identified through Alternative Site Investigation		0 (WTG, WTG construction footprint and access road and collector line in feature)	
RB-050	Blueberry Acidic Shrub Rock Barren Type (RBS3-1)	6.4 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
RB-051	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	1.5 ha in size		27 (access road and collector line)	
RB-052	Dry Acidic Open Rock Barren Type (RBO3-1)	1.9 ha in size		0 (access road and collector line in feature)	
RB-053	Jack Pine Acidic Treed Rock Barren Type (RBT3-2), Dry Acidic Open Rock Barren Type (RBO3-1)	16.9 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
RB-054	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	1.3 ha in size; feature identified through Alternative Site Investigation		37 (access road and collector line)	

Table 3-13: Precambrian Rock Barren

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
RB-055	Treed Rock Barren (RBT)	1.6 ha in size; feature identified through Alternative Site Investigation		58 (access road and collector line)	
RB-056	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	4.4 ha in size		0 (access road and collector line in feature)	
RB-057	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	35.7 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
RB-058	Blueberry Acidic Shrub Rock Barren Type (RBS3-1)	4.9 ha in size		0 (transmission line in feature)	
RB-059	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	45.4 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
RB-060	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	1.2 ha in size		0 (access road and collector line in feature)	
RB-061	Dry Acidic Open Rock Barren Type (RBO3-1)	13.3 ha in size		45 (access road and collector line)	
RB-062	Blueberry Acidic Shrub Rock Barren Type (RBS3-1), Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	17.7 ha in size		0 (WTG, WTG construction footprint, access road and collector line, transmission line and meteorological tower in feature)	
RB-063	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	26.9 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
RB-064	Treed Rock Barren Type (RBT)	1.5 ha in size; feature identified through Alternative Site Investigation		25 (access road and collector line)	
RB-065	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	1.6 ha in size; feature identified through Alternative Site Investigation		84 (access road and collector line)	
RB-066	Jack Pine Acidic Treed Rock Barren Type (RBT3-2), Dry Acidic Open Rock Barren Type (RBO3-1)	32.7 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	

Table 3-13: Precambrian Rock Barren

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
RB-069	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	1.2 ha in size; feature identified through Alternative Site Investigation		9 (WTG construction footprint) (65 m from access road)	
RB-070	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	2.7 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
RB-071	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	739.1 ha in size		0 (WTG, WTG construction footprint, access road and collector line, transmission line and transformer station in feature)	
RB-072	Dry Acidic Open Rock Barren Type (RBO3-1)	225.1 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
RB-073	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2), Blueberry acidic Shrub Rock Barren Type (RBS3-1)	7.7 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
RB-074	Blueberry Acidic Shrub Rock Barren Type (RBS3-1)	3.0 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
RB-075	Blueberry Acidic Shrub Rock Barren Type (RBS3-1)	4.0 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
RB-076	Dry Acidic Open Rock Barren Type(RBO3-1); Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	23.7 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
RB-078	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	42.2 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
RB-079	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	2.6 ha in size; feature identified through Alternative Site Investigation		0 (WTG construction footprint in feature)	
RB-080	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	6.3 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
RB-081	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	6.3 ha in size		0 (access road and collector line in feature)	

Table 3-13: Precambrian Rock Barren

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
RB-082	Jack Pine Acidic Treed Rock Barren Type (RBT3-2), Dry Acidic Open Rock Barren Type (RBO3-1)	47.0 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
RB-083	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	43.8 ha in size		0 (WTG construction footprint, and access road and collector line in feature)	
RB-084	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2), Dry Acidic Open Rock Barren Type (RBO3-1)	55.6 ha in size		0 (WTG, WTG construction footprint, access road and collector line, and meteorological tower in feature)	
RB-086	Jack Pine Acidic Treed Rock Barren Type (RBT3-2), Blueberry Acidic Shrub Rock Barren Type (RBS3-1)	8.4 ha in size		0 (WTG and WTG construction footprint in feature)	
RB-088	Jack Pine Acidic Treed Rock Barren Type (RBT3-2), Blueberry Acidic Shrub Rock Barren Type (RBS3-1)	104.3 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
RB-089	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	41.6 ha in size; feature identified through Alternative Site Investigation		0 (WTG construction footprint, and access road and collector line in feature)	
RB-090	Dry Acidic Open Rock Barren Type (RBO3-1)	31.8 ha in size		0 (access road and collector line in feature)	
RB-091	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2), Dry Acidic Open Rock Barren Type (RBO3-1)	55.2 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
RB-092	Dry Acidic Open Rock Barren Type (RBO3-1)	1.6 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
RB-093	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	2.9 ha in size		8 (WTG construction footprint) (72 m from access road)	
RB-094	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	14.8 ha in size; feature identified through Alternative Site Investigation		0 (WTG and WTG construction footprint in feature)	
RB-095	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	60.8 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	

Table 3-13: Precambrian Rock Barren

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
RB-096	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	10.9 ha in size		0 (WTG construction footprint in feature)	
RB-097	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	5.9 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
RB-098	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	1.1 ha in size; feature identified through Alternative Site Investigation		0 (transmission line in feature)	
RB-125	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	1.2 ha in size; feature identified through Alternative Site Investigation		28 (WTG construction footprint) (104 m from access road)	
RB-130	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	1.1 ha in size; feature identified through Alternative Site Investigation		6 (WTG construction footprint) (104 m from access road)	
Generalized Candidate IWH	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	A total of two (2) features consisting of rock barren vegetation communities and greater than one (1) ha in size; identified through Alternative Site Investigation.		Varies; all greater than 120 m from access road and not overlapped by HIWEC infrastructure.	

Table 3-14: Sand Barren

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
SNB-001	Dry Bracken Fern Forb Sand Barren Type (SBO1-1)	Contains shallow sandy substrates and characteristic flora including Sweetfern.	May provide specialized habitat for plants and animals.	0 (access road and collector line in feature)	All of these features contain characteristic flora of sand barren communities and have sandy substrate.
SNB-002	Shrub Sand Barren (SBS1)	Contains sandy substrates and characteristic flora including Sweetfern and Reindeer Lichens.		0 (transmission line in feature)	

Table 3-15: Old-growth Forest

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
FO-001	Coniferous Forest (FOC), Deciduous Forest (FOD), Fresh – Moist Poplar Deciduous Forest Type (FOD8-1), Fresh – Moist Sugar Maple – Hardwood Deciduous Forest Type (FOD6-5), Mixed Forest (FOM) and Fresh – Moist Hemlock Mixed Forest (FOM6)	178.6 ha in size; feature identified through Alternative Site Investigation	Storage of carbon, water filtration, and capture of nitrogen. May also provide habitat for diverse plant and animal communities.	0 (transmission line in feature)	All of these features are greater than 30 ha in size and may contain old-growth forests.
FO-002	Coniferous Forest (FOC), Dry – Fresh White Pine – Red Pine Coniferous Forest (FOC1-2), Deciduous Forest (FOD), Mixed Forest (FOM), Dry – Fresh Poplar Mixed Forest Type (FOM5-2) and Fresh – Moist Poplar Mixed Forest Type (FOM8-1)	60.8 ha in size; feature identified through Alternative Site Investigation		0 (access road and collector line in feature)	
FO-006	Fresh – Moist Poplar Deciduous Forest Type (FOD8-1), Dry – Fresh Pine Coniferous Forest Ecosite (FOC1) and Mixed Forest (FOM)	97.9 ha in size; feature identified through Alternative Site Investigation		12 (access road and collector line)	
FO-057	Dry – Fresh White Pine – Oak Mixed Forest Type (FOM2-1)	32.8 ha in size; has the characteristics of a mature forest		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
FO-061	Dry – Fresh White Pine – Red Pine Coniferous Forest Type(FOC1-2), Fresh – Moist White Cedar – Balsam Fir Coniferous Forest Type (FOC4-3), Dry – Fresh Deciduous Forest Ecosite (FOD4), Dry – Fresh White Birch Mixed Forest Type (FOM5-1) and Fresh – Moist Hemlock – Hardwood Mixed Forest Type (FOM6-2)	80.8 ha in size; has the characteristics of a mature forest		0 (WTG, WTG construction footprint, access road and collector line, transformer station and transmission line in feature)	
FO-138	Dry – Fresh Pine Coniferous Forest Ecosite (FOC1) and Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOC1-2)	71.9 ha in size; feature identified through Alternative Site Investigation		0 (WTG, WTG construction footprint, and access road and collector line in feature)	

3.7.6 Bog

Bogs are nutrient poor, acid peatlands that are dominated by peat mosses (e.g., Sphagnum moss), ericaceous shrubs, and sedges. The water table is at or near the surface in the spring, and slightly lower during the remainder of the year (MNRF, 2012b). Bogs are a fairly rare vegetation community in Ecoregion 5E but are abundant in the HIWEC study area, and a bog of any size is considered to be IWH. The potential for bogs to occur within the HIWEC study area was identified during the Records Review.

A total of 78 bog communities were identified within 120 m of the HIWEC location during the Site Investigation (**Table 3-16**). Of these, 70 were identified as Candidate IWH, as these features are located within 120 m of a proposed access road or are overlapped by other HIWEC components and were carried forward to the EOI. Eight (8) of the bog communities were identified as Generalized Candidate IWH, as these features are located more than 120 m away from an access road, but are still within 120 m of the HIWEC location; these were also carried forward to EOI. The locations of these features are shown on **Figure 3-5I**.

3.7.7 Rare Forests (Red Spruce and White Oak)

Red Spruce is a valued wildlife cover tree. Historically, red spruce was much more abundant; however, stands containing the species within Ecoregion 5E are now considered rare (MNRF, 2012b). Red Spruce is a shade-tolerant conifer that grows best in a cool, moist climate. It will grow in shallow till soils (average soil depth of 0.46 m) and may grow on sites unfavourable for other species, such as those characterized by organic soils over rock, steeper slopes, and wet bottomlands (although poorly drained sites will inhibit growth). Any forest stand made up of 10% Red Spruce or greater is considered IWH, and stands may be of any size (MNRF, 2012b). The potential for Red Spruce forests to occur within the HIWEC study area was identified during the Records Review.

White Oak is a valued wildlife mast producing tree, and the mast produced by the White Oak tree is often preferred over the more common Red Oak acorn (MNRF, 2012b). Stands containing White Oak trees are rare in Ecoregion 5E, and any forest stand made up of 10% White Oak or greater, regardless of the size, is considered IWH (MNRF, 2012b). The potential for White Oak forests to occur within the HIWEC study area was identified during the Records Review.

No rare forest species (Red Spruce or White Oak) were recorded within the HIWEC study area in 2013 (AECOM, 2015a) or during the Site Investigation; therefore, this IWH type was not carried forward to the EOI.

Table 3-16: Bogs

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
BO-001	Treed Bog Ecosite (BOT1)	1.4 ha in size; feature identified through Alternative Site Investigation.	May provide specialized habitat to plants and animals	1 (WTG construction footprint) (79 m from access road)	All of these features contain the characteristic flora and substrate of bogs
BO-002	Treed Bog (BOT)	0.3 ha in size; feature identified through Alternative Site Investigation.		103 (access road and collector line)	
BO-003	Treed Bog (BOT)	1.2 ha in size; feature identified through Alternative Site Investigation.		6 (access road and collector line)	
BO-004	Treed Bog (BOT)	1.1 ha in size; feature identified through Alternative Site Investigation.		29 (access road and collector line)	
BO-006	Treed Bog (BOT)	1.3 ha in size; feature identified through Alternative Site Investigation.		23 (access road and collector line)	
BO-007	Treed Bog (BOT)	1.0 ha in size; feature identified through Alternative Site Investigation.		6 (access road and collector line)	
BO-008	Treed Bog (BOT)	3.2 ha in size; feature identified through Alternative Site Investigation.		42 (access road and collector line, and transmission line)	
BO-009	Treed Bog (BOT)	0.6 ha in size; feature identified through Alternative Site Investigation.		20 (access road and collector line, and transmission line)	
BO-010	Black Spruce Treed Bog Type (BOT1-1)	1.7 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
BO-011	Treed Bog (BOT)	0.3 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	

Table 3-16: Bogs

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
BO-012	Black Spruce Treed Bog Type (BOT1-1)	0.2 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
BO-013	Treed Bog (BOT)	0.1 ha in size		0 (WTG and WTG construction footprint in feature)	
BO-014	Black Spruce Treed Bog Type (BOT1-1)	0.2 ha in size		0 (WTG and WTG construction footprint in feature)	
BO-015	Black Spruce Treed Bog Type (BOT1-1)	0.7 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
BO-016	Leatherleaf Shrub Bog Type (BOS1-1)	1.2 ha in size		0 (WTG and WTG construction footprint in feature)	
BO-017	Black Spruce Treed Bog (BOT1-1)	0.5 ha in size		0 (WTG construction footprint in feature)	
BO-018	Black Spruce Treed Bog Type (BOT1-1)	1.1 ha in size		0 (access road and collector line, and transmission line in feature)	
BO-019	Leatherleaf Shrub Bog Type (BOS1-1)	0.04 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
BO-020	Leatherleaf Shrub Bog Type (BOS1-1)	0.1 ha in size		0 (WTG and WTG construction footprint in feature)	
BO-021	Leatherleaf Shrub Bog Type (BOS1-1)	2.6 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
BO-022	Black Spruce Treed Bog Type (BOT1-1)	6.0 ha in size		0 (access road and collector line in feature)	
BO-023	Black Spruce Treed Bog Type (BOT1-1)	2.0 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
BO-024	Black Spruce Treed Bog Type (BOT1-1)	1.4 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
BO-025	Black Spruce Treed Bog Type (BOT1-1)	0.2 ha in size		0 (access road and collector line in feature)	

Table 3-16: Bogs

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
BO-026	Black Spruce Treed Bog Type (BOT1-1)	6.1 ha in size		0 (access road and collector line in feature)	
BO-027	Black Spruce Treed Bog Type(BOT1-1)	2.1 ha in size		0 (access road and collector line in feature)	
BO-030	Black Spruce Treed Bog Type (BOT1-1)	4.4 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
BO-031	Black Spruce Treed Bog Type (BOT1-1)	3.2 ha in size		0 (access road and collector line in feature)	
BO-032	Few-seeded Sedge open Bog Type (BOO1-1)	0.4 ha in size		0 (transmission line in feature)	
BO-033	Leatherleaf Shrub Bog Type (BOS1-1)	0.4 ha in size		0 (transmission line in feature)	
BO-034	Few-seeded Sedge open Bog Type (BOO1-1)	2.7 ha in size		0 (access road and collector line in feature)	
BO-035	Treed Bog Ecosite (BOT1)	0.6 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
BO-037	Leatherleaf Shrub Bog Type (BOS1-1)	0.6 ha in size		0 (WTG and WTG construction footprint in feature)	
BO-038	Treed Bog Ecosite (BOT1)	0.5 ha in size; feature identified through Alternative Site Investigation.		0 (access road and collector line in feature)	
BO-039	Treed Bog (BOT)	1.6 ha in size; feature identified through Alternative Site Investigation.		4 (WTG construction footprint) 47 m from access road)	
BO-040	Treed Bog (BOT)	1.8 ha in size; feature identified through Alternative Site Investigation.		19 (access road and collector line)	
BO-041	Cotton-grass Open Bog Type(BOO1-2)	1.8 ha in size; feature identified through Alternative Site Investigation.		0 (WTG construction footprint in feature)	

Table 3-16: Bogs

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
BO-042	Treed Bog Ecosite (BOT1)	0.5 ha in size; feature identified through Alternative Site Investigation.		0 (WTG and WTG construction footprint in feature)	
BO-043	Treed Bog Ecosite (BOT1)	0.6 ha in size; feature identified through Alternative Site Investigation.		0 (access road and collector line in feature)	
BO-044	Open Bog Ecosite (BOO1)	0.3 ha in size; feature identified through Alternative Site Investigation.		0 (WTG and WTG construction footprint in feature)	
BO-045	Treed Bog Ecosite (BOT1)	0.1 ha in size; feature identified through Alternative Site Investigation.		0 (WTG and WTG construction footprint in feature)	
BO-046	Treed Bog Ecosite (BOT1)	0.4 ha in size; feature identified through Alternative Site Investigation.		0 (WTG construction footprint, and access road and collector line in feature)	
BO-047	Treed Bog Ecosite (BOT1)	0.02 ha in size; feature identified through Alternative Site Investigation.		0 (WTG construction footprint in feature) (65 m from access road)	
BO-048	Leatherleaf Shrub Bog Type (BOS1-1)	0.2 ha in size; feature identified through Alternative Site Investigation.		53 (access road and collector line)	
BO-049	Leatherleaf Shrub Bog Type (BOS1-1)	0.1 ha in size; feature identified through Alternative Site Investigation.		0 (WTG construction footprint in feature)	
BO-050	Cotton-grass Open Bog Type (BOO1-2)	0.1 ha in size; feature identified through Alternative Site Investigation.		0 (WTG and WTG construction footprint in feature)	

Table 3-16: Bogs

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
BO-051	Black Spruce Treed Bog Type (BOT1-1)	0.2 ha in size; feature identified through Alternative Site Investigation.		0 (access road and collector line in feature)	
BO-052	Treed Bog (BOT)	0.8 ha in size; feature identified through Alternative Site Investigation.		0 (WTG construction footprint in feature)	
BO-053	Treed Bog (BOT)	0.2 ha in size; feature identified through Alternative Site Investigation.		27 (WTG construction footprint) (91 m from access road)	
BO-054	Treed Bog (BOT)	0.3 ha in size; feature identified through Alternative Site Investigation.		69 (access road and collector line)	
BO-055	Shrub Bog (BOS)	1.0 ha in size; feature identified through Alternative Site Investigation.		2 (access road and collector line)	
BO-056	Treed Bog Ecosite (BOT1)	0.4 ha in size; feature identified through Alternative Site Investigation.		27 (access road and collector line)	
BO-057	Treed Bog Ecosite (BOT1)	0.2 ha in size		0 (WTG and WTG construction footprint in feature)	
BO-058	Treed Bog Ecosite (BOT1)	1.4 ha in size		0 (WTG and WTG construction footprint in feature)	
BO-059	Treed Bog Ecosite (BOT1)	0.8 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
BO-060	Treed Bog Ecosite (BOT1)	0.8 ha in size		0 (WTG and WTG construction footprint in feature)	
BO-061	Treed Bog Ecosite (BOT1)	1.1 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	

Table 3-16: Bogs

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
BO-062	Treed Bog Ecosite (BOT1)	0.3 ha in size		0 (WTG and WTG construction footprint in feature)	
BO-063	Cotton-grass Open Bog Type(BOO1-2)	0.4 ha in size		0 (WTG and WTG construction footprint in feature)	
BO-064	Treed Bog Ecosite (BOT1)	0.1 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
BO-065	Treed Bog Ecosite (BOT1)	0.4 ha in size		0 (access road and collector line in feature)	
BO-066	Treed Bog (BOT)	1.0 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
BO-067	Treed Bog Ecosite (BOT1)	1.5 ha in size		0 (access road and collector line in feature)	
BO-068	Leatherleaf Shrub Bog Type (BOS1-1)	1.0 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
BO-069	Leatherleaf Shrub Bog Type (BOS1-1)	0.4 ha in size		0 (WTG, WTG construction footprint and access road and collector line in feature)	
BO-070	Treed Bog Ecosite (BOT1)	0.3 ha in size		0 (WTG and WTG construction footprint in feature)	
BO-071	Few-seeded Sedge open Bog Type (BOO1-1)	0.1 ha in size		0 (WTG and WTG construction footprint in feature)	
BO-072	Few-seeded Sedge open Bog Type (BOO1-1)	0.3 ha in size		0 (access road and collector line in feature)	
BO-073	Treed Bog (BOT)	3.4 ha in size; feature identified through Alternative Site Investigation		55 (WTG construction footprint) (100 m from access road)	
BO-074	Treed Bog (BOT)	0.4 ha in size; feature identified through Alternative Site Investigation		59 (WTG construction footprint) (65 m from access road)	
Generalized Candidate IWH	Bog (BO)	A total of eight (8) bog vegetation communities were identified		Varied; all greater than 120 m from access road not overlapped by HIWEC infrastructure.	

3.8 Specialized Habitats for Wildlife

Specialized habitats for wildlife are described in the *Significant Wildlife Habitat Technical Guide (SWHTG)* (MNRF, 2000) and *Draft Ecoregion 5E Criterion Schedule Addendum to the SWHTG* (MNRF, 2012b). The following specialized habitats for wildlife were identified as potentially occurring in the HIWEC study area through the Records Review and Site Investigation:

- Waterfowl Nesting Areas;
- Bald Eagle and Osprey Nesting, Foraging and Perching Habitat;
- Woodland Raptor Nesting Habitat;
- Turtle and Lizard Nesting Areas;
- Seeps and Springs;
- Aquatic Feeding Habitat;
- Mineral Licks;
- Denning Sites for Mink, Otter, Marten, Fisher and Eastern Wolf;
- Amphibian Breeding Habitat (Woodland and Wetland); and
- Mast Producing Areas.

A description of the Site Investigation results pertaining to each of these types of specialized habitats for wildlife follows. The boundaries of IWH features were mapped in accordance with MNRF guidance (2012b), including buffer areas to be included as part of the feature for some IWH types.

3.8.1 Waterfowl Nesting Areas

Waterfowl nesting areas are typically located in upland vegetation communities composed of grasses, sedges, rushes, trees and shrubs adjacent to wetland habitat with open standing water. Therefore, upland vegetation communities were considered to include any forest, cultural, swamp and / or thicket communities. Rock barren communities and coniferous swamps are generally not conducive to waterfowl nesting and were therefore not included as part of upland communities. Suitable wetland habitat was considered to include shallow water, marsh and open fen communities with the presence of shallow water and that are at least two (2) ha in size. To qualify as IWH, the surrounding upland habitat must be on average greater than 120 m in width to decrease nest predation (MNRF, 2012b), which is generally higher in upland habitat adjacent to wetlands. Upland areas that are adjacent to marshes might support nests of species such as Mallard, Blue-winged Teal, Green-winged Teal and American Black Duck. Treed areas with large cavity bearing trees including swamps might support nests of Wood Duck, Bufflehead or Hooded Merganser. The potential for nesting areas of American Black Duck, Blue-winged Teal, Green-winged Teal, Wood Duck, Hooded Merganser, Common Merganser, Red-breasted Merganser, Mallard, Canada Goose, American Widgeon, Bufflehead and Common Goldeneye to occur within the HIWEC study area was identified during the Records Review.

A total of 22 features were identified as potentially suitable waterfowl nesting areas within 120 of the HIWEC location. Of these, 21 features were identified as Candidate IWH and carried forward to the EOI because they occurred within 120 m of a WTG and / or were at least partially overlapped by the HIWEC location. The remaining one (1) feature was identified as Generalized Candidate IWH and was carried forward to the EOI because it occurred more than 120 m from a WTG and was not overlapped by other HIWEC components. **Table 3-17** provides a summary of the compositions, attributes and functions of each identified feature. The locations of these features are shown on **Figure 3-5m**.

Table 3-17: Waterfowl Nesting Areas

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
WFN-01	Upland communities include: <ul style="list-style-type: none"> Swamp thicket (SWT); Dry – Fresh Pine Coniferous Forest Ecosite (FOC1); Dry Jack Pine Coniferous Forest Type (FOC1-1); Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOC1-2); Dry – Fresh White Pine – Maple – Oak Mixed Forest Ecosite (FOM2); Red Maple – Conifer Organic Mixed Swamp Type (SWM5-1); Alder Organic Thicket Swamp Type (SWT3-1); Mountain Holly Organic Thicket Swamp Type (SWT3-8); and Alder Mineral Thicket Swamp Type (SWT2-1). 	Upland communities are adjacent to the following wetland communities: <ul style="list-style-type: none"> Open Fen Ecosite (FEO1); Shallow Water (SA); Shallow Marsh (MAS); and Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4). 	May provide potential nesting areas for waterfowl.	0 (access road and collector line, WTG, and WTG construction footprint in feature)	All of these features contain uplands that are at least 120 m wide and are adjacent to (i.e., within 120 m of) wetlands or complexes of smaller wetlands that are at least two (2) ha in size and have shallow water present.
WFN-02	Upland communities include: <ul style="list-style-type: none"> Swamp thicket (SWT); and Dry – Fresh Pine Coniferous Forest Ecosite (FOC1). 	Upland communities are adjacent to the following wetland communities: <ul style="list-style-type: none"> Open Fen Ecosite (FEO1); Shallow Water (SA); Shallow Marsh (MAS); Organic Meadow Marsh Ecosite (MAM3); Bluejoint Organic Meadow Marsh Type (MAM3-1); and Broad-leaved Sedge Organic Meadow Marsh Type (MAM3-6). 		0 (access road and collector line, WTG, and WTG construction footprint in feature)	
WFN-03	Upland communities include: <ul style="list-style-type: none"> Swamp thicket (SWT); Alder Mineral Thicket Swamp Type (SWT2-1); Alder Organic Thicket Swamp Type (SWT3-1); Deciduous Swamp (SWD); White Birch – Poplar Mineral Deciduous Swamp Type (SWD4-3); Birch – Poplar Organic Deciduous Swamp Ecosite (SWD7); 	Upland communities are adjacent to the following wetland communities: <ul style="list-style-type: none"> Open Fen (FEO1); Shallow Water (SA); Water Lily – Bullhead Lily Floating-leaved Shallow Aquatic Type (SAF1-1); Marsh (MA); Narrow-leaved Sedge Mineral Meadow Marsh Type (MAM2-5); Broad-leaved Sedge Mineral Meadow Marsh Type (MAM2-6); 		0 (access road and collector line, WTG, WTG construction footprint and transmission line in feature)	

Table 3-17: Waterfowl Nesting Areas

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
	<ul style="list-style-type: none"> ▪ Mixed Swamp (SWM); ▪ Red Maple – Conifer Mineral Mixed Swamp Type (SWM2-1); ▪ Dry – Fresh Pine Coniferous Forest Ecosite (FOC1); ▪ Mixed Forest (FOM); ▪ Poplar – Conifer Organic Mixed Swamp Type (SWM6-2); and ▪ Fresh – Moist Poplar Mixed Forest Type (FOM8-1). 	<ul style="list-style-type: none"> ▪ Organic Meadow Marsh Ecosite (MAM3); ▪ Narrow-leaved Sedge Organic Meadow Marsh Type (MAM3-5); ▪ Broad-leaved Sedge Mineral Shallow Marsh Type (MAS2-4); ▪ Shallow Water / Shrub Fen Moasic (SA / FES); and ▪ Organic Shallow Marsh Ecosite (MAS3). 			
WFN-06	<p>Upland communities include:</p> <ul style="list-style-type: none"> ▪ Deciduous Swamp (SWD); ▪ Black Ash Organic Deciduous Swamp Type (SWD5-1); ▪ Alder Mineral Thicket Swamp Type (SWT2-1); ▪ Buttonbush Mineral Thicket Swamp Type (SWT2-4); ▪ Meadowsweet Mineral Thicket Swamp Type (SWT2-6); ▪ Alder Organic Thicket Swamp Type (SWT3-1); ▪ Forest (FO); ▪ Coniferous Forest (FOC); ▪ Deciduous Forest (FOD); ▪ Fresh – Moist White Elm Lowland Deciduous Forest Type (FOD7-1); ▪ Fresh – Moist Ash Lowland Deciduous Forest Type (FOD7-2); ▪ Fresh – Moist Poplar Deciduous Forest Type (FOD8-1); ▪ Fresh – Moist Poplar – Sassafras Deciduous Forest Ecosite (FOD8); ▪ Mixed Forest (FOM); ▪ Dry – Fresh White Pine – Oak Mixed Forest Type (FOM2-1); ▪ Dry – Fresh Poplar Mixed Forest Type (FOM5-2); and ▪ Fresh – Moist Poplar Mixed Forest Type (FOM8-1). 	<p>Upland communities are adjacent to the following wetland communities:</p> <ul style="list-style-type: none"> ▪ Shallow Marsh (MAS); ▪ Organic Shallow Marsh (MAS3); ▪ Cattail Organic Shallow Marsh Type(MAS3-1); ▪ Cattail Mineral Shallow Marsh Type (MAS2-1); ▪ Organic Meadow Marsh Ecosite (MAM3); ▪ Bluejoint Organic Meadow Marsh Type (MAM3-1); ▪ Shallow Water (SA); and ▪ Duckweed Mixed Shallow Aquatic Type (SAM1-2). 		<p>0 (access road and collector line, and transmission line in feature)</p>	

Table 3-17: Waterfowl Nesting Areas

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
WFN-08	Upland communities include: <ul style="list-style-type: none"> ▪ Dry – Fresh Pine Coniferous Forest Ecosite (FOC1); ▪ Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOC1-2); ▪ White Birch – Poplar Mineral Deciduous Swamp Type (SWD4-3); ▪ Mixed Swamp (SWM); ▪ Mixed Forest (FOM); and ▪ Dry – Fresh White Pine – Oak Mixed Forest Type (FOM2-1). 	Upland communities are adjacent to the following wetland communities: <ul style="list-style-type: none"> ▪ Open Fen (FEO1); ▪ Shallow Water (SA); and ▪ Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4). 		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
WFN-09	Upland communities include: <ul style="list-style-type: none"> ▪ Deciduous Forest (FOD); ▪ Dry – Fresh Sugar Maple – Red Maple Deciduous Forest Type (FOD5-9); ▪ Fresh – Moist Sugar Maple – Hardwood Deciduous Forest Type (FOD6-5); ▪ Deciduous Swamp (SWD); ▪ Alder Mineral Thicket Swamp Type (SWT2-1); and ▪ Alder Organic Thicket Swamp Type (SWT3-1). 	Upland communities are adjacent to the following wetland communities: <ul style="list-style-type: none"> ▪ Open Fen Ecosite (FEO1). 		0 (access road and collector line, and WTG construction footprint in feature)	
WFN-11	Upland communities include: <ul style="list-style-type: none"> ▪ Alder Mineral Thicket Swamp Type (SWT2-1); and ▪ Fresh – Moist White Birch Mixed Forest Type (FOM8-2). 	Upland communities are adjacent to the following wetland communities: <ul style="list-style-type: none"> ▪ Shallow Water (SA); and ▪ Broad-leaved Sedge Mineral Shallow Marsh Type (MAS2-4). 		0 (WTG construction footprint and access road and collector line in feature)	
WFN-14	Upland communities include: <ul style="list-style-type: none"> ▪ Coniferous Forest (FOC); ▪ Dry – Fresh Oak – Red Maple Deciduous Forest (FOD2-1); ▪ Dry – Fresh Poplar Deciduous Forest (FOD3-1); ▪ Dry – Fresh Deciduous Forest (FOD4); ▪ Dry – Fresh Sugar Maple – Beech Deciduous Forest (FOD5-2); ▪ Dry – Fresh Sugar Maple – Red Maple Deciduous Forest (FOD5-9); 	Upland communities are adjacent to the following wetland communities: <ul style="list-style-type: none"> ▪ Open Fen (FEO1); ▪ Slender Sedge Open Fen (FEO1-2); ▪ Beaked Sedge Open Fen (FEO1-5); ▪ Meadow Marsh (MAM); ▪ Organic Meadow Marsh (MAM3); ▪ Broad-leaved Sedge Organic Meadow Marsh (MAM3-6); ▪ Organic Shallow Marsh (MAS3); ▪ Shallow Water (SA); and 		0 (access road and collector line, WTG and WTG construction footprint in feature)	

Table 3-17: Waterfowl Nesting Areas

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
	<ul style="list-style-type: none"> ▪ Mixed Forest (FOM); ▪ Deciduous Swamp (SWD); ▪ Black Ash Mineral Deciduous Swamp (SWD2-1); ▪ Red Maple Mineral Deciduous Swamp (SWD3-1); ▪ Black Ash Organic Deciduous Swamp (SWD5-1); ▪ Mixed Swamp (SWM); ▪ Thicket Swamp (SWT); ▪ Alder Mineral Thicket Swamp (SWT2-1); and ▪ Alder Organic Thicket Swamp (SWT3-1). 	<ul style="list-style-type: none"> ▪ Floating-leaved Shallow Aquatic (SAF1). 			
WFN-15	<p>Upland communities include:</p> <ul style="list-style-type: none"> ▪ Dry – Fresh White Birch Mixed Forest Type (FOM5-1); ▪ Deciduous Swamp (SWD); ▪ Thicket Swamp (SWT); and ▪ Mixed Swamp (SWM). 	<p>Upland communities are adjacent to the following wetland communities:</p> <ul style="list-style-type: none"> ▪ Meadow Marsh (MAM); and ▪ Shallow Water (SA). 		0 (WTG and WTG construction footprint in feature)	
WFN-16	<p>Upland communities include:</p> <ul style="list-style-type: none"> ▪ Dry – Fresh Pine Coniferous Forest (FOC1); ▪ Mixed Forest (FOM); ▪ Dry – Fresh White Birch – Poplar – Conifer Mixed Forest Ecosite (FOM5); ▪ Dry – Fresh Poplar Mixed Forest Type (FOM5-2); ▪ Fresh – Moist White Cedar – Hardwood Mixed Forest Type(FOM7-2); and ▪ Deciduous Swamp (SWD). 	<p>Upland communities are adjacent to the following wetland communities:</p> <ul style="list-style-type: none"> ▪ Open Fen Ecosite (FEO1); ▪ Meadow Marsh (MAM); and ▪ Shallow Water (SA). 		0 (access road and collector line, and transformer station in feature)	
WFN-17	<p>Upland communities include:</p> <ul style="list-style-type: none"> ▪ Fresh – Moist Hemlock – Hardwood Mixed Forest Type (FOM6-2); ▪ Fresh – Moist Poplar Mixed Forest Type (FOM8-1); ▪ Black Ash Mineral Deciduous Swamp Type (SWD2-1); ▪ Black Ash Organic Deciduous Swamp Type (SWD5-1);and ▪ Alder Mineral Thicket Swamp Type (SWT2-1). 	<p>Upland communities are adjacent to the following wetland communities:</p> <ul style="list-style-type: none"> ▪ Meadow Marsh (MAM); and ▪ Forb Mineral Meadow Marsh Type (MAM2-10). 		0 (access road and collector line, and transmission line in feature)	

Table 3-17: Waterfowl Nesting Areas

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
WFN-20	Upland communities include: <ul style="list-style-type: none"> ▪ Fresh – Moist Poplar Deciduous Forest Type (FOD8-1); ▪ Dry – Fresh White Birch – Poplar – Conifer Mixed Forest Ecosite (FOM5); and ▪ Fresh – Moist Hemlock Mixed Forest Ecosite (FOM6). 	Upland communities are adjacent to the following wetland communities: <ul style="list-style-type: none"> ▪ Open Fen Ecosite (FEO1); ▪ Shallow Marsh (MAS); and ▪ Submerged Shallow Aquatic Ecosite (SAS1). 		0 (transmission line in feature)	
WFN-21	Upland communities include: <ul style="list-style-type: none"> ▪ Dry – Fresh Poplar Deciduous Forest Type (FOD3-1); ▪ Fresh – Moist Poplar Deciduous Forest Type (FOD8-1); ▪ Fresh – Moist Poplar Mixed Forest Type (FOM8-1); and ▪ Alder Mineral Thicket Swamp Type (SWT2-1). 	Upland communities are adjacent to the following wetland communities: <ul style="list-style-type: none"> ▪ Open Fen Ecosite (FEO1); ▪ Meadow Marsh (MAM); ▪ Organic Meadow Marsh Ecosite (MAM3); ▪ Bluejoint Organic Meadow Marsh Type (MAM3-1); ▪ Shallow Marsh (MAS); ▪ Organic Shallow Marsh Ecosite (MAS3); ▪ Cattail Organic Shallow Marsh Type (MAS3-1); ▪ Shallow Water (SA); and ▪ Pondweed Mixed Shallow Aquatic Type (SAM1-4). 		0 (access road and collector line, WTG and WTG construction footprint in feature)	
WFN-22	Upland communities include: <ul style="list-style-type: none"> ▪ Mixed Forest (FOM); and ▪ Dry – Fresh White Birch Mixed Forest Type (FOM5-1). 	Upland communities are adjacent to the following wetland communities: <ul style="list-style-type: none"> ▪ Open Fen Ecosite (FEO1). 		2 (WTG construction footprint in feature) (43 m from WTG)	
WFN-23	Upland communities include: <ul style="list-style-type: none"> ▪ Coniferous Forest (FOC); ▪ Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOC1-2); ▪ Deciduous Forest (FOD); ▪ Mixed Forest (FOM); ▪ Dry – Fresh Poplar Mixed Forest Type (FOM5-2); ▪ Fresh – Moist Poplar Mixed Forest Type (FOM8-1); and ▪ White Cedar – Hardwood Mineral Mixed Swamp Type (SWM1-1). 	Upland communities are adjacent to the following wetland communities: <ul style="list-style-type: none"> ▪ Meadow Marsh (MAM); and ▪ Shallow Water (SA). 		0 (access road and collector line in feature)	

Table 3-17: Waterfowl Nesting Areas

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
WFN-25	Upland communities include: <ul style="list-style-type: none"> ▪ Dry Jack Pine Coniferous Forest Type (FOC1-1); ▪ Mixed Forest (FOM); ▪ Dry – Fresh Poplar Mixed Forest Type (FOM5-2); ▪ Black Ash Mineral Deciduous Swamp Type (SWD2-1); ▪ Red Maple Mineral Deciduous Swamp Type (SWD3-1); and ▪ Alder Mineral Thicket Swamp Type (SWT2-1). 	Upland communities are adjacent to the following wetland communities: <ul style="list-style-type: none"> ▪ Open Fen (FEO); ▪ Meadow Marsh (MAM); and ▪ Organic Shallow Marsh Ecosite (MAS3). 		0 (access road and collector line, WTG and WTG construction footprint in feature)	
WFN-26	Upland communities include: <ul style="list-style-type: none"> ▪ Deciduous Forest (FOD); ▪ Dry – Fresh Poplar Deciduous Forest Type (FOD3-1); ▪ Dry – Fresh Sugar Maple – White Birch – Poplar Deciduous Forest Type (FOD5-10); ▪ Mixed Forest (FOM); ▪ Dry – Fresh White Pine – Oak Mixed Forest Type (FOM2-1); ▪ Dry – Fresh White Pine – Maple – Oak Mixed Forest Ecosite (FOM2); and ▪ Birch – Conifer Mineral Mixed Swamp Type (SWM3-1). 	Upland communities are adjacent to the following wetland communities: <ul style="list-style-type: none"> ▪ Organic Shallow Marsh Ecosite (MAS3). 		0 (transmission line in feature)	
WFN-27	Upland communities include: <ul style="list-style-type: none"> ▪ Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOC1-2); ▪ Dry – Fresh Poplar Deciduous Forest Type (FOD3-1); ▪ Dry – Fresh White Birch Deciduous Forest Type (FOD3-2); ▪ Dry – Fresh Sugar Maple Deciduous Forest Ecosite (FOD5); ▪ Red Maple Organic Deciduous Swamp Type (SWD6-1); ▪ Red Maple – Conifer Mineral Mixed Swamp Type (SWM2-1); 	Upland communities are adjacent to the following wetland communities: <ul style="list-style-type: none"> ▪ Cattail Organic Shallow Marsh Type (MAS3-1); ▪ Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4); and ▪ Beaked Sedge Open Fen Type (FEO1-5). 		0 (access road and collector line, WTG, WTG construction footprint and transmission line in feature)	

Table 3-17: Waterfowl Nesting Areas

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
	<ul style="list-style-type: none"> ▪ Alder Mineral Thicket Swamp Type (SWT2-1); and ▪ Alder Organic Thicket Swamp Type (SWT3-1). 				
WFN-28	<p>Upland communities include:</p> <ul style="list-style-type: none"> ▪ Coniferous Forest (FOC); ▪ Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOC1-2); ▪ Dry – Fresh Poplar Deciduous Forest Type (FOD3-1); ▪ Dry – Fresh Deciduous Forest Ecosite (FOD4); ▪ Black Ash Mineral Deciduous Swamp Type (SWD2-1); ▪ Red Maple Mineral Deciduous Swamp Type (SWD3-1); ▪ Red Maple – Conifer Mineral Mixed Swamp Type (SWM2-1); ▪ Thicket Swamp (SWT); ▪ Alder Mineral Thicket Swamp Type (SWT2-1); and ▪ Alder Organic Thicket Swamp Type (SWT3-1). 	<p>Upland communities are adjacent to the following wetland communities:</p> <ul style="list-style-type: none"> ▪ Shallow Water (SA); ▪ Broad-leaved Sedge Organic Meadow Marsh Type (MAM3-6); and ▪ Narrow-leaved Sedge Organic Shallow Marsh Type (MAS3-3). 		0 (access road and collector line, WTG, WTG construction footprint and transmission line in feature)	
WFN-29	<p>Upland communities include:</p> <ul style="list-style-type: none"> ▪ Poplar – Conifer Organic Mixed Swamp Type (SWM6-2); ▪ Thicket Swamp (SWT); and ▪ Alder Mineral Thicket Swamp Type (SWT2-1). 	<p>Upland communities are adjacent to the following wetland communities:</p> <ul style="list-style-type: none"> ▪ Open Fen Ecosite (FEO1); ▪ Broad – leaved Sedge Organic Shallow Marsh Type (MAS3-4); and ▪ Shallow Water (SA). 		5 (WTG construction footprint) (48 m from WTG)	
WFN-36	<p>Upland communities include:</p> <ul style="list-style-type: none"> ▪ Mixed Swamp (SWM); ▪ Thicket Swamp (SWT); and ▪ Alder Mineral Thicket Swamp Type (SWT2-1). 	<p>Upland communities are adjacent to the following wetland communities:</p> <ul style="list-style-type: none"> ▪ Narrow-leaved Sedge Mineral Shallow Marsh Type (MAS2-3); and ▪ Shallow Water (SA). 		0 (WTG construction footprint in feature)	
Generalized Candidate IWH	A total of one (1) feature containing various upland communities was identified.	Upland communities are adjacent to various wetlands or wetland complexes that contain shallow water.		Greater than 120 m from a WTG and not overlapped by the HIWEC location.	

3.8.2 Bald Eagle and Osprey Nesting, Foraging and Perching Habitat

Osprey and Bald Eagle nest near open water where fish species are abundant. Nests are built in large trees, or in artificial structures, and can become very large as new material is added with each year. Osprey nests in Ontario are usually 9 m to 18 m from the ground (Wetmore and Gillespie, 1976) and are within 10 km of large lakes, marshes or productive foraging areas (Ewins, 1997). Ospreys prefer dead coniferous tree tops with unobstructed views and, as such, the majority of nests are found in mature, isolated trees, rather than groups of trees.

Most Bald Eagle nests are associated with large lakes. Bald Eagle nests are typically 15 m to 22 m from the ground and are often found in mature forest with discontinuous or open canopy, but may also be in isolated groups of trees. In Ontario, Bald Eagles show a preference for live trees and conifers, typically with a diameter-at-breast-height (DBH) of at least 60 cm. Bald Eagles choose trees with an unobstructed view and flight path. Both the Osprey and Bald Eagle may use their respective nests every year for decades. Both species prey on fish in clear, shallow water and therefore nesting habitats must be located near large water bodies that have large shallow areas with an abundance of fish.

According to the OBBA, there is confirmed breeding evidence for Osprey and Bald Eagle within and in the general vicinity of the HIWEC study area (BSC *et al.*, 2006). As described in the Records Review Report, both species and two (2) large stick nests were also recorded in 2013 in the HIWEC study area, and the MNRF Parry Sound District provided a map indicating the location of one (1) Osprey nest in the HIWEC study area. AECOM also completed three (3) aerial surveys on November 14, 2014, April 24 and May 13, 2015 within the HIWEC study area to identify new Bald Eagle or Osprey nests, if present, and confirm whether the nests identified through the Records Review were still present. The locations of all nest bowls and stick nests observed during the aerial surveys as well as Site Investigation field surveys completed in 2014 and 2015 were recorded. Bald Eagle and Osprey nests are usually conspicuous because of their large size and prominent locations since the birds prefer unobstructed views.

As described in the Records Review Report, no Bald Eagle nests were identified within the HIWEC study area in 2011, 2012 or 2013. Furthermore, no Bald Eagle nests were identified within 120 m of the HIWEC location during aerial surveys and Site Investigation field surveys completed by AECOM in 2014 and 2015.

All known records, both historical and recent, of Osprey nests located within 120 m of the HIWEC location were identified and mapped. Nests located more than 120 m from the HIWEC location, but still within the margin of error for GPS accuracy, were also identified. As described in **Section 3.6.8**, MNRF indicated the presence of an Osprey nest in the general location of Feature BIRD-07 where three (3) unoccupied Great Blue Heron stick nests were observed during Site Investigation surveys completed in 2015. In addition, Stantec identified an Osprey nest in the general location of Feature BIRD-01 where one (1) stick nest occupied by one (1) Great Blue Heron was observed during Site Investigation surveys completed in 2015. In both cases, it is presumed that these records of Osprey nests were actually Great Blue Heron nests and not Osprey nests.

A total of two (2) potential Osprey stick nests were identified within 120 m of the HIWEC location. The composition, attributes and functions of these features are summarized in **Table 3-18** and the locations are mapped on **Figures 3-5n**. In accordance with the *Draft Ecoregion 5E Criterion Schedule Addendum to the SWHTG* (MNRF, 2012b), a 300 m buffer was applied around the Osprey stick nest location identified for each feature in order to define the boundaries of each Candidate IWH feature. Minimum distances to the HIWEC location were measured from the edge of the 300 m buffer included as part of the feature. Neither of the nests are overlapped by the HIWEC location. However, after applying a 300 m buffer and including this as part of the feature (MNRF, 2012b), both features are overlapped by the HIWEC location and were therefore carried forward to the EOI as Candidate IWH.

Table 3-18: Bald Eagle and Osprey Nesting, Foraging and Perching Habitat

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m) ⁹	Rationale for carrying feature forward to EOI
BIRD-03	Stick nests located in Shallow Water (SA) community	An unoccupied stick nest, likely that of an Osprey, sitting in a crotch between a broken branch and a trunk of a dead tree in the middle of an active beaver pond. This stick nest was observed from an aerial survey conducted on May 13, 2015.	May provide nesting, foraging and perching habitat for Ospreys.	0 (WTG, WTG construction footprint, and access road and collector line in feature) (Nest is 105 m from WTG construction footprint)	Presence of stick nests that may be potentially suitable nesting habitats for Ospreys.
BIRD-13	Stick nest located in a Meadowsweet Mineral Thicket Swamp (SWT2-6) community	An unoccupied stick nest, likely that of an Osprey, sitting on top of a snag in a swamp with open water and patches of vegetation with an abundance of snags present, was observed during Site Investigation field studies conducted in 2015.		0 (WTG construction footprint, and access road and collector line in feature) (Nest is 25 m from access road and collector line)	

3.8.3 Woodland Raptor Nesting Habitat

Woodland raptors carry out their life cycles in forested habitats where they find shelter, build nests and hunt for prey. These species are sensitive to seemingly minor changes in habitat as they have specialized habitat requirements. Woodland raptors are very territorial and seldom nest closer than one (1) km to another of the same species. As a result, the species are highly sensitive to fragmentation because they require large tracts of forest cover. In addition, some woodland raptors can be intolerant of human activity which can result in disturbance to nests and ultimately may affect brood survival. The potential for nesting habitat of Red-tailed Hawk, Broad-winged Hawk, Sharp-shinned Hawk, Merlin, Barred Owl, Red-shouldered Hawk, Cooper’s Hawk and Northern Goshawk to occur within the HIWEC study area was identified through the Records Review.

Red-tailed Hawk is common in Ontario and nests in coniferous and deciduous forests with relatively open canopies that are near foraging areas such as grasslands, agricultural land and other open habitats (Preston and Beane, 2009).

The Broad-winged Hawk can be found nesting in continuous deciduous or mixed forests with canopy openings and water nearby. Nests are usually located in the first main crotch of a deciduous tree, or on a platform of horizontal branches against the trunk in a conifer (Goodrich, *et al.* 1996).

The Sharp-shinned Hawks’ secretive nature and tendency to nest within dense vegetation makes it a difficult species to detect during the breeding season. These hawks breed mainly in large stands of deciduous, coniferous and mixed pine-hardwood forests and pine plantations (Bildstein and Meyer, 2000).

Merlins nest in deciduous and coniferous forest openings and edges near watercourses, lakes and bogs. They tend to choose nest sites with unobstructed views of the surrounding areas (Warkentin *et al.*, 2005).

Barred Owl nests in mature or old-growth forests, including swamps, mixed forests and riparian areas. This species often builds nests in deciduous trees in cavities formed by disease, broken branches and snags, but it can also nest in smaller stick nests formed by hawks, crows, ravens or squirrel dens (Mazur and James, 2000).

9. In accordance with the Draft Ecoregion 5E Criterion Schedule Addendum to the SWHTG (MNR, 2012b), a 300 m buffer was applied to each point location where an Osprey nest was recorded. Minimum distances to the HIWEC location were measured from the edge of the 300 m buffer included as part of the habitat.

Northern Goshawks nest in a variety of tree species and woodland types, but in general will nest in close proximity to water (Bull and Hohmann, 1994), forest openings such as trails (Speiser and Bosakowski, 1987), and in large forested blocks (Cadman *et al.*, 2007).

The majority of the HIWEC study area is covered by extensive tracts of wooded areas that serve as potentially suitable nesting habitat for a variety of raptor species. As described in **Section 3.4**, total of 72 wooded areas were identified within 120 m of the HIWEC location which meet the habitat criteria for Woodland Raptor Nesting Habitat according to the *Draft Ecoregion 5E Criterion Schedule Addendum to the SWHTG* (MNR, 2012b). A description of the attributes, composition and function of each wooded area, as well as the minimum distance from each wooded area to the nearest HIWEC component is provided in **Table 3-3** in **Section 3.4** (refer to **Figures 3-4** for locations). Wooded areas wherein vegetation removal is proposed for HIWEC components were carried forward to the EOI as Candidate IWH, while the remaining wooded areas were carried forward to the EOI as Generalized Candidate IWH. Of the 72 identified wooded areas, a total of 44 were carried forward to the EOI as Candidate IWH, which include the following:

- WOOD-004;
- WOOD-005;
- WOOD-010;
- WOOD-013;
- WOOD-018;
- WOOD-020;
- WOOD-021;
- WOOD-023;
- WOOD-026;
- WOOD-030;
- WOOD-031;
- WOOD-034;
- WOOD-036;
- WOOD-038;
- WOOD-045;
- WOOD-047;
- WOOD-048;
- WOOD-050;
- WOOD-051;
- WOOD-058;
- WOOD-066;
- WOOD-070;
- WOOD-071;
- WOOD-074;
- WOOD-075;
- WOOD-076;
- WOOD-087;
- WOOD-088;
- WOOD-091;
- WOOD-093;
- WOOD-097;
- WOOD-101;
- WOOD-103;
- WOOD-107;
- WOOD-109;
- WOOD-111;
- WOOD-114;
- WOOD-127;
- WOOD-128;
- WOOD-129;
- WOOD-130;
- WOOD-131;
- WOOD-132; and
- WOOD-139.

3.8.4 Turtle and Lizard Nesting Areas

Larger beaches provide higher quality nesting habitat and reduce the chances of a nest being discovered by predators. In areas where sand and gravel beaches are limited or not available, small pockets of these beaches become essential for turtle nesting. Turtles typically nest in areas of coarse substrate (sand or gravel) in the general vicinity of ponds, marshes, lakes or other water bodies that support turtle populations. Ideal turtle nesting habitat is located within several hundred metres of a permanent water feature, is elevated to prevent the nest from being inundated, and consists of sand or sand mixed with gravel as these are light enough to allow turtles to dig out nests (MNR, 2012b). In addition, sand and gravel absorb heat from the sun which aids in incubating the eggs thus accelerating hatching. Nests will be laid in other soils if sand is not available, preferably exposed soils located on south or west facing slopes to maximize radiant heat. The immediate exposed sandy shorelines of ponds, where raised well above water level, can provide suitable nesting sites. The potential for nesting areas of Midland Painted Turtle, Northern Map Turtle and Snapping Turtle to occur within the HIWEC study area was identified during the Records Review. Field staff searched for suitable turtle nesting habitat (i.e., sand and / or gravel) during the Site Investigation. In addition, all meadow marsh vegetation communities identified within 120 m of the HIWEC location were assumed to contain suitable habitat for turtle nesting.

Five-lined Skinks use a variety of nesting sites to lay their eggs, such as beneath or within decaying logs, trees or stumps and beneath rocks. In the Great Lakes / St. Lawrence populations, nests are usually formed underneath

rock covers in small depressions of soil over rock substrates (COSEWIC, 2007d). The potential for nesting areas of Five-lined Skink to occur within the HIWEC study area was identified during the Records Review. Nesting sites may be found on the rock barrens which cover the majority of the HIWEC study area.

No Five-lined Skink nests were confirmed within the HIWEC study area. All rock barren vegetation communities were considered suitable habitat for lizard nesting; thus, lizard nesting habitat was assessed as part of Precambrian Rock Barren as described above in **Section 3.7.3**. A total of 86 Precambrian Rock Barren features were identified within the 120 m of the HIWEC location. A description of the attributes, composition and functions of each feature, as well as the minimum distance from each feature to the HIWEC location, is summarized in **Table 3-13** in **Section 3.7.3** (refer to **Figure 3-5j** for locations). All 89 identified Precambrian Rock Barren features are located within 120 m of an access road or overlapped by another HIWEC component and were therefore carried forward to the EOI as Candidate IWH.

The number of areas containing sandy substrate in the HIWEC study area is limited. Turtle nests were identified within the same shrub sand barren community, located within 120 m of the HIWEC location, in 2012 and 2013 (AECOM, 2015c). In 2012, a single (1) predated turtle nest belonging to Painted Turtle, Snapping Turtle or Blanding's Turtle was recorded. In 2013, between seven (7) and ten (10) predated nests belonging to Snapping Turtles and Painted Turtles were recorded in the same location. In accordance with the *Draft Ecoregion 5E Criterion Schedule Addendum to the SWHTG* (MNR, 2012b), a turtle nesting area feature consists of the nest site and a 100 m radius buffer. Minimum distances to the HIWEC location were measured from the edge of the 100 m buffer included as part of the feature. Therefore, both confirmed turtle nest locations are located within the same feature (TLN-001), which is overlapped by the HIWEC location and was carried forward to the EOI as Candidate IWH (refer to **Figure 3-5o** for location). In addition, 33 meadow marsh communities were identified within 120 m of the HIWEC location. Of these, 32 meadow marsh communities were identified within 120 m of an access road or are overlapped by other HIWEC infrastructure and were therefore carried forward to the EOI as Candidate IWH. The remaining meadow marsh community was carried forward to the EOI as Generalized Candidate IWH. The compositions, attributes and functions of these features, as well as minimum distance from each feature to the HIWEC location, are described in **Table 3-19**. The locations of these features are shown on **Figure 3-5o**.

3.8.5 Seeps and Springs

Seeps and springs, where groundwater comes to the surface, are often located at the source of coldwater streams and within headwater areas in forested habitats. Wildlife may rely on open water available at seeps and springs during the winter (MNR, 2012b). Seeps are also important for baseflow to streams thereby contributing to fish habitat, and may provide habitat for a number of specialized plant species. The potential for seeps and springs to occur within the HIWEC study area was identified during the Records Review.

A total of 11 locations were identified as possible seeps or springs during the Site Investigation, including field studies conducted for the Water Assessment and Water Bodies Report (AECOM, 2015d), based on evidence of iron precipitates, pooling or upwelling of water and / or the presence of seep indicator plant species, such as Watercress (*Nasturtium officinale*) or Skunk Cabbage (*Symplocarpus foetidus*). Although seeps and springs are often found within forest and swamp Ecosites, some of those observed during the Site Investigation were found within treed areas in Rock Barren Ecosites. Where a potential seep or spring feature was found, the habitat features was mapped as the entire forest or swamp Ecosite (MNR, 2012b). Of the 11 seep or spring sites, ten (10) were identified as Candidate IWH, as these features are overlapped by the HIWEC location and were carried forward to the EOI. The one (1) remaining location that was identified as a seep or spring is not overlapped by the HIWEC location and, as such, was identified as Generalized Candidate IWH and carried forward to the EOI. The compositions, attributes and functions of these features are summarized in **Table 3-20**. Refer to **Figure 3-5p** for the locations of these features.

Table 3-19: Turtle and Lizard Nesting Areas

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
TLN-001	Shrub Sand Barren Ecosite (SBS1)	0.8 ha in size. In 2012, a single (1) predated nest, belonging to Painted Turtle, Snapping Turtle or Blanding’s Turtle was observed. In 2013, seven (7) to ten (10) predated nests belonging to Snapping Turtles and Painted Turtles were observed.	Provides nesting habitat for turtles	0 (transmission line in feature)	Confirmed turtle nests present in a sand barren community.
TLN-002	Meadow Marsh (MAM)	0.4 ha in size; feature identified through Alternative Site Investigation	May provide nesting habitat for turtles.	0 (transmission line in feature) 77 m from access road	All of these features are meadow marsh communities which may contain turtle nesting habitat.
TLN-003	Meadow Marsh (MAM)	1.3 ha in size; feature identified through Alternative Site Investigation		17 (WTG construction footprint) 29 m from access road	
TLN-004	Meadow Marsh (MAM)	4.0 ha in size; feature identified through Alternative Site Investigation		22 (WTG construction footprint) 32 m from access road	
TLN-005	Meadow Marsh (MAM)	0.4 ha in size; feature identified through Alternative Site Investigation		13 (access road and collector line)	
TLN-006	Mixed Forb Mineral Meadow Marsh Type (MAM2-10)	0.3 ha in size		0 (transmission line in feature) 0 m from access road	
TLN-007	Meadow Marsh (MAM)	0.4 ha in size; feature identified through Alternative Site Investigation		9 (access road and collector line)	
TLN-008	Meadow Marsh (MAM)	5.7 ha in size; feature identified through Alternative Site Investigation		51 (access road and collector line)	
TLN-009	Organic Meadow Marsh Ecosite (MAM3)	7.3 ha in size; feature identified through Alternative Site Investigation		0 (WTG construction footprint in feature)	
TLN-010	Broad-leaved Sedge Organic Meadow Marsh Type (MAM3-6)	0.8 ha in size; feature identified through Alternative Site Investigation		9 (access road and collector line)	
TLN-011	Narrow-leaved Sedge Mineral Meadow Marsh Type (MAM2-5)	0.8 ha in size		0 (WTG construction footprint in feature)	

Table 3-19: Turtle and Lizard Nesting Areas

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
TLN-012	Narrow-leaved Sedge Mineral Meadow Marsh Type (MAM2-5)	3.0 ha in size		0 (access road and collector line in feature)	
TLN-014	Broad-leaved Sedge Mineral Meadow Marsh Type (MAM2-6)	14.6 ha in size		0 (WTG construction footprint, and access road and collector line in feature)	
TLN-015	Broad-leaved Sedge Organic Meadow Marsh Type (MAM3-6)	0.3 ha in size		0 (access road and collector line in feature)	
TLN-016	Broad-leaved Sedge Organic Meadow Marsh Type (MAM3-6)	1.3 ha in size		0 (WTG construction footprint in feature)	
TLN-017	Meadow Marsh (MAM)	1.5 ha in size; feature identified through Alternative Site Investigation		18 (access road and collector line)	
TLN-018	Meadow Marsh (MAM)	1.3 ha in size; feature identified through Alternative Site Investigation		17 (WTG construction footprint) (94 m from access road)	
TLN-019	Broad-leaved Sedge Organic Meadow Marsh Type (MAM3-6)	2.3 ha in size; feature identified through Alternative Site Investigation		10 (WTG construction footprint) (61 m from access road)	
TLN-020	Organic Meadow Marsh (MAM3)	0.3 ha in size; feature identified through Alternative Site Investigation		8 (access road and collector line)	
TLN-021	Meadow Marsh (MAM)	1.5 ha in size; feature identified through Alternative Site Investigation		25 (access road and collector line)	
TLN-022	Meadow Marsh (MAM)	0.7 ha in size; feature identified through Alternative Site Investigation		2 (access road and collector line)	
TLN-023	Meadow Marsh (MAM)	1.2 ha in size; feature identified through Alternative Site Investigation		10 (WTG construction footprint) (38 m from access road)	
TLN-024	Broad-leaved Sedge Organic Meadow Marsh Type (MAM3-6)	5.9 ha in size; feature identified through Alternative Site Investigation		31 (access road and collector line)	
TLN-025	Organic Meadow Marsh Type (MAM3)	1.1 ha in size; feature identified through Alternative Site Investigation		9 (WTG construction footprint) (51 m from access road)	
TLN-026	Organic Meadow Marsh Type (MAM3)	0.4 ha in size; feature identified through Alternative Site Investigation		101 (access road and collector line)	

Table 3-19: Turtle and Lizard Nesting Areas

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
TLN-027	Bluejoint Organic Meadow Marsh Type (MAM3-1)	0.2 ha in size; feature identified through Alternative Site Investigation		0 (WTG and WTG construction footprint in feature)	
TLN-028	Organic Meadow Marsh Ecosite (MAM3)	0.1 ha in size; feature identified through Alternative Site Investigation		0 (WTG construction footprint in feature)	
TLN-029	Meadow Marsh (MAM)	3.1 ha in size; feature identified through Alternative Site Investigation		22 (access road and collector line)	
TLN-031	Narrow-leaved Sedge Organic Meadow Marsh Type (MAM3-5)	3.3 ha in size		0 (WTG construction footprint in feature)	
TLN-033	Reed-canary Grass Mineral Meadow Marsh Type (MAM2-2)	1.8 ha in size		0 (access road and collector line in feature)	
TLN-034	Broad-leaved Sedge Mineral Meadow Marsh Type (MAM2-6)	6.5 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
TLN-037	Narrow-leaved Sedge Mineral Meadow Marsh Type (MAM2-5)	0.4 ha in size		0 (access road and collector line in feature)	
TLN-038	Narrow-leaved Sedge Mineral Meadow Marsh Type (MAM2-5)	1.2 ha in size		0 (access road and collector line in feature)	
TLN-039	Organic Meadow Marsh Ecosite (MAM3)	8.8 ha in size; feature identified through Alternative Site Investigation		0 (WTG construction footprint in feature)	
Generalized Candidate IWH	Meadow Marsh (MAM)	1.9 ha in size; feature identified through Alternative Site Investigation		Greater than 120 m from access road and not overlapped by the HIWEC location	

Table 3-20: Seeps and Springs

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
SS-001	Fresh-Moist Poplar Mixed Forest Type (FOM8-1)	Evidence of iron precipitates in small stream running into wetland.	Wildlife may rely on open water available at seeps and springs during the winter. Seeps are also important for baseflow to streams thereby contributing to fish habitat, and may provide habitat for a number of specialized plant species.	0 (access road and collector line in feature)	All of these features are potential seeps or springs.
SS-002	Fresh-Moist White Birch Mixed Forest Type (FOM8-2)	Evidence of iron precipitates in surface water.		0 (access road and collector line in feature)	
SS-003	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	Evidence of iron precipitate on watercourse substrate.		0 (access road and collector line in feature)	
SS-004	Fresh-Moist White Cedar-Hardwood Mixed Forest Type (FOM7-2)	Evidence of iron precipitate along watercourse banks.		0 (access road and collector line, and transformer station in feature)	
SS-005	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	Evidence of iron precipitate on watercourse substrate.		0 (WTG, transmission line, access road and collector line, and WTG construction footprint in feature)	
SS-006	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	Evidence of iron precipitate on the substrate and in the water of a small creek flowing from a forest through a breached beaver dam.		0 (access road and collector line, and transmission line in feature)	
SS-007	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	Presence of watercress, a seep indicator plant species.		0 (WTG, access road and collector line and WTG construction footprint in feature)	
SS-008	White Cedar – Conifer Organic Coniferous Swamp Type (SWC3-2)	Pool of clear water approximately 1 m by 2 m across and 30 cm deep with evidence of upwelling.		0 (access road and collector line in feature)	
SS-009	Dry-Fresh Poplar Mixed Forest Type (FOM5-2)	Evidence of iron precipitates in shallow standing water.		0 (transmission line, and access road and collector line in feature)	
SS-010	Dry-Fresh Poplar Deciduous Forest Type (FOD3-1)	Seep or spring observed.		0 (access road and collector line, and transmission Line in feature)	
Generalized Candidate IWH	Fresh-Moist Poplar Mixed Forest Type (FOM8-1)	Evidence of groundwater recharge; water flowing underground to stream.	63 (access road and collector line and transmission Line)		

3.8.6 Aquatic Feeding Habitat

Aquatic feeding habitats are an important habitat component for Moose and White-tailed Deer, as they supply important nutrients. These habitats may be found in all forested Ecosites adjacent to water. Wetlands or isolated embayments in rivers or lakes that provide an abundance of submerged aquatic vegetation, such as pondweeds, water milfoil, and lilies, are preferred sites and may be considered Candidate IWH. Adjacent stands of lowland conifer or mixed woods are beneficial for providing cover and shade (MNRF, 2012b). The potential for Aquatic Feeding Habitat to occur within the HIWEC study area was identified during the Records Review.

Aquatic feeding habitat for Moose and White-tailed Deer was considered to include conifer or mixed forest within 120 m of a wetland, where the wetland at the center of the feature consists of one (1) or multiple directly adjacent vegetation communities defined by the presence of standing water (i.e., open aquatic, shallow water, or shallow marsh). Wetlands that did not contain an abundance of submerged aquatic vegetation, such as pondweeds, water milfoil, and lilies, were excluded. A total of 36 features consisting of the wetland and adjacent (within 120 m) conifer or mixed forest were identified within 120 m of the HIWEC location (**Table 3-21**). The location of one (1) of these features, MA-139, is consistent with the location of a Moose Aquatic Feeding Area, as mapped by MNRF and reproduced in the Records Review Report. All of the identified features are either overlapped by the HIWEC location or located within 120 m of a WTG or access road. Therefore, all 36 features were carried forward to the EOI as Candidate IWH. The locations of these features are shown on **Figure 3-5q**.

3.8.7 Mineral Licks

Mineral licks are a valuable and rare habitat component for Moose and White-tailed Deer. Mineral licks are found in locations of upwelling groundwater and are comprised of the sediment around the seepage areas. They are typically found in areas of sedimentary and volcanic bedrock. In areas of granitic bedrock, the site is usually overlain with calcareous glacial till. Any known mineral lick, together with a 120 m buffer around the site, is considered IWH. The area of wetland, seep, or spring containing a mineral lick, as well as the surrounding 100 to 200 m of undisturbed, contiguous forest (depending on the level of disturbance in the area) is also considered important (MNRF, 2012b).

Mineral licks were not identified within 120 m of the HIWEC location during the Records Review or Site Investigation. While much of the site is represented by granitic bedrock, areas overlain with sand and gravel deposits were minimal. Locations of seeps and springs identified within the HIWEC study area were not found to be associated with mineral licks. No abundant animal tracks were found in the vicinity of seeps or springs.

3.8.8 Denning Sites for Mink, Otter, Marten, Fisher and Eastern Wolf

Denning sites for these species are becoming increasingly scarce in Ontario due to development pressures. The potential for denning sites of Mink, River Otter, Marten, Fisher, Grey Wolf and Eastern Wolf to occur within the HIWEC study area was identified during the Records Review.

American Mink (*Neovison vison*) prefer shorelines dominated by coniferous or mixed forests and usually construct dens underground. Old muskrat lodges are sometimes used (MNRF, 2012b).

North American River Otter (*Lontra canadensis*) prefer undisturbed shorelines alongside water bodies that support productive fish populations. Abundant shrubby vegetation and downed woody debris is beneficial for denning. They often use old beaver lodges, log jams, or crevices in rock piles (MNRF, 2012b).

American Marten (*Martes americana*) and Fisher (*Martes pennant*) share the same general habitat, and require large tracts of coniferous or mixed forest of mature or older age class. Denning sites are often found in cavities in large trees, or under large downed woody debris (MNRF, 2012b).

Table 3-21: Aquatic Feeding Habitat

Feature ID	Composition of Adjacent Forest	Composition of Wetland	Attributes ¹⁰	Functions	Minimum Distance to HIWEC Location (m) ¹¹	Rationale for carrying feature forward to EOI
MA-01	Mixed Forest (FOM) and Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOC1-2)	Open Aquatic (OAO)	0.1 ha in size; unknown whether indicator aquatic vegetation species are present.	May provide Moose and White-tailed Deer with feeding habitat.	0 (access road and collector line, and transmission line in feature)	All of these features are comprised of wetlands with adjacent (within 120 m) conifer or mixed forest and may contain preferred submerged aquatic vegetation, such as pondweeds, water milfoil, and lilies.
MA-03	Mixed Forest (FOM)	Water Lily-Bullhead Lily Floating-Leaved Shallow Aquatic Type (SAF1-1)	1.1 ha in size; feature identified through Alternative Site Investigation.		0 (transmission line in feature)	
MA-8	Dry – Fresh Pine Coniferous Forest Ecosite (FOC1) and Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOC1-2)	Shallow Marsh (MAS)	1.6 ha in size; feature identified through Alternative Site Investigation.		0 (access road and collector line, WTG and WTG construction footprint in feature)	
MA-11	Dry – Fresh White Pine-Red Pine Coniferous Forest Type (FOC1-2)	Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4)	3.6 ha in size; feature identified through Alternative Site Investigation.		0 (access road and collector line, and WTG construction footprint in feature)	
MA-13	Mixed Forest (FOM) and Dry – Fresh Pine Coniferous Forest Ecosite (FOC1)	Shallow Water (SA)	2.0 ha in size; feature identified through Alternative Site Investigation.		26 (WTG construction footprint) (34 m from WTG)	
MA-14	Dry – Fresh Pine Coniferous Forest Ecosite (FOC1) and Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOC1-2)	Shallow Water (SA)	0.1 ha in size; feature identified through Alternative Site Investigation.		0 (access road and collector line, WTG and WTG construction footprint in feature)	
MA-15	Dry – Fresh White Birch Mixed Forest Type (FOM5-1) and Fresh – Moist Poplar Mixed Forest Type (FOM8-1)	Open Aquatic (OAO), Shallow Water (SA), Broad-leaved Sedge Mineral Shallow Marsh Type (MAS2-4) and Organic Shallow Marsh Ecosite (MAS3)	6.5 ha in combined area; unknown whether indicator aquatic vegetation are species present.		0 (access road and collector line, WTG and WTG construction footprint in feature)	

10. Attributes of wetland provided

11. Feature includes wetland and adjacent (within 120 m) forest.

Table 3-21: Aquatic Feeding Habitat

Feature ID	Composition of Adjacent Forest	Composition of Wetland	Attributes ¹⁰	Functions	Minimum Distance to HIWEC Location (m) ¹¹	Rationale for carrying feature forward to EO
MA-16	Dry-Fresh Pine Coniferous Forest Ecosite (FOC1), and Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOC1-2)	Open Aquatic (OAO)	2.3 ha in size; feature identified through Alternative Site Investigation.		0 (access road and collector line, WTG, WTG construction footprint and transmission line in feature)	
MA-17	Dry – Fresh Pine Coniferous Forest Ecosite (FOC1)	Shallow Water (SA), and Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4)	5.0 ha in size; feature identified through Alternative Site Investigation.		5 (WTG construction footprint) (48 m from WTG)	
MA-19	Fresh – Moist Poplar Mixed Forest Type (FOM8-1)	Shallow Water (SA) / Shrub Fen (FES), and Open Aquatic (OAO)	3.4 ha in size; feature identified through Alternative Site Investigation.		6 (access road and collector line)	
MA-24	Fresh – Moist Poplar Mixed Forest Type (FOM8-1)	Open Aquatic (OAO)	0.1 ha in size; feature identified through Alternative Site Investigation.		20 (access road and collector line)	
MA-27	Dry – Fresh Pine Coniferous Forest Ecosite (FOC1)	Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4)	0.05 ha in size; feature identified through Alternative Site Investigation.		0 (WTG and WTG construction footprint in feature)	
MA-28	Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOC1-2)	Shallow Water (SA)	0.05 ha in size; feature identified through Alternative Site Investigation.		0 (access road and collector line in feature)	
MA-30	Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOC1-2)	Shallow Water (SA)	0.5 ha in size; feature identified through Alternative Site Investigation.		0 (transmission line in feature)	
MA-33	Dry – Fresh White Birch Mixed Forest Type (FOM5-1)	Shallow Water (SA)	1.5 ha in size; feature identified through Alternative Site Investigation.		0 (WTG and WTG construction footprint in feature)	
MA-34	Coniferous Forest (FOC), Mixed Forest (FOM), Dry – Fresh White Pine – Oak Mixed Forest Type (FOM2-1), Dry – Fresh Poplar Mixed Forest (FOM5-2) and Fresh – Moist Poplar Mixed Forest Type (FOM8-1)	Shallow Water (SA), Organic Shallow Marsh (MAS3) and Cattail Organic Shallow Marsh (MAS3-1)	15.9 ha in size; feature identified through Alternative Site Investigation.		0 (access road and collector line in feature)	

Table 3-21: Aquatic Feeding Habitat

Feature ID	Composition of Adjacent Forest	Composition of Wetland	Attributes ¹⁰	Functions	Minimum Distance to HIWEC Location (m) ¹¹	Rationale for carrying feature forward to EOI
MA-39	Mixed Forest (FOM), Fresh – Moist White Birch Mixed Forest Type (FOM8-2) and Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOC1-1)	Organic Shallow Marsh Ecosite (MAS3)	4.0 ha in size; unknown whether indicator aquatic vegetation species are present.		0 (access road and collector line, WTG and WTG construction footprint in feature)	
MA-40	Fresh – Moist White Birch Mixed Forest Type (FOM8-2)	Open Aquatic (OAO)	1.5 ha in size; feature identified through Alternative Site Investigation.		0 (WTG construction footprint in feature)	
MA-42	Dry – Fresh Pine Coniferous Forest Ecosite (FOC1), Dry – Fresh White Birch-Poplar – Conifer Mixed Forest Ecosite (FOM5), Dry – Fresh Poplar Mixed Forest Type (FOM5-2) and Fresh – Moist White Cedar – Hardwood Mixed Forest Type (FOM7-2)	Shallow Water (SA) and Open Aquatic (OAO)	3.0 ha in size; unknown whether indicator aquatic vegetation species are present.		0 (access road and collector line in feature)	
MA-43	Fresh – Moist White Birch Mixed Forest Type (FOM8-2)	Open Aquatic (OAO)	0.1 ha in size; feature identified through Alternative Site Investigation.		0 (access road and collector line in feature)	
MA-44	Fresh – Moist Poplar Mixed Forest Type (FOM8-1)	Open Aquatic (OAO)	0.2 ha in size; feature identified through Alternative Site Investigation.		0 (transmission line in feature)	
MA-45	Fresh – Moist Poplar Mixed Forest Type (FOM8-1)	Open Aquatic (OAO) and Pondweed Mixed Shallow Aquatic Type (SAM1-4)	3.3 ha in size; presence of indicator aquatic vegetation species confirmed.		0 (access road and collector line in feature)	
MA-46	Fresh – Moist Poplar Mixed Forest Type (FOM8-1)	Shallow Water (SA), and Shallow Water (SA) / Shrub Fen (FES)	9.9 ha in size; feature identified through Alternative Site Investigation.		0 (WTG and WTG construction footprint in feature)	
MA-52	Fresh – Moist Poplar Mixed Forest Type (FOM8-1)	Open Aquatic (OAO)	0.03 ha in size; feature identified through Alternative Site Investigation.		0 (transmission line in feature)	

Table 3-21: Aquatic Feeding Habitat

Feature ID	Composition of Adjacent Forest	Composition of Wetland	Attributes ¹⁰	Functions	Minimum Distance to HIWEC Location (m) ¹¹	Rationale for carrying feature forward to EOI
MA-62	Mixed Forest (FOM), Dry – Fresh White Pine –Oak Mixed Forest Type (FOM2-1) and Dry – Fresh White Pine-Red Pine Coniferous Forest Type (FOC1-2)	Shallow Water (SA) and Shallow Marsh (MAS)	1.2 ha in size; feature identified through Alternative Site Investigation.		16 (access road and collector line)	
MA-63	Mixed Forest (FOM), Dry-Fresh White Pine –Oak Mixed Forest Type (FOM2-1), and Dry –Fresh White Pine – Oak Mixed Forest Type (FOM2-1)	Open Water (OA), Open Aquatic (OAO) and Organic Shallow Marsh (MAS3)	42.6 ha in size; presence of indicator aquatic vegetation species confirmed.		0 (access road and collector line, and transmission line in feature)	
MA-67	Fresh – Moist White Birch Mixed Forest Type (FOM8-2)	Shallow Water (SA)	6.5 ha in size; feature identified through Alternative Site Investigation.		0 (WTG and WTG construction footprint in feature)	
MA-69	Mixed Forest (FOM), Dry – Fresh Poplar Mixed Forest Type (FOM5-2), Fresh – Moist Poplar Mixed Forest Type (FOM8-1), Fresh-Moist White Birch Forest Type (FOM8-2) and Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOC1-2)	Shallow Water (SA)	5.0 ha in size; feature identified through Alternative Site Investigation.		0 (access road and collector line in feature)	
MA-74	Dry – Fresh Pine Coniferous Forest Ecosite (FOC1) and Dry – Fresh Poplar Mixed Forest Type (FOM5-2)	Open Aquatic (OAO) and Shallow Water (SA) / Shrub Fen (FES)	13.1 ha in size; feature identified through Alternative Site Investigation.		0 (access road and collector line, WTG and WTG construction footprint in feature)	
MA-75	Dry – Fresh Pine Coniferous Forest Ecosite (FOC1) and Dry Jack Pine Coniferous Forest Type (FOC1-1)	Shallow Aquatic (SA)/Shrub Fen (FES) and Narrow-leaved Sedge Organic Shallow Marsh Type (MAS3-3)	2.0 ha in size; unknown whether indicator aquatic vegetation species are present.		0 (access road and collector line, WTG and WTG construction footprint in feature)	
MAF-78	Dry – Fresh White Pine-Maple – Oak Mixed Forest Type (FOM2), Dry – Fresh Pine Coniferous Forest Ecosite (FOC1) and Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOC1-2)	Shallow Water (SA)	2.9 ha in size; feature identified through Alternative Site Investigation.		0 (access road and collector line, and WTG construction footprint in feature)	

Table 3-21: Aquatic Feeding Habitat

Feature ID	Composition of Adjacent Forest	Composition of Wetland	Attributes ¹⁰	Functions	Minimum Distance to HIWEC Location (m) ¹¹	Rationale for carrying feature forward to EOI
MA-81	Mixed Forest (FOM) and Dry – Fresh Pine Coniferous Forest Ecosite (FOC1)	Open Water (OA), Shallow Water (SA) and Shallow Marsh (MAS)	9.0 ha in size; unknown whether indicator aquatic vegetation species are present.		0 (WTG construction footprint in feature)	
MA-82	Coniferous Forest (FOC) and Mixed Forest (FOM)	Broad-leaved Sedge Mineral Shallow Marsh Type(MAS2-4), Shallow Water (SA) and Shallow Water (SA) / Shrub Fen (FES)	8.8 ha in size unknown whether indicator aquatic vegetation species are present.		0 (access road and collector line, and WTG construction footprint in feature)	
MA-102	Dry-Fresh White Birch Mixed Forest Type (FOM5-1) and Dry – Fresh Poplar Mixed Forest Type (FOM5-2)	Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4)	1.2 ha in size; unknown whether indicator aquatic vegetation species are present.		0 (WTG construction footprint and transmission line in feature)	
MA-117	Fresh – Moist Poplar Mixed Forest Type (FOM8-1)	Water Lily-Bullhead Lily Floating-Leaved Shallow Aquatic Type (SAF1-1)	5.0 ha in size; presence of indicator aquatic vegetation species confirmed.		0 (access road and collector line, WTG and WTG construction footprint in feature)	
MA-139	Mixed Forest (FOM) and Fresh – Moist Hemlock Mixed Forest Ecosite (FOM6)	Open Water (OA), Submerged Shallow Aquatic Ecosite (SAS1) and Shallow Marsh (MAS)	8.7 ha in size; unknown whether indicator aquatic vegetation species are present. This location has also been mapped as a Moose Aquatic Feeding Area by MNRF.		0 (transmission line in feature)	

Any known, active denning site for any of the above-listed species, including a 100 m buffer around the site, is considered IWH, and any known Eastern Wolf (*Canis lycaon*) den sites are considered IWH, together with a 200 m buffer (MNRF, 2012b).

A large number of potential mammal denning sites of non-targeted species such as North American Porcupine (*Erethizon dorsatum*) were identified through the Site Investigation. However, no denning sites for American Mink, American Marten or North American River Otter were located within the HIWEC study area. In total, four (4) potential mammal denning sites for Fisher or Eastern Wolf were identified within 120 m of the HIWEC location during the Site Investigation. The compositions, attributes and functions of these habitats are summarized in **Table 3-22**. The locations of these features are shown on **Figure 3-5r**. In accordance with the *Draft Ecoregion 5E Criterion Schedule Addendum to the SWHTG* (MNRF, 2012b), a 200 m buffer was applied to the potential Fisher or Eastern Wolf den location identified for each feature in order to define the boundaries of each Candidate IWH feature. Minimum distances to the HIWEC location were measured from the edge of the 200 m buffer included as part of the feature. Two (2) of these dens are within the HIWEC location. However, all four (4) identified features are overlapped by the HIWEC location when a 200 m buffer is applied to the den site (MNRF, 2012b). Therefore, these four (4) features were carried forward to the EOI as Candidate IWH.

3.8.9 Amphibian Breeding Habitat (Woodland and Wetland)

Breeding amphibians congregate in wetlands, lakes or ponds that are generally at least 0.05 ha (500 m²) in size with at least a 25 m diameter, and vernal pools in spring where they mate and lay their eggs in water. The larvae then hatch and live in the water for several months until they emerge as adults. The adults of most breeding amphibians live in terrestrial habitat away from breeding areas for most of the active season, only to return in the spring to breed. Some may winter in the pools or ponds but many hibernate terrestrially and migrate to these breeding areas with the spring thaws. Wetland breeding amphibians tend to congregate in temporary or permanent standing water in spring where they mate and lay eggs. The larvae then hatch and live in the water for at least several months and over a year in the case of Green Frogs and Bullfrogs. Generally, both woodland and wetland amphibian species require a sufficient water depth with submergent and / or emergent shoreline vegetation to support populations of invertebrates on which the larvae feed, and to provide protection from predators. The potential for breeding habitat of Eastern Newt, Blue-spotted Salamander, Spotted Salamander, Four-toed Salamander, Spring Peeper, Wood Frog, American Toad, Gray Treefrog, Western Chorus Frog, Northern Leopard Frog, Pickerel Frog, Green Frog, Mink Frog and Bullfrog to occur within the HIWEC study area was identified during the Records Review.

The HIWEC study area is covered by an unfragmented network of connecting wooded areas and wetlands that contain a variety of potentially suitable amphibian breeding habitats. Treed rock barrens (RBT) were considered as part of wooded areas, which cover the majority of the HIWEC study area and provide connections between wetland and forest communities. Given this landscape connectivity, woodland and wetland breeding amphibians are likely to breed in the same habitats even though the *Draft Ecoregion 5E Criterion Schedule Addendum to the SWHTG* (MNRF, 2012b) provides criteria that make amphibian woodland breeding habitats and amphibian wetland breeding habitats mutually exclusive (i.e., an area can be either a wetland or a woodland amphibian breeding habitat but not both). The main criterion that separates these two (2) habitats from each other is that wetland amphibian breeding habitats are identified as being more than 120 m away from woodland or forest habitats (MNRF, 2012b). This criterion is more suitable for fragmented landscapes where wetland communities are often isolated from any nearby woodlands and surrounded by agricultural fields or other open, natural areas. However, in the context of the HIWEC study area, this criterion is less applicable since most wetlands, lakes, ponds or pools are surrounded by wooded areas. Therefore, criteria for both woodland and wetland breeding amphibians as described in the *Draft Ecoregion 5E Criterion Schedule Addendum to the SWHTG* (MNRF, 2012b) were combined into one (1) Amphibian Breeding Habitat IWH type. Any identified amphibian breeding habitats were considered to potentially provide suitable habitats for both woodland and wetlands breeding amphibians.

Table 3-22: Denning Sites for Mink, Otter, Marten, Fisher and Eastern Wolf

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m) ¹²	Rationale for carrying feature forward to EOI
DEN-001	White Birch – Poplar Mineral Deciduous Swamp Type (SWD4-3)	Potentially suitable mammal denning site	May provide denning sites for Fisher or Eastern Wolf.	0 (access road and collector line, WTG and WTG construction footprint in feature) (Den is 4 m from a WTG)	All of these features may contain denning sites for Fisher or Eastern Wolf.
DEN-002	Fresh – Moist Poplar Mixed Forest Type (FOM8-1)	Large hole; opening approximately 30 cm across		0 (access road and collector line in feature) (Den is 0 m from an access road)	
DEN-003	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	30 m radius area hosts three (3) large dens; largest made by rock overhang, approximately 2.5 m deep, 1 m high, and 3 m wide. There is evidence of recent use (large nest of needles, hair, Canid feces)		0 (access road and collector line, WTG and WTG construction footprint in feature) (Den is 40 m from a WTG construction footprint)	
DEN-004	Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOC1-2)	Den created by uprooted tree; large in size.		0 (access road and collector line, transmission line and WTG construction footprint in feature) (Den is 0 m from an access road and collector line, and transmission line)	

12. In accordance with the Draft Ecoregion 5E Criterion Schedule Addendum to the SWHTG (MNRF, 2012b), a 100 m radius buffer centered on the potential denning site of American Mink, North American River Otter, American Marten and Fisher is included as part of the habitat. A 200 m radius buffer centered on potential denning sites of Eastern Wolf is considered part of the habitat feature. Minimum distances to HIWEC location were measured from species-specific buffer included for each feature.

Any vegetation community wherein standing water or vernal pools were recorded by AECOM field staff during the 2014 and 2015 Site Investigation was considered to contain suitable amphibian breeding habitat. Additionally, all open aquatic (OAO), shallow marsh (MAS) and shallow water (SA) communities greater than 0.05 ha in size that were identified through an Alternative Site Investigation were assumed to contain suitable amphibian breeding habitat, as the ELC classification of these communities relies on the presence of standing water. In order to facilitate mapping, any adjacent ELC polygons meeting the above requirements were grouped together.

In total, 88 features were identified as having standing water or vernal pools potentially suitable for supporting breeding amphibian populations and being located within 120 m of the HIWEC location. Of these, 76 features were identified as Candidate IWH, as they are either located within 120 m of an access road or are overlapped by the HIWEC location. These features were carried forward to the EOI. The remaining 12 features were identified as Generalized Candidate IWH and also carried forward to the EOI. The compositions, attributes and functions of these features, as well as minimum distances to the nearest HIWEC component, are summarized in **Table 3-23**. Locations of these features are shown on **Figure 3-5s**.

3.8.10 Mast Producing Areas

Mast is a very important food requirement for wildlife species including Black Bear, White-tailed Deer, Wild Turkey and Ruffed Grouse. The most important areas are mature forests > 0.5 ha in size, containing numerous large American Beech and Red Oak trees, which supply the energy-rich mast (e.g., nuts) that wildlife prefer (MNR, 2012b). Sites such as clear-cuts or burns are only temporary sources of food and are less important (MNR, 2012b).

During the Site Investigation, field staff searched forested areas within 120 m of the HIWEC location for mast producing areas. The Alternative Site Investigation also included a review of aerial photography. Vegetation communities present within the HIWEC location and observations of potential Mast Producing Areas collected by field staff during the 2014 and 2015 Site Investigation were examined to determine whether they qualified as Mast Producing Areas. Only ELC communities with numerous American Beech or Red Oak, as described in the vegetation characteristics columns of the ELC Manual (Lee, *et al.* 1998) were considered (e.g., FOM1-1, FOM2, FOM2-1, FOM3, FOM3-1, FOD1-1, FOD1-4, FOD2-1, FOD2-2, FOD2-4, FOD4-1, FOD4-3, FOD5-2, FOD5-3, FOD6-5, FOD9-1, and FOD9-2). These communities were further refined to include only those sites with a high component (i.e., > 50%) of mast-producing tree species measuring 40 to 65 cm diameter-at-breast-height (DBH). Any FOM or FOD ELC community identified through the Alternative Site Investigation was also considered as a potential Mast Producing Area. In total, four (4) features greater than one (1) ha in size are overlapped by the HIWEC location and were therefore identified as Candidate IWH and carried forward to EOI. In addition, a total of 13 features were identified as Generalized IWH and carried forward to the EOI, as these features are not overlapped by the HIWEC location. The locations of these features are presented on **Figure 3-5t**. **Table 3-24** summarizes the compositions, attributes, and functions of these features.

Table 3-23: Amphibian Breeding Habitat (Woodland and Wetland)

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EO1
ABH-001	Shallow Water (SA), Open Aquatic (OAO), Shallow Water / Shrub Fen (SA/FES), Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4), Tamarack Treed Fen Type (FET1-1), Slender Sedge Open Fen Type (FEO1-2), Narrow-leaved Sedge Mineral Shallow Marsh Type (MAS2-3), Leatherleaf – Forb Shrub Fen Type (FES1-4), Jack Pine Acidic Treed Rock Barren Type (RBT3-2), Common Juniper Acidic Shrub Rock Barren Type (RBS3-2), Open Fen Ecosite (FEO1), Alder Mineral Thicket Swamp Type (SWT2-1) and Water Lily – Bullhead Lily Floating-leaved Shallow Aquatic Type (SAF1-1)	Vernal pool present in rock barren depression with standing water and Sphagnum moss; vernal pool present created by small beaver dam with submerged and fringing vegetation; standing water present; stream flowing through swamp thicket.	May contain standing water or vernal pools in wetlands and / or forests which provide breeding habitats for woodland and wetland amphibians.	0 (access road and collector line, WTG, WTG construction footprint and transmission line in feature)	All of these features are either confirmed or assumed to contain standing water or vernal pools suitable for amphibian breeding.
				100 (access road and collector line)	
				0 (access road and collector line, WTG and WTG construction footprint in feature)	
				0 (WTG construction footprint in feature) (24 m from access road)	
ABH-002	Open Water (OA)	Feature identified through Alternative Site Investigation.			
ABH-003	Shallow Water (SA), Tamarack Treed Fen Type (FET1-1), Black Spruce Treed Bog Type (BOT1-1), Common Juniper Acidic Shrub Rock Barren Type (RBS3-2), Treed Fen Ecosite (FET1), Dry – Acidic Open Rock Barren Type (RBO3-1) and Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	Standing Water present; vernal pool present; several egg masses observed of possibly Wood Frog and salamander species; channelized slow-moving stream of shallow water with lots of fringing vegetation; vernal pool in rock barren depression with Sphagnum moss and emergent vegetation.			
ABH-004	Organic Shallow Marsh Ecosite (MAS3)	Feature identified through Alternative Site Investigation.			

Table 3-23: Amphibian Breeding Habitat (Woodland and Wetland)

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
ABH-005	Open Aquatic (OAO)	Feature identified through Alternative Site Investigation.		11 (WTG construction footprint) (34 m from access road)	
ABH-006	Shallow Water (SA), Open Aquatic (OAO), Fresh – Moist Poplar Mixed Forest Type (FOM8-1), Dry – Fresh Poplar Mixed Forest Type (FOM5-2), White Cedar – Hardwood Mineral Mixed Swamp Type (SWM1-1), Common Juniper Acidic Shrub Rock Barren Type (RBS3-2), White Cedar – Conifer Organic Coniferous Swamp Type (SWC3-2) and Tamarack Treed Fen Type (FET1-1)	Standing water present; large vernal pool surrounded by smaller vernal pools; vernal pool present; treed fen adjacent to large shallow water (SA) community; large vernal pool present; vernal pool present with some sphagnum moss and emergent vegetation; long linear vernal pool present; three (3) egg masses observed, potentially belonging to Spotted Salamander.		0 (access road and collector line in feature)	
ABH-007	Common Juniper Acidic Shrub Rock Barren Type (RBS3-2), Shallow Water (SA), and Open Aquatic (OAO)	Large vernal pool present; standing water present.		0 (access road and collector line, and transmission line in feature)	
ABH-010	Open Aquatic (OAO)	Feature identified through Alternative Site Investigation.		15 (access road and collector line)	
ABH-011	Shallow Water (SA), Open Fen Ecosite (FEO1) and Shallow Water / Shrub Fen (SA / FES)	Feature identified through Alternative Site Investigation.		23 (access road and collector line)	
ABH-014	Shallow Water (SA) and Broad-leaved Sedge Mineral Meadow Marsh Type (MAM2-6)	Standing water present.		0 (access road and collector line, and WTG construction footprint in feature)	
ABH-017	Open Water (OA)	Feature identified through Alternative Site Investigation.		10 (WTG construction footprint) (89 m from access road)	
ABH-018	Open Water (OA)	Feature identified through Alternative Site Investigation.		88 (access road and collector line)	
ABH-019	Open Aquatic (OAO)	Feature identified through Alternative Site Investigation.		64 (access road and collector line)	

Table 3-23: Amphibian Breeding Habitat (Woodland and Wetland)

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EO
ABH-020	Open Aquatic (OAO)	Feature identified through Alternative Site Investigation.		12 (access road and collector line)	
ABH-021	Shallow Water (SA)	Feature identified through Alternative Site Investigation.		68 (WTG construction footprint) (109 m from access road)	
ABH-025	Shallow Marsh (MAS)	Feature identified through Alternative Site Investigation.		3 (access road and collector line)	
ABH-026	Shallow Marsh (MAS) and Red Maple – Conifer Mineral Mixed Swamp Type (SWM2-1)	Standing water present; a network of five (5) vernal pools.		0 (access road and collector line in feature)	
ABH-028	Open Aquatic (OAO)	Standing water present; dried up pond with several pools of water remaining.		0 (access road and collector line, and transmission line in feature)	
ABH-030	Open Aquatic (OAO)	Feature identified through Alternative Site Investigation.		84 (access road and collector line)	
ABH-033	Shallow Water (SA)	Feature identified through Alternative Site Investigation.		27 (access road and collector line)	
ABH-036	Shallow Water (SA)	Feature identified through Alternative Site Investigation.		4 (WTG construction footprint) (69 m from access road)	
ABH-038	Open Water (OA)	Feature identified through Alternative Site Investigation.		107 (access road and collector line)	
ABH-045	Pondweed Mixed Shallow Aquatic Type (SAM1-4)	Standing water present; large beaver pond with a narrow fringe of vegetation.		0 (access road and collector line in feature)	
ABH-053	Narrow-leaved Sedge Mineral Shallow Marsh Type (MAS2-3)	Standing water present.		0 (access road and collector line in feature)	
ABH-058	Tamarack – Black Spruce Organic Coniferous Swamp Type (SWC4-1)	Shallow water present.		0 (access road and collector line, WTG and WTG construction footprint in feature)	
ABH-059	Leatherleaf – Forb Shrub Fen Type (FES1-4)	Standing water present in form of slow moving stream.		0 (access road and collector line in feature)	

Table 3-23: Amphibian Breeding Habitat (Woodland and Wetland)

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOJ
ABH-060	Water Lily – Bullhead Lily Floating-leaved Shallow Aquatic Type (SAF1-1) and Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4)	Standing water present.		0 (access road and collector line in feature)	
ABH-064	Jack Pine Acidic Treed Rock Barren Type (RBT3-2)	Vernal pool present in rock barren depression surrounded by sphagnum moss.		0 (access road and collector line, WTG and WTG construction footprint in feature)	
ABH-072	Dry – Fresh White Pine – Maple – Oak Mixed Forest Type (FOM2-3)	Large linear vernal pool present.		0 (access road and collector line, and transmission line in feature)	
ABH-077	Alder Mineral Thicket Swamp Type (SWT2-1)	Standing water present.		0 (WTG and WTG construction footprint in feature) (67 m from access road)	
ABH-079	Water Lily – Bullhead Lily Floating-leaved Shallow Aquatic Type (SAF1-1)	Standing water present		0 (transmission line in feature)	
ABH-080	Submerged Shallow Aquatic (SAS1)	Standing water present.		0 (transmission line in feature)	
ABH-082	Cattail Mineral Shallow Marsh Type (MAS2-1)	Standing water present.		0 (transmission line in feature)	
ABH-083	Winterberry Organic Thicket Swamp Type (SWT3-7)	Small vernal pool present.		0 (access road and collector line in feature)	
ABH-084	Alder Organic Thicket Swamp Type (SWT3-1), Shallow Water (SA), Jack Pine Acidic Treed Rock Barren Type (RBT3-2), Dry – Fresh Sugar Maple Deciduous Forest Ecosite (FOD5), Dry – Fresh White Pine – Oak Mixed Forest Type (FOM2-1), Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOC1-2), Dry – Fresh Sugar Maple Deciduous Forest (FOD5), Common Juniper Acidic Shrub Rock Barren Type (RBS3-2) and Red Maple Mineral Deciduous Swamp Type (SWD3-1)	Standing water present; vernal pool present; vernal pool present in rock barren depression.		0 (access road and collector line, WTG and WTG construction footprint in feature)	

Table 3-23: Amphibian Breeding Habitat (Woodland and Wetland)

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
ABH-085	Alder Mineral Thicket Swamp Type (SWT2-1), Broad-leaved Sedge Mineral Shallow Marsh Type (MAS2-4), Cattail Mineral Shallow Marsh Type (MAS2-1), Tamarack Treed Fen Type (FET1-1), Shallow Water / Shrub Fen (SA / FES), Shallow Water (SA), Birch – Poplar Mineral Mixed Swamp Ecosite (SWM3), Black Ash Mineral Deciduous Swamp Type (SWD2-1), Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4), Common Juniper Acidic Shrub Rock Barren Type (RBS3-2), Dry Acidic Open Rock Barren Type (RBO3-1) and Open Aquatic (OAO)	Narrow channel leading to a Shallow Water (SA) community adjacent mixed swamp with abundance of basking logs present near the mouth; vernal pool present; vernal pool present in rock barren depression; standing water present.		0 (access road and collector line, WTG and WTG construction footprint in feature)	
ABH-086	Alder Organic Thicket Swamp Type (SWT3-1)	Standing water present.		0 (access road and collector line, and WTG construction footprint in feature)	
ABH-087	Alder Organic Thicket Swamp (SWT3-1) Type	Standing water present.		0 (access road and collector line, WTG and WTG construction footprint in feature)	
ABH-088	Alder Organic Thicket Swamp Type (SWT3-1), White – Pine Mineral Coniferous Swamp Type (SWC2-1) and Blueberry Acidic Shrub Rock Barren Type (RBS3-1)	Standing water present; vernal pool present.		0 (access road and collector line, WTG and WTG construction footprint in feature)	
ABH-089	Alder Organic Thicket Swamp Type (SWT3-1)	Standing water present.		0 (access road and collector line in feature)	
ABH-090	Alder Mineral Thicket Swamp Type (SWT2-1), Shallow Marsh (MAS), Shallow Water (SA), Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4), Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOC1-2) and Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOC1-2)	Standing water present.		0 (access road and collector line, WTG and WTG construction footprint in feature)	

Table 3-23: Amphibian Breeding Habitat (Woodland and Wetland)

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
ABH-091	Alder Mineral Thicket Swamp Type (SWT2-1), Dry – Fresh Deciduous Forest Ecosite (FOD4), Red Maple Mineral Deciduous Swamp Type (SWD3-1) and Dry – Fresh Sugar Maple Deciduous Forest Ecosite (FOD5)	Standing water present; vernal pool present.		0 (access road and collector line, WTG, WTG construction footprint and transmission line in feature)	
ABH-095	Broad – leaved Sedge Mineral Shallow Marsh Type (MAS2-4), Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4), Shallow Water / Shrub Fen (SA / FES), Shallow Water (SA) and Water Lily – Bullhead Lily Floating-leaved Shallow Aquatic Type (SAF1-1), Dry Acidic Open Rock Barren Type (RBO3-1) and Open Aquatic (OAO)	Standing water present.		0 (access road and collector line, WTG and WTG construction footprint in feature)	
ABH-097	Cattail Mineral Shallow Marsh Type (MAS2-1)	Standing water present.		0 (access road and collector line in feature)	
ABH-098	Broad-leaved Sedge Mineral Shallow Marsh Type (MAS2-4)	Standing water present.		0 (access road and collector line, and WTG construction footprint in feature)	
ABH-099	Narrow-leaved Sedge Organic Shallow Marsh Type (MAS3-3)	Standing water present.		0 (WTG construction footprint in feature) (67 m from access road)	
ABH-101	Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4)	Standing water present.		24 (access road and collector line)	
ABH-102	Broad-leaved Sedge Mineral Shallow Marsh Type (MAS2-4), Shallow Water (SA) and Common Juniper Acidic Shrub Rock Barren Type (RBS3-2)	Standing water present; vernal pool in rock barren depression.		0 (access road and collector line, WTG and WTG construction footprint in feature)	
ABH-103	Open Aquatic (OAO)	Feature identified through Alternative Site Investigation.		0 (transmission line in feature)	
ABH-104	Shallow Water (SA)	Feature identified through Alternative Site Investigation.		8 (WTG construction footprint) (73 m from access road)	

Table 3-23: Amphibian Breeding Habitat (Woodland and Wetland)

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EO
ABH-105	Cattail Organic Shallow Marsh Type (MAS3-1) and Shallow Marsh (MAS)	Feature identified through Alternative Site Investigation.		0 (transmission line in feature)	
ABH-108	Meadow Marsh (MAM) and Fresh – Moist Poplar Mixed Forest Type (FOM8-1) and Shallow Water (SA)	Small vernal pools present; vernal pool present.		0 (access road and collector line in feature)	
ABH-109	Shallow Water / Shrub Fen (SA / FES), Broad-leaved Sedge Mineral Meadow Marsh Type (MAM2-6) Shallow Water (SA), Organic Shallow Marsh Ecosite (MAS3) and Water Lily – Bullhead Lily Floating-leaved Shallow Aquatic Type (SAF1-1), Common Juniper Acidic Shrub Rock Barren Type (RBS3-2) and Acidic Treed Rock Barren Ecosite (RBT3)	Narrow vernal pool present; standing water present; vernal pool present in rock barren.		0 (access road and collector line, WTG, WTG construction footprint in feature)	
ABH-111	Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4) and Cattail Organic Shallow Marsh Type (MAS3-1)	Feature identified through Alternative Site Investigation.		0 (WTG construction footprint in feature) (6 m from access road)	
ABH-112	Shallow Water (SA)	Feature identified through Alternative Site Investigation.		39 (WTG construction footprint) (79 m from access road)	
ABH-115	Open Aquatic (OAO), White Pine Mineral Coniferous Swamp Type (SWC2-1), Broad-leaved Sedge Mineral Shallow Marsh Type (MAS2-4), Dry – Fresh White Pine – Red Pine Coniferous Forest Type (FOC1-2) and Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4)	Standing water present throughout community; vernal pool present.		0 (access road and collector line, WTG, WTG construction footprint and transmission line in feature)	
ABH-116	Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4) and Shallow Water (SA)	Feature identified through Alternative Site Investigation.		5 (WTG construction footprint) (87 m from access road)	

Table 3-23: Amphibian Breeding Habitat (Woodland and Wetland)

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EO
ABH-118	Shallow Water / Shrub Fen (SA / FES)	Feature identified through Alternative Site Investigation.		76 (access road and collector line)	
ABH-122	Open Aquatic (OAO)	Feature identified through Alternative Site Investigation.		65 (access road and collector line)	
ABH-125	Dry – Fresh Pine Coniferous Forest Type (FOC1-2)	Vernal pool present.		0 (access road and collector line in feature)	
ABH-129	White Birch – Poplar Mineral Deciduous Swamp Type (SWD4-3)	Vernal pools present.		0 (WTG construction footprint in feature)	
ABH-132	Cattail Organic Shallow Marsh Type (MAS3-1)	Feature identified through Alternative Site Investigation.		0 (access road and collector line in feature)	
ABH-135	Shallow Water / Shrub Fen (SA / FES) and Narrow-leaved Sedge Organic Shallow Marsh Type (MAS3-3)	Standing water present.		0 (access road and collector line, and WTG construction footprint in feature)	
ABH-145	Open Aquatic (OAO)	Feature identified through Alternative Site Investigation.		29 (WTG construction footprint) (117 m from access road)	
ABH-150	Leatherleaf – Forb Shrub Fen Type (FES1-4)	Standing water present.		0 (WTG construction footprint in feature)	
ABH-155	Shallow Water (SA)	Standing water present.		0 (access road and collector line in feature)	
ABH-160	Dry – Fresh Sugar Maple – Red Maple Deciduous Forest Type (FOD5-9), Beaked Sedge Open Fen Type(FEO1-5) and Dry – Fresh Sugar Maple- Red Maple Deciduous Forest Type (FOD 5-9)	Vernal pool present. Shallow water present throughout.		0 (access road and collector line, WTG and WTG construction footprint in feature)	
ABH-162	Cattail Organic Shallow Marsh Type (MAS3-1)	Feature identified through Alternative Site Investigation.		34 (access road and collector line)	
ABH-167	Water Lily – Bullhead Lily Floating-leaved Shallow Aquatic Type (SAF1-1)	Standing water present.		0 (WTG and WTG construction footprint in feature)	
ABH-168	Floating-leaved Shallow Aquatic Ecosite (SAF1)	Standing water present.		0 (WTG construction footprint in feature)	
ABH-182	Dry – Fresh White Pine – Sugar Maple Mixed Forest Type (FOM2-2)	Vernal pool present.		0 (access road and collector line, and WTG construction footprint in feature)	

Table 3-23: Amphibian Breeding Habitat (Woodland and Wetland)

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
ABH-192	Tamarack – Black Spruce Organic Coniferous Swamp Ecosite (SWC4)	Standing water present.		0 (access road and collector line, and WTG construction footprint in feature)	
ABH-198	Submerged Shallow Aquatic (SAS1)	Standing water present.		0 (transmission line in feature)	
ABH-200	Dry – Fresh Poplar Deciduous Forest Type (FOD3-1)	Vernal pool present.		0 (access road and collector line in feature)	
ABH-206	Shallow Marsh (MAS)	Feature Identified through Alternative Site Investigation.		52 (access road and collector line)	
ABH-207	Open Aquatic (OAO)	Feature Identified through Alternative Site Investigation.		0 (WTG construction footprint in feature)	
Generalized Candidate IWH	Variety of qualifying wetland, forest and open water communities.	A total of 12 vegetation communities with standing water or vernal pool(s) present.		Varied; all > 120 m from nearest access road and not overlapped by the HIWEC location.	

Table 3-24: Mast Producing Areas

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
MPA-001	Fresh – Moist Sugar Maple – Hardwood Deciduous Forest Type (FOD6-5)	27.6 ha in size; this ELC community type is characterised by uncommon associations between Sugar Maple and Beech, Basswood, Oak, Hickory and Red Maple.	May provide a food resource for various wildlife species	0 (transmission line in feature)	All of these features consist of forest communities greater than 0.5 ha in size which may contain mast producing species.
MPA-002	Mixed Forest (FOM)	2.5 ha in size; feature identified through Alternative Site Investigation.		0 (access road and collector line in feature)	
MPA-003	Dry - Fresh White Pine – Oak Mixed Forest Type (FOM2-1)	2.3 ha in size; Red Oak is present in the sub canopy of the community.		0 (access road and collector line in feature)	
MPA-004	Deciduous Forest (FOD)	1.2 ha in size; feature identified through Alternative Site Investigation.		0 (access road and collector line in feature)	
Generalized Candidate IWH	Deciduous Forest (FOD) and / or Mixed Forest (FOM)	Varied; 12 features identified through Alternative Site Investigation.		Varied; all < 120 m from, but not overlapped by, the HIWEC location.	

3.9 Habitat for Species of Conservation Concern

Habitats for Species of Conservation Concern (SOCC) are described in the *Significant Wildlife Habitat Technical Guide (SWHTG; MNRF, 2000)* and *Draft Ecoregion 5E Criterion Schedule Addendum to the SWHTG (MNRF, 2012b)*. The following habitats for SOCC were identified as potentially occurring in the HIWEC Study Area through the Records Review and Site Investigation:

- Marsh Bird Breeding Habitat; and
- Habitats for specific SOCC.

For the purpose of this Site Investigation, SOCC include the following:

- Provincially rare species ranked by the Natural Heritage Information Centre (NHIC) as S1 (critically imperiled), S2 (imperiled) or S3 (vulnerable) in the province of Ontario but not listed as Endangered or Threatened under Schedule 1 of SARA or the ESA;
- Species listed as Special Concern under Schedule 1 of SARA;
- Species evaluated by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as Special Concern, Threatened or Endangered but not listed as Endangered or Threatened under Schedule 1 of SARA or the ESA; and
- Species listed as Special Concern under the ESA.

A total of 18 SOCC were identified as potentially occurring within the HIWEC study area through the Records Review. AECOM biologists reviewed the specific habitat requirements of these species and searched for suitable habitats during the Site Investigation. A description of the Site Investigation results pertaining to habitats for these SOCC follows.

In addition, AECOM biologists searched for and documented any occurrences of other SOCC not identified through the Records Review during the Site Investigation. Complete lists of the plant and wildlife species observed during the Site Investigations are provided in **Appendix C** and **Appendix D**, respectively. No additional SOCC were recorded within the HIWEC study area during the Site Investigation.

3.9.1 Marsh Bird Breeding Habitat

A number of bird species in Ontario require high quality marsh habitat for successful breeding. According to the OBBA (BSC *et al.*, 2006) there are records for American Bittern, Pied-billed Grebe, Common Loon, Sandhill Crane, Marsh Wren and Yellow Rail in the general vicinity of the HIWEC study area. As described in the Records Review Report, American Bittern, Red-necked Grebe, Redhead, Ring-necked Duck, Lesser Scaup, American Coot, Common Loon, Sandhill Crane, Green Heron, Trumpeter Swan, Yellow Rail and Black Tern were recorded in the HIWEC study area between 2011 and 2013.

Marshes, open fens and shallow water communities with standing water and that are at least 2 ha in size were identified and assessed during the Site Investigation to determine whether they contain suitable marsh bird breeding habitat. The target marsh bird species for this IVH type generally require large marshes with good interspersion and emergent marsh vegetation. For example, American Coot nests only in large marshes in Ontario (Cadman *et al.*, 2007). Green Herons commonly breed in treed areas along swamps, marshes, lakes, ponds and other wet habitats (Davis and Kushlan, 1994); therefore, any deciduous or mixed swamps located immediately adjacent to open wetlands were also identified as part of the habitat and assessed to determine whether they contain suitable breeding habitat for this species as well. Green Herons generally do not nest in coniferous swamps.

Directly adjacent marshes, open fens and shallow water vegetation communities with standing water were grouped together to determine if these features are greater than or equal to 2 ha. Additionally, adjacent deciduous or mixed swamps greater than 0.5 ha in size and directly adjacent to these wetland features were included in the feature. A total of 58 features were identified to potentially contain suitable marsh breeding habitats within 120 m of the HIWEC location. Of these, 49 features were identified as Candidate IWH and carried forward to the EOI because these features occur within 120 m of a WTG or are at least partially overlapped by the HIWEC location. The remaining nine (9) features were identified as Generalized Candidate IWH and were also carried forward to the EOI. **Table 3-25** provides a summary of the compositions, attributes and functions of these features. The locations of these features are shown on **Figure 3-5u**.

3.9.2 *Bald Eagle*

Bald Eagles nest in a variety of habitats and forest types, almost always near a major lake or river where they do most of their hunting (MNRF, 2000). They usually nest in large trees such as pine and poplar.

Habitats for this species were assessed as part of Bald Eagle and Osprey Nesting, Foraging and Perching habitat, as described in **Section 3.8.2** above. No Bald Eagle nests were identified within 120 m of the HIWEC location and therefore habitat for this species was not carried forward to the EOI.

3.9.3 *Black Tern*

Black Terns are found in wetlands, coastal or inland marshes, large cattail marshes, marshy edges of rivers, lakes or ponds, wet open fens, and wet meadows (MNRF, 2000). This species returns to the same area to nest each year in loose colonies. Suitable nesting habitats are comprised of marshes > 20 ha in size that have shallow (0.5 to 1 m deep) water and areas of open water near nests (MNRF, 2000). Black Terns feed over adjacent grasslands for insects, and also feed on fish, crayfish and frogs.

Habitats for this species were assessed as part of Marsh Bird Breeding Habitat, as described in **Section 3.9.1** above; a total of 49 Candidate IWH and nine (9) Generalized Candidate IWH were identified and carried forward to the EOI. The locations of these features are mapped on **Figure 3-5u**. Of these, seven (7) Candidate IWH features are > 20 ha in size and were therefore carried forward to the EOI as potential Black Tern habitat (MBB-10, MBB-11, MBB-17, MBB-28, MBB-33, MBB-34 and MBB-45). No Generalized Candidate IWH features are > 20 ha in size; therefore, none were carried forward to the EOI as potential Black Tern habitat.

3.9.4 *Caspian Tern*

Caspian Terns prefer open habitat near large lakes or rivers, beaches, shorelines, rocky or sandy beaches, and offshore islands (MNRF, 2000). They are negatively affected by elevated water levels during the nesting season, feed on fish, and are often found in association with Ring-billed Gulls.

Habitats for this species were assessed as part of Colonially-Nesting Bird Breeding Habitat (Ground), as described in **Section 3.6.9** above. No suitable features for colonially-nesting breeding birds (ground) were identified within 120 m of the HIWEC location; therefore, habitat for this species was not carried forward to the EOI.

Table 3-25: Marsh Bird Breeding Habitat

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
MBB-05	Meadow Marsh (MAM)	Feature identified through Alternative Site Investigation.	May provide suitable breeding habitat for marsh breeding birds.	22 (WTG construction footprint) (43 m from WTG)	All of these features contain marshes, fens, or shallow water communities that are at least 2 ha in size and may contain shallow water and some emergent vegetation. Some features also contain deciduous or mixed swamps bordering areas with shallow water, which may contain suitable breeding habitat for Green Heron.
MBB-07	Shallow Water (SA) and Narrow-leaved Sedge Mineral Shallow Marsh Type (MAS2-3)	Shallow water and emergent vegetation present.		0 (WTG construction footprint in feature)	
MBB-08	Beaked Sedge Open Fen Type (FEO1-5)	Shallow water and emergent vegetation present.		0 (access road and collector line, and WTG construction footprint in feature)	
MBB-09	Organic Shallow Marsh Ecosite (MAS3) and Black Ash Mineral Deciduous Swamp Type (SWD2-1)	Shallow water and emergent vegetation present. Deciduous swamp bordering shallow water areas may provide suitable Green Heron nesting habitat.		0 (access road and collector line, and WTG construction footprint in feature)	
MBB-10	Shallow Water (SA), Shallow Marsh (MAS), Cattail Organic Shallow Marsh Type (MAS3-1), Open Fen (FEO), Open Fen Ecosite (FEO1), Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4), Slender Sedge Open Fen Type (FEO1-2) and Water Lily – Bullhead Lily Floating-leaved Shallow Aquatic Type (SAF1-1)	Shallow water and emergent vegetation present.		0 (WTG construction footprint in feature)	
MBB-11	Shallow Water (SA), Shallow Marsh (MAS), Organic Shallow Marsh Ecosite (MAS3), Open Fen (FEO), Open Fen Ecosite (FEO1), Organic Meadow Marsh Ecosite (MAM3) and Meadow Marsh (MAM)	Feature identified through Alternative Site Investigation.		3 (access road and collector line) (74 m from WTG)	
MBB-12	Shallow Water (SA), Open Fen (FEO) and Open Fen Ecosite (FEO1)	Feature identified through Alternative Site Investigation.		4 (WTG construction footprint) (24 m from WTG)	

Table 3-25: Marsh Bird Breeding Habitat

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
MBB-14	Shallow Water (SA) and Cattail Organic Shallow Marsh Type (MAS3-1)	Shallow water and emergent vegetation present.		0 (WTG construction footprint in feature)	
MBB-15	Organic Meadow Marsh Ecosite (MAM3)	Shallow water and emergent vegetation present.		0 (WTG construction footprint in feature)	
MBB-16	Narrow-leaved Sedge Mineral Shallow Marsh Type (MAS2-3)	Shallow water and emergent vegetation present.		0 (access road and collector line in feature)	
MBB-17	Open Fen (FEO), Open Fen Ecosite (FEO1), Shallow Water (SA), Narrow-leaved Sedge Mineral Meadow Marsh Type (MAM2-5) and Broad-leaved Sedge Mineral Meadow Marsh Type (MAM2-6)	Shallow water and emergent vegetation present.		0 (access road and collector line, and WTG construction footprint in feature)	
MBB-18	Open Fen (FEO), Open Fen Ecosite (FEO1) and Pondweed Mixed Shallow Aquatic Type (SAM 1-4)	Shallow water and emergent vegetation present.		0 (access road and collector line in feature)	
MBB-19	Mixed Shallow Marsh (MAS), Organic Meadow Marsh Ecosite (MAM3), Shallow Water (SA), Open Fen (FEO) and Open Fen Ecosite (FEO1)	Feature identified through Alternative Site Investigation.		70 (WTG construction footprint in feature) (89 m from WTG)	
MBB-20	Open Fen (FEO) and Open Fen Ecosite (FEO1)	Feature identified through Alternative Site Investigation.		22 (WTG construction footprint) (62 m from WTG)	
MBB-21	Open Fen (FEO), Open Fen Ecosite (FEO1), Shallow Water (SA), Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4) and Water Lily – Bullhead Lily Floating-leaved Shallow Aquatic Type (SAF1-1)	Shallow water and emergent vegetation present.		0 (access road and collector line in feature)	
MBB-22	Open Fen (FEO), Open Fen Ecosite (FEO1) and Shallow Water (SA)	Feature identified through Alternative Site Investigation.		0 (access road and collector line in feature)	

Table 3-25: Marsh Bird Breeding Habitat

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
MBB-23	Shallow Water (SA)	Feature identified through Alternative Site Investigation.		52 (access road and collector line) (92 m from WTG)	
MBB-24	Shallow Water (SA), Open Fen (FEO) and Open Fen Ecosite (FEO1)	Feature identified through Alternative Site Investigation.		27 (access road and collector line) (76 m from WTG)	
MBB-25	Shallow Water (SA), Open Fen (FEO) and Open Fen Ecosite (FEO1)	Feature identified through Alternative Site Investigation.		67 (WTG construction footprint) (115 m from WTG)	
MBB-26	Shallow Water (SA), Open Fen (FEO) and Open Fen Ecosite (FEO1)	Feature identified through Alternative Site Investigation.		62 (WTG construction footprint) (96 m from WTG)	
MBB-28	Organic Meadow Marsh Ecosite (MAM3), Organic Shallow Marsh Type (MAS3), Shallow Water (SA), Cattail Organic Shallow Marsh Type (MAS3-1) and Cattail Mineral Shallow Marsh Type (MAS2-1)	Shallow water and emergent vegetation present.		0 (access road and collector line in feature)	
MBB-30	Shallow Water (SA), Open Fen (FEO), Open Fen Ecosite (FEO1), Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4), White Birch –Poplar Mineral Deciduous Swamp Type (SWD4-3) and Mixed Swamp (SWM)	Shallow water and emergent vegetation present. Deciduous and mixed swamps bordering shallow water areas may provide suitable Green Heron nesting habitat.		0 (WTG construction footprint in feature)	
MBB-31	Narrow-leaved Sedge Organic Shallow Marsh Type (MAS3-3), Black Ash Mineral Deciduous Swamp Type (SWD2-1) and Red Maple Mineral Deciduous Swamp Type (SWD3-1)	Shallow water and emergent vegetation present. Deciduous swamp bordering shallow water areas may provide suitable Green Heron nesting habitat.		0 (access road and collector line, WTG, WTG construction footprint and transmission line in feature)	
MBB-32	Shallow Water (SA)	Feature identified through Alternative Site Investigation.		50 (WTG construction footprint) (85 m from WTG)	

Table 3-25: Marsh Bird Breeding Habitat

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
MBB-33	Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4), Cattail Organic Shallow Marsh Type (MAS3-1), Beaked Sedge Open Fen Type (FEO1-5) and Red Maple Organic Deciduous Swamp Type (SWD6-1)	Shallow water and emergent vegetation present. Deciduous swamp bordering shallow water areas may provide suitable Green Heron nesting habitat.		0 (access road and collector line, and WTG construction footprint in feature)	
MBB-34	Broad-leaved Sedge Organic Meadow Marsh Type (MAM3-6), Meadow Marsh (MAM), Slender Sedge Open Fen Type (FEO1-2) and Red Maple Mineral Deciduous Swamp Type (SWD3-1)	Shallow water and emergent vegetation present. Deciduous swamp bordering shallow water areas may provide suitable Green Heron nesting habitat.		0 (access road and collector line, and WTG construction footprint in feature)	
MBB-35	Open Fen (FEO) and Open Fen Ecosite (FEO1)	Feature identified through Alternative Site Investigation.		0 (WTG construction footprint in feature)	
MBB-36	Shallow Water (SA) and Broad-leaved Sedge Mineral Shallow Marsh Type (MAS2-4)	Shallow water and emergent vegetation present.		0 (WTG construction footprint in feature)	
MBB-38	Shallow Water (SA), Organic Meadow Marsh Ecosite (MAM3) and Black Ash Organic Deciduous Swamp Type (SWD 5-1)	Shallow water and emergent vegetation present. Deciduous swamp bordering shallow water areas may provide suitable Green Heron nesting habitat.		0 (access road and collector line, and WTG construction footprint in feature)	
MBB-39	Shallow Water (SA), Organic Meadow Marsh Ecosite (MAM3) and Floating-leaved Shallow Aquatic Ecosite (SAF1)	Shallow water and emergent vegetation present.		0 (WTG construction footprint in feature)	
MBB-40	Shallow Water (SA)	Feature identified through Alternative Site Investigation.		66 (WTG construction footprint) (87 m from WTG)	
MBB-41	Shallow Water (SA), Floating-leaved Shallow Aquatic Ecosite (SAF1), Open Fen (FEO) and Open Fen Ecosite (FEO1)	Shallow water and emergent vegetation present.		0 (access road and collector line, and WTG construction footprint in feature)	

Table 3-25: Marsh Bird Breeding Habitat

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
MBB-43	Shallow Water (SA), Broad-leaved Sedge Mineral Shallow Marsh Type (MAS2-4), Open Fen (FEO), Open Fen Ecosite (FEO1) and Meadow Marsh (MAM)	Shallow water and emergent vegetation present.		0 (access road and collector line in feature)	
MBB-44	Shallow Water (SA) and Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4)	Feature identified through Alternative Site Investigation.		8 (WTG construction footprint) (45 m from WTG)	
MBB-45	Open Fen (FEO), Open Fen Ecosite (FEO1), Shallow Water (SA), Organic Meadow Marsh Ecosite (MAM3), Narrow-leaved Sedge Organic Meadow Marsh Type (MAM3-5), Broad-leaved Sedge Mineral Meadow Marsh Type (MAM2-6) and Red Maple – Conifer Mineral Mixed Swamp Type (SWM2-1)	Shallow water and emergent vegetation present. Mixed swamp bordering shallow water areas may provide suitable Green Heron nesting habitat.		0 (access road and collector line, WTG and WTG construction footprint in feature)	
MBB-46	Open Fen (FEO), Open Fen Ecosite (FEO1) and Slender Sedge Open Fen Type (FEO1-2)	Shallow water and emergent vegetation present.		0 (access road and collector line in feature)	
MBB-47	Shallow Water (SA), Organic Meadow Marsh Ecosite (MAM3), Broad-leaved Sedge Organic Meadow Marsh Type (MAM3-6) and Birch – Poplar Mineral Mixed Swamp (SWM3)	Wetland feature identified through Alternative Site Investigation. Mixed swamp bordering shallow water areas may provide suitable Green Heron nesting habitat.		0 (WTG construction footprint in feature) (17 m from WTG)	
MBB-48	Shallow Water (SA), Organic Meadow Marsh Ecosite (MAM3), Broad-leaved Sedge Organic Meadow Marsh (MAM3-6), Open Fen (FEO), Open Fen Ecosite (FEO1), Shallow Marsh (MAS), Birch – Poplar Mineral Mixed Swamp Ecosite (SWM3) and Birch – Conifer Mineral Mixed Swamp Type (SWM3-1)	Shallow water and emergent vegetation present. Mixed swamp bordering shallow water areas may provide suitable Green Heron nesting habitat.		0 (access road and collector line, WTG and WTG construction footprint in feature)	

Table 3-25: Marsh Bird Breeding Habitat

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EO
MBB-49	Open Fen (FEO), Open Fen Ecosite (FEO1) and Broad-leaved Sedge Mineral Shallow Marsh Type (MAS2-4)	Shallow water and emergent vegetation present.		0 (access road and collector line, and WTG construction footprint in feature)	
MBB-50	Water Lily – Bullhead Lily Floating-leaved Shallow Aquatic Type (SAF1-1)	Shallow water and emergent vegetation present.		0 (WTG and WTG construction footprint in feature)	
MBB-51	Shallow Water (SA), Broad-leaved Sedge Mineral Shallow Marsh Type (MAS2-4) and Organic Shallow Marsh Ecosite (MAS3)	Shallow water and emergent vegetation present.		0 (WTG construction footprint in feature)	
MBB-52	Shallow Water (SA), Open Fen (FEO), Open Fen Ecosite / Shallow Water (FEO1 / SA) and Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4)	Feature identified through Alternative Site Investigation.		5 (WTG construction footprint) (49 m from WTG)	
MBB-53	Open Fen (FEO) and Open Fen Ecosite (FEO1)	Feature identified through Alternative Site Investigation.		5 (access road and collector line) (66 m from WTG)	
MBB-54	Open Fen (FEO) and Open Fen Ecosite (FEO1)	Shallow water and emergent vegetation present.		0 (access road and collector line, and WTG construction footprint in feature)	
MBB-55	Open Fen (FEO), Open Fen Ecosite (FEO1) and Shallow Water (SA)	Feature identified through Alternative Site Investigation.		8 (WTG construction footprint) (25 m from WTG)	
MBB-57	Open Fen (FEO), Open Fen Ecosite (FEO1), Shallow Water (SA) and Red Maple – Conifer Organic Mixed Swamp Type (SWM5-1)	Feature identified through Alternative Site Investigation. Mixed swamp bordering shallow water areas may provide suitable Green Heron nesting habitat.		0 (access road and collector line, WTG and WTG construction footprint in feature)	
MBB-58	Open Fen (FEO) and Open Fen Ecosite (FEO1)	Feature identified through Alternative Site Investigation.		37 (access road and collector line) (117 m from WTG)	

Table 3-25: Marsh Bird Breeding Habitat

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
MBB-59	Open Fen (FEO), Open Fen Ecosite (FEO1), Shallow Water (SA) and Mixed Swamp (SWM)	Feature identified through Alternative Site Investigation. Mixed swamp bordering shallow water areas may provide suitable Green Heron nesting habitat.		0 (access road and collector line, and WTG construction footprint in feature)	
MBB-60	Broad-leaved Sedge Organic Meadow Marsh Type (MAM3-6)	Feature identified through Alternative Site Investigation.		9 (access road and collector line) (58 m from WTG)	
Generalized Candidate IWH	A total of nine (9) features consisting of various marsh, fen, shallow water and swamp communities.	Feature identified through Alternative Site Investigation		Various; all within 120 m of, but not overlapped by, the HIWEC location and > 120 m from a WTG.	

3.9.5 *Eastern Wood-pewee*

Eastern Wood-pewees prefer open, deciduous or mixed forests, particularly those predominated by Oak with little understorey, forest clearings and edges, farm woodlots, and parks (MNRF, 2000). Deciduous or mixed forests greater than 3 ha in size were considered suitable habitat for this species was searched for during the Site Investigation.

In total, 76 deciduous or mixed woodland features were either identified through the Site Investigation or Alternative Site Investigation. Adjacent woodlands were combined to together to create these woodland complexes. Of these, 32 features were greater than 3 ha in size and were considered as potential Eastern Wood-peewee habitat. A total of 29 features were identified as Candidate IWH because they were located within 120 m of a WTG or overlapped by HIWEC infrastructure. These features were carried forward to the EOI. The remaining three (3) features were identified as Generalized Candidate HIWIC and where carried forward to the EOI. The composition, attributes and functions as well as minimum distances from each feature to the nearest HIWEC component is summarized in **Table 3-26**. The locations of these features are shown on **Figure 3-5v**.

3.9.6 *Peregrine Falcon*

Peregrine Falcons prefer rock cliffs and crags, especially those situated near water, as well as tall buildings in urban centres (MNRF, 2000). The presence of suitable habitat for this species, including cliffs ranging from 50 to 200 m in height, was searched for during the Site Investigation.

A total of seven (7) Cliffs and Talus Slopes were identified within 120 m of the HIWEC location during the Site Investigation; however, none of these meet the height requirement for suitable Peregrine Falcon habitat (refer to **Table 3-12** in **Section 3.7.2**). Therefore, no features were carried forward to the EOI for this IWH type.

3.9.7 *Prairie Warbler*

Prairie Warblers inhabit Precambrian rock barrens with scrubby Common Juniper, White Pine, and Oak (MNRF, 2000). Habitat for this species was assessed as part of Precambrian Rock Barren, as described in **Section 3.7.3**.

A total of 88 Precambrian Rock Barren features were identified within 120 m of the HIWEC location (refer to **Table 3-13** in **Section 3.7.3**). A total of 86 features were identified as Candidate IWH and were carried forward to the EOI as potential Prairie Warbler habitat. The remaining two (2) features were identified as Generalized Candidate IWH and were also carried forward to the EOI as potential Prairie Warbler habitat.

3.9.8 *Wood Thrush*

Wood Thrush are found in Carolinian and Great Lakes – St. Lawrence forest zones, where they prefer undisturbed moist mature deciduous or mixed forest with deciduous sapling growth located near ponds or swamps, as well as hardwood forest edges, provided there are some trees greater than 12 m in height (MNRF, 2000). Suitable habitat for this species was searched for during the Site Investigation.

Habitats for this species were assessed as part of Eastern Wood-pewee Habitat, given the similarities in habitat requirements for these species, as described in **Section 3.9.5** above. In total, 76 deciduous or mixed woodland features were either identified through the Site Investigation or Alternative Site Investigation. Adjacent woodlands were combined to together to create these woodland complexes. Of these, 32 features were greater than 3 ha in

Table 3-26: Eastern Wood-pewee Habitat

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
WT-01	Deciduous Forest (FOD), Fresh – Moist Poplar Deciduous Forest Type (FOD8-1), Fresh – Moist Sugar Maple – Hardwood Deciduous Forest Type (FOD6-5), Mixed Forest (FOM) and Fresh – Moist Hemlock Mixed Forest Ecosite (FOM6)	169.8 ha in size	May provide breeding habitat for Eastern Wood-pewee	0 (transmission line in feature)	All of these features consist of relatively undisturbed forest communities that have an area greater than 3 ha
WT-02	Deciduous Forest (FOD), Mixed Forest (FOM), Dry – Fresh White Birch Mixed Forest Type (FOM5-1) and Fresh – Moist Poplar Mixed Forest Type (FOM8-1)	49.8 ha in size		0 (access road and collector line in feature)	
WT-04	Dry-Fresh White Pine -Oak Mixed Forest Type (FOM2-1)	5.9 ha in size		0 (access road and collector line in feature)	
WT-06	Dry – Fresh Poplar Deciduous Forest Type (FOD3-1), Dry – Fresh Sugar Maple – White Birch-Poplar Deciduous Forest Type (FOD5-10), Mixed Forest (FOM) and Dry – Fresh White Pine –Maple – Oak Mixed Forest Type (FOM21)	67.0 ha in size		0 (access road and collector line, and transmission line in feature)	
WT-07	Deciduous Forest (FOD), Dry-Fresh Poplar Deciduous Forest Type (FOD3-1), Fresh-Moist Poplar Deciduous Forest Type (FOD8-1), Mixed Forest (FOM), Dry-Fresh White Pine – Oak Mixed Forest Type (FOM2-1) and Dry – Fresh White Birch Mixed Forest Type (FOM5-1)	170.4 ha in size		0 (access road and collector line, and transmission line in feature)	
WT-08	Dry – Fresh Poplar Deciduous Forest Type (FOD3-1)	7.7 ha in size		0 (transmission line in feature)	
WT-09	Dry – Fresh Sugar Maple Deciduous Forest Type (FOD5-1), Mixed Forest (FOM), Dry-Fresh Poplar Mixed Forest Type (FOM5-2), and Fresh – Moist Poplar Mixed Forest Type (FOM8-1)	44.0 ha in size		0 (access road and collector line, and transmission line in feature)	
WT-10	Dry – Fresh White Birch Mixed Forest Type (FOM5-1)	4.4 ha in size		0 (access road and collector line, and transmission line in feature)	
WT-11	Deciduous Forest (FOD), Dry-Fresh Poplar Deciduous Forest Type (FOD3-1), Fresh – Moist Ash Lowland Deciduous Forest Type (FOD7-2), Fresh – Moist Poplar Mixed Forest Type (FOD8-1), Moist Poplar Deciduous Forest Ecosite (FOD8), Mixed Forest (FOM), Dry – Fresh White Birch Mixed Forest Type (FOM5-1) and Fresh – Moist Poplar Mixed Forest Type (FOM8-1)	229.4 ha in size		0 (access road and collector line, and transmission line in feature)	
WT-12	Fresh – Moist Hemlock – Hardwood Mixed Forest Type (FOM6-2)	5.4 ha in size		0 (access road and collector line, and transmission line in feature)	
WT-13	Dry – Fresh White Birch Mixed Forest Type (FOM5-1)	5.0 ha in size		0 (access road and collector line, and transmission line in feature)	

Table 3-26: Eastern Wood-pewee Habitat

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
WT-17	Dry – Fresh White Birch – Poplar – Conifer Mixed Forest (FOM5) and Fresh – Moist Ash Lowland Deciduous Forest Type (FOD7-2)	6.0 ha in size		0 (access road and collector line, and transformer station in feature)	
WT-18	Dry – Fresh White Birch Mixed Forest Type (FOM5-1)	12.2 ha in size		0 (access road and collector line, and transmission line in feature)	
WT-25	Fresh – Moist Poplar Mixed Forest Type (FOM8-1)	6.4 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
WT-26	Dry – Fresh Poplar Deciduous Forest Type (FOD3-1) and Dry – Fresh White Birch Mixed Forest Type (FOM5-1)	3.2 ha in size		0 (WTG construction footprint and transmission line in feature)	
WT-28	Fresh – Moist Poplar Mixed Forest Type (FOM8-1)	3.0 ha in size		0 (access road and collector line in feature in feature)	
WT-40	Dry – Fresh Red Maple Upland Deciduous Forest Ecosite (FOD4) and Dry – Fresh Red Maple Deciduous Forest Ecosite (FOD5)	5.1 ha in size		0 (WTG, WTG construction footprint, access road and collector line, and transmission line in feature)	
WT-43	Deciduous Forest (FOD), Dry – Fresh White Birch Deciduous Forest Type (FOD3-2), Dry – Fresh Sugar Maple Deciduous Forest Ecosite (FOD5), Dry – Fresh Deciduous Forest Ecosite (FOD4), Fresh – Moist Poplar Deciduous Forest Type (FOD8-1) and Mixed Forest (FOM)	32.1 ha in size		0 (access road and collector line, and transmission line in feature)	
WT-44	Dry – Fresh White Pine – Oak Mixed Forest Type (FOM2-1)	32.8 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
WT-55	Dry – Fresh Poplar Deciduous Forest Type (FOD3-1) and Dry – Fresh Sugar Maple – Red Maple Deciduous Forest Type (FOD5-9)	30.0 ha in size		0 (WTG, WTG construction footprint, access road and collector line in feature)	
WT-57	Dry – Fresh Oak – Red Maple Forest Type (FOD2-1)	4.2 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
WT-58	Dry – Fresh Deciduous Forest Ecosite (FOD4), Dry – Fresh Sugar Maple – Beech Deciduous Forest Type (FOD5-2)	8.2 ha in size		0 (access road and collector line in feature)	
WT-59	Dry – Fresh Deciduous Forest Ecosite (FOD4)	9.3 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
WT-60	Dry – Fresh Deciduous Forest Ecosite (FOD4)	4.6 ha in size		0 (WTG construction footprint in feature)	
WT-62	Dry – Fresh White Birch Mixed Forest Type (FOM5-1)	3.6 ha in size		0 (access road and collector line in feature)	

Table 3-26: Eastern Wood-pewee Habitat

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
WT-63	Fresh – Moist Poplar Mixed Forest Type (FOM8-1)	19.9 ha in size		0 (WTG, WTG construction footprint, access road and collector line in feature)	
WT-64	Deciduous Forest (FOD), Dry – Fresh White Birch Deciduous Forest Type (FOD3-2)	11.7 ha in size		0 (access road and collector line in feature)	
WT-65	Dry – Fresh Deciduous Forest Ecosite (FOD4), Dry – Fresh White Birch – Poplar – Mixed Forest Type (FOM5-1)	18.8 ha in size		0 (WTG, WTG construction footprint, access road and collector line in feature)	
WT-73	Mixed Forest (FOM), Dry – Fresh White Birch Mixed Forest Type (FOM5-1)	9.5 ha in size		0 (access road and collector line in feature)	
Generalized Candidate IWH	A total of three (3) features consisting of various deciduous or mixed woodland types.	Feature identified through Alternative Site Investigation		Various; all within 120 m of, but not overlapped by, the HIWEC location and > 120 m from a WTG.	

size and were considered a potential Wood Thrush habitat. A total of 29 features were identified as Candidate IWH because they were located within 120 m of a WTG or overlapped by HIWEC infrastructure. These features were carried forward to the EOI. The remaining three (3) features were identified as Generalized Candidate HIWIC and were carried forward to the EOI. The composition, attributes and functions as well as minimum distances from each feature to the nearest HIWEC component is summarized in **Table 3-26**. The locations of these features are shown on **Figure 3-5v**.

3.9.9 Yellow Rail

Yellow Rails prefer large, freshwater or brackish grass and sedge marshes with dense vegetation including bulrushes, horsetails and grasses (MNRF, 2000).

Habitats for this species were assessed as part of Marsh Bird Breeding Habitat, as described in **Section 3.9.1** above. A total of 49 Candidate IWH and nine (9) Generalized Candidate IWH were identified and carried forward to the EOI as potential Yellow Rail habitat. The locations of these features are shown on **Figure 3-5u**.

3.9.10 Monarch

Monarchs are found in meadows and open areas that contain an abundance of Common Milkweed (*Asclepias syriaca*), the species' host food plant (MNRF, 2000). Suitable habitat for this species was searched for during the Site Investigation.

One (1) cultural meadow (CUM) community was identified during the Alternative Site Investigation and, as it is located along the current main access road to the HIWEC study area (Bekanon Road), was observed routinely during field studies. Common Milkweed was not abundant in this community. Therefore, this IWH type was not carried forward to the EOI.

3.9.11 Dragonfly Species of Conservation Concern (*Horned Clubtail and Mottled Darner*)

Horned Clubtails and Mottled Darners are found in ponds, lakes, bays, rivers, marshes and bogs (MNRF, 2000). These species also use open meadows, clearings and woodlands as foraging and roosting habitat (MNRF, 2000). Suitable habitat for these species was searched for during the Site Investigation.

In total, 95 features were identified as bog (BO), open fen (FEO), shallow aquatic (SA), shallow meadow (MAS) and / or open aquatic (OAO) communities that are greater than 0.5 ha in size, which were considered potentially suitable for supporting dragonfly populations. Of these, 72 features were identified as Candidate IWH because they are overlapped by the HIWEC location. These were carried forward to the EOI. The remaining 23 features within 120 m of the HIWEC location were identified as Generalized Candidate IWH and were also carried forward to the EOI. The compositions, attributes and functions of these features, as well as minimum distances from each feature to the nearest HIWEC component, are summarized in **Table 3-27**. The locations of these features are shown on **Figure 3-5w**.

Table 3-27: Dragonfly Species of Conservation Concern (Horned Clubtail and Mottled Darner) Habitat

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
DF-01	Submerged Shallow Aquatic Ecosite (SAS1), Open Aquatic (OAO), Shallow Marsh (MAS) and Open Fen Ecosite (FEO1)	10.2 ha in size	May provide breeding habitat for aquatic stage of life cycle of dragon fly SOCC, as well as habitat for feeding and roosting	0 (transmission line in feature)	All of these features contain shallow water are potentially suitable habitat for dragonfly SOCC.
DF-03	Water Lily – Bullhead Lily Floating-leaved Shallow Aquatic Type (SAF1-1)	1.1 ha in size		0 (transmission line in feature)	
DF-12	Open Water (OA), Open Aquatic (OAO) and Organic Shallow Marsh Ecosite (MAS3)	42.6 ha in size		0 (transmission line in feature)	
DF-15	Black Spruce Treed Bog Type (BOT1-1)	1.1 ha in size		0 (access road and collector line in feature)	
DF-17	Shallow Aquatic (SA), Open Water (OA), Open Aquatic (OAO) and Open Fen Ecosite (FEO1)	8.5 ha in size		0 (access road and collector line in feature)	
DF-18	Open Aquatic (OAO), Shallow Aquatic (SA), and Narrow-leaved Sedge Mineral Shallow Marsh Type (MAS2-3)	10.7 ha in size		0 (WTG construction footprint in feature)	
DF-20	Leatherleaf Shrub Bog Type (BOS1-1)	1.2 ha in size		0 (WTG and WTG construction footprint in feature)	
DF-21	Leatherleaf Shrub Bog Type (BOS1-1)	2.6 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
DF-28	Black Spruce Treed Bog Type (BOT1-1)	0.5 ha in size		0 (WTG construction footprint in feature)	
DF-29	Black Spruce Treed Bog Type (BOT1-1)	3.2 ha in size		0 (access road and collector line in feature)	
DF-33	Open Aquatic (OAO)	0.1 ha in size		0 (access road and collector line in feature)	
DF-35	Broad-leaved Sedge Organic Shallow Marsh (MAS3-4)	1.2 ha in size		0 (WTG construction footprint and transmission line in feature)	
DF-37	Shallow Aquatic (SA), Open Water (OA); Shallow Marsh (MAS), Cattail Organic Shallow Marsh Type (MAS3-1), Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4), Open Fen (FEO), Open Fen Ecosite (FEO1) and Slender Sedge Open Fen Type (FEO1-2)	43.1 ha in size		0 (WTG construction footprint in feature)	
DF-38	Organic Shallow Marsh Ecosite (MAS3)	4.0 ha in size in size	0 (WTG construction footprint in feature)		

Table 3-27: Dragonfly Species of Conservation Concern (Horned Clubtail and Mottled Darner) Habitat

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EO1
DF-42	Black Spruce Treed Bog Type (BOT1-1)	0.7 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
DF-45	Treed Bog Ecosite (BOT1) and Open Fen Ecosite (FEO1)	8.6 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
DF-47	Narrow-leaved Sedge Mineral Shallow Marsh Type (MAS2-3)	2.9 ha in size		0 (access road and collector line in feature)	
DF-54	Shallow Aquatic (SA)	1.8 ha in size		0 (access road and collector line in feature)	
DF-55	Pondweed Mixed Shallow Aquatic Type (SAM1-4) and Open Fen Ecosite (FEO1)	3.5 ha in size		0 (access road and collector line in feature)	
DF-56	Shallow Aquatic (SA), Black Spruce Treed Bog Type (BOT1-1), Leatherleaf Shrub Bog Type (BOS1-1) and Open Fen Ecosite (FEO1)	14.4 ha in size		0 (WTG in feature)	
DF-57	Shallow Aquatic (SA), Open Aquatic (OAO) and Cattail Organic Shallow Marsh Type (MAS3-1)	9.5 ha in size		0 (WTG construction footprint in feature)	
DF-59	Shallow Aquatic (SA), Water Lily – Bullhead Lily Floating-leaved Shallow Aquatic Type (SAF1-1), Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4) and Open Fen Ecosite (FEO1)	18.1 ha in size		0 (access road and collector line in feature)	
DF-63	Black Spruce Treed Bog Type (BOT1-1)	2.1 ha in size		0 (access road and collector line in feature)	
DF-64	Black Spruce Treed Bog Type (BOT1-1)	4.4 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
DF-66	Shallow Aquatic (SA), Open Fen (FEO), and Open Fen Ecosite (FEO1)	19.8 ha in size		0 (access road and collector line in feature)	
DF-71	Black Spruce Treed Bog Type (BOT1-1)	1.4 ha in size		0 (WTG, WTG construction footprint, access road and collector line in feature)	
DF-72	Black Spruce Treed Bog Type (BOT1-1)	1.7 ha in size		0 (WTG, WTG construction footprint, access road and collector line in feature)	
DF-73	Black Spruce Treed Bog Type (BOT1-1)	2.0 ha in size		0 (WTG, WTG construction footprint, access road and collector line in feature)	

Table 3-27: Dragonfly Species of Conservation Concern (Horned Clubtail and Mottled Darner) Habitat

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
DF-74	Black Spruce Treed Bog Type (BOT1-1) and Open Water (OA)	7.0 ha in size		0 (access road and collector line in feature)	
DF-80	Few-seeded Sedge Open Bog Type (BOO1-1)	2.7 ha in size		0 (access road and collector line in feature)	
DF-89	Treed Bog Ecosite (BOT1)	0.8 ha in size		0 (WTG, WTG construction footprint, access road and collector line in feature)	
DF-92	Narrow-leaved Sedge Organic Shallow Marsh Type (MAS3-3)	6.5 ha in size		0 (WTG construction footprint in feature)	
DF-95	Open Aquatic (OAO), Shallow Aquatic (SA) and Open Fen Ecosite (FEO1)	18.7 ha in size		0 (WTG construction footprint in feature)	
DF-103	Submerged Shallow Aquatic Ecosite (SAS1)	1.1 ha in size		0 (transmission line in feature)	
DF-104	Shallow Marsh (MAS) and Cattail Organic Shallow Marsh Type (MAS3-1)	0.8 ha in size		0 (transmission line in feature)	
DF-106	Shallow Aquatic (SA) and Broad-leaved Sedge Mineral Shallow Marsh Type (MAS2-4)	4.9 ha in size		0 (WTG construction footprint in feature)	
DF-107	Open Aquatic (OAO), Broad-leaved Sedge Mineral Shallow Marsh Type (MAS2-4), Cattail Organic Shallow Marsh Type (MAS3-1) and Beaked Sedge Open Fen Type (FEO1-5)	27.7 ha in size		0 (WTG construction footprint in feature)	
DF-109	Treed Bog (BOT)	0.8 ha in size		0 (WTG construction footprint in feature)	
DF-110	Treed Bog (BOT) and Open Fen Ecosite (FEO1)	1.9 ha in size		0 (access road and collector line in feature)	
DF-111	Water Lily – Bullhead Lily Floating-leaved Shallow Aquatic Type (SAF1-1) and Broad-leaved Sedge Mineral Shallow Marsh Type (MAS2-4).	1.2 ha in size		0 (access road and collector line in feature)	
DF-113	Shallow Aquatic (SA), Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4) and Open Aquatic (OAO)	5.6 ha in size		0 (WTG construction footprint in feature)	
DF-114	Shallow Aquatic (SA), Broad-leaved Sedge Mineral Shallow Marsh Type (MAS2-4) and Open Fen Ecosite (FEO1)	15.1 ha in size		0 (access road and collector line in feature)	

Table 3-27: Dragonfly Species of Conservation Concern (Horned Clubtail and Mottled Darner) Habitat

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
DF-116	Cotton-grass Open Bog Type (BOO1-2)	1.8 ha in size		0 (WTG construction footprint in feature)	
DF-118	Water Lily – Bullhead Lily Floating-leaved Shallow Aquatic Type (SAF1-1) and Open Fen Ecosite (FEO1)	18.7 ha in size		0 (WTG construction footprint, and access road and collector line in feature)	
DF-124	Organic Shallow Marsh Ecosite (MAS3) and Open Fen Ecosite (FEO1)	4.2 ha in size		0 (access road and collector line in feature)	
DF-125	Floating-leaved Shallow Aquatic Ecosite (SAF1)	8.0 ha in size		0 (WTG construction footprint in feature)	
DF-126	Treed Bog Ecosite (BOT1)	1.5 ha in size		0 (access road and collector line in feature)	
DF-128	Shallow Aquatic (SA)	5.0 ha in size		0 (WTG construction footprint in feature)	
DF-129	Open Aquatic (OAO), Open Fen Ecosite (FEO1) and Slender Sedge Open Fen Type (FEO1-2)	4.2 ha in size		0 (access road and collector line in feature)	
DF-130	Treed Bog Ecosite (BOT1)	1.4 ha in size		0 (WTG and WTG construction footprint in feature)	
DF-133	Shallow Marsh (MAS), Shallow Aquatic (SA) and Open Fen Ecosite (FEO1)	9.4 ha in size		0 (WTG construction footprint in feature)	
DF-135	Shallow Aquatic (SA), Open Aquatic (OAO), Broad-leaved Sedge Mineral Shallow Marsh Type (MAS2-4), Organic Shallow Marsh Ecosite (MAS3) and Open Fen Ecosite (FEO1)	7.8 ha in size		0 (WTG construction footprint, and access road and collector line in feature)	
DF-136	Water Lily – Bullhead Lily Floating-leaved Shallow Aquatic Type (SAF1-1)	5.0 ha in size		0 (WTG and WTG construction footprint in feature)	
DF-140	Leatherleaf Shrub Bog Type (BOS1-1)	1.0 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
DF-142	Open Aquatic (OAO)	10.2 ha in size		0 (WTG construction footprint in feature)	
DF-144	Shallow Aquatic (SA), Broad-leaved Sedge Organic Shallow Marsh Type (MAS3-4), Open Fen Ecosite (FEO1) and Slender Sedge Open Fen Type (FEO1-2)	10.5 ha in size		0 (access road and collector line in feature)	

Table 3-27: Dragonfly Species of Conservation Concern (Horned Clubtail and Mottled Darner) Habitat

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
DF-146	Open Aquatic (OAO) and Cattail Mineral Shallow Marsh Type (MAS2-1)	1.8 ha in size		0 (WTG construction footprint in feature)	
DF-148	Open Fen Ecosite (FEO1)	1.3 ha in size		0 (access road and collector line in feature)	
DF-150	Treed Bog (BOT)	1.0 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
DF-159	Treed Bog Ecosite (BOT1)	0.6 ha in size		0 (access road and collector line in feature)	
DF-161	Wild-rice Organic Shallow Marsh Type (MAS3-5)	0.7 ha in size		0 (WTG construction footprint and access road and collector line in feature)	
DF-162	Treed Bog Ecosite (BOT1)	0.8 ha in size		0 (WTG and WTG construction footprint in feature)	
DF-163	Treed Bog Ecosite (BOT1)	1.1 ha in size		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
DF-165	Treed Bog Ecosite (BOT1)	0.5 ha in size		0 (access road and collector line in feature)	
DF-166	Treed Bog Ecosite (BOT1), Shallow Aquatic (SA), and Open Fen Ecosite (FEO1)	3.9 ha in size		0 (WTG and WTG construction footprint in feature)	
DF-169	Shallow Marsh (MAS)	1.6 ha in size		0 (access road and collector line in feature)	
DF-172	Shallow Aquatic (SA), Organic Shallow Marsh Ecosite (MAS3) and Cattail Organic Shallow Marsh Type (MAS3-1)	15.2 ha in size		0 (access road and collector line in feature)	
DF-177	Beaked Sedge Open Fen Type (FEO1-5)	5.5 ha in size		0 (WTG construction footprint, and access road and collector line in feature)	
DF-188	Slender Sedge Open Fen Type (FEO1-2)	45.7 ha in size		0 (WTG construction footprint in feature)	
DF-189	Open Fen Ecosite (FEO1)	7.8 ha in size		0 (WTG construction footprint in feature)	
DF-190	Beaked Sedge Open Fen Type (FEO1-5)	1.2 ha in size		0 (access road and collector line in feature)	

Table 3-27: Dragonfly Species of Conservation Concern (Horned Clubtail and Mottled Darner) Habitat

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
DF-193	Open Fen Ecosite (FEO1)	1.9 ha in size		0 (WTG and WTG construction footprint in feature)	
Generalized Candidate IWH	A total of 23 features comprised of a variety of qualifying open fen, bog, shallow meadow and open water communities.	Various		Varied; all > 120 m of the HIWEC location and not overlapped by HIWEC infrastructure.	

3.9.12 *Pine Imperial Moth*

The Pine Imperial Moth is a large, heavy-bodied moth with a distribution restricted to conifer or mixed forests or woodlands in the Great Lakes region (NatureServe, 2015). The larvae of this boreal subspecies of the Imperial Moth feed primarily on White Pine and Red Pine (NatureServe, 2015). Suitable habitat for this species was searched for during the Site Investigation.

Conifer or mixed forest vegetation communities with a canopy and / or sub-canopy dominated by White Pine and / or Red Pine were considered suitable habitat for Pine Imperial Moth. Suitable habitat for Pine Imperial Moth was also considered to include communities that were classified to a community series or Ecosite that is potentially dominated by White Pine and / or Red Pine (e.g., FOC identified through the Alternative Site Investigation). In total, 85 features were identified as potentially suitable habitat for Pine Imperial Moth. Of these, 58 features are overlapped by the HIWEC location; therefore, these features were carried forward to the EOI as Candidate IWH. The remaining 27 features were carried forward to the EOI as Generalized Candidate IWH. The compositions, attributes and functions of these features, as well as minimum distances from each feature to the nearest HIWEC component, are summarized in **Table 3-28**. The locations of these features are shown on **Figure 3-5y**.

3.9.13 *Eastern Wolf*

The Eastern Wolf prefers deciduous and mixed forests in its southern range, and mixed and coniferous forests further north. Wolf packs require a home range of approximately 500 km² (MNR, 2000).

Habitats for this species were assessed as part of Denning Sites for Mink, Otter, Marten, Fisher and Eastern Wolf, as described in **Section 3.8.8** above. Four (4) potential Eastern Wolf denning sites (DEN-001, DEN-002, DEN-003 and DEN-004) were carried forward to the EOI as Candidate IWH (refer to **Figure 3-5r** for locations).

3.9.14 *Common Five-lined Skink*

The Common Five-lined Skink is found in moderately dense or open deciduous or mixed woodlands with logs and slash piles, damp spots under logs, leaf litter, or sawdust, open talus slopes, rock barrens, and sandy beaches of Lake Erie and Lake Ontario (MNR, 2000). This species breeds in forest floor litter, where it lays and protects eggs under rocks and logs. Common Five-lined Skinks forage in open woodlands, sandy areas, along shores of lakes and islands. They hibernate under rock piles, in rock crevices, under logs and in stumps.

Habitat for this species was assessed as part of Turtle and Lizard Nesting Areas, as described in **Section 3.8.4** above. A total of 86 Precambrian Rock Barren features were considered to contain suitable nesting habitat for the Common Five-lined Skink and were carried forward to the EOI as Candidate IWH (refer to **Figure 3-5j** for locations).

3.9.15 *Eastern Ribbonsnake*

Eastern Ribbonsnakes are found in sunny grassy areas with low dense vegetation near bodies of shallow permanent quiet water, wet meadows, grassy marshes or Sphagnum bogs, and along the borders of ponds, lakes or streams (MNR, 2000).

Habitat for this species was assessed as part of Reptile Hibernacula as described in **Section 3.6.6** above. A total of 99 potential reptile hibernacula sites were identified within 120 m of the HIWEC location, including 98 Candidate IWH and one (1) Generalized Candidate IWH, and were carried forward to the EOI.

Table 3-28: Pine Imperial Moth

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
PIM-001	Dry – Fresh White Pine – Red Pine Coniferous Forest (FOC1-2)	Dominant species include White Pine and / or Red Pine.	May provide feeding and / or breeding habitat for Pine Imperial Moth.	0 (access road and collector line in feature)	All of these features may consist of conifer or mixed forest dominated by Red Pine or White Pine.
PIM-002	Dry – Fresh White Pine – Oak Mixed Forest (FOM2-1)	Dominant species include White Pine and / or Red Pine.		0 (WTG and WTG construction footprint in feature)	
PIM-003	Dry – Fresh White Pine – Red Pine Coniferous Forest (FOC1-2)	Dominant species include White Pine and / or Red Pine.		0 (access road and collector line, and WTG construction footprint in feature)	
PIM-004	Dry – Fresh White Pine – Red Pine Coniferous Forest (FOC1-2)	Dominant species include White Pine and / or Red Pine.		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
PIM-005	Dry – Fresh White Pine – Red Pine Coniferous Forest (FOC1-2)	Dominant species include White Pine and / or Red Pine.		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
PIM-006	Dry – Fresh White Pine – Sugar Maple Mixed Forest (FOM2-2)	Dominant species include White Pine and / or Red Pine.		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
PIM-007	Dry – Fresh White Pine – Red Pine Coniferous Forest (FOC1-2)	Dominant species include White Pine and / or Red Pine.		0 (WTG, WTG construction footprint, access road and collector line, and transmission line in feature)	
PIM-008	Dry – Fresh White Pine – Oak Mixed Forest (FOM2-1)	Dominant species include White Pine and / or Red Pine.		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
PIM-009	Dry – Fresh White Pine – Red Pine Coniferous Forest (FOC1-2)	Dominant species include White Pine and / or Red Pine.		0 (access road and collector line, and transmission line in feature)	
PIM-010	Dry – Fresh White Pine – Red Pine Coniferous Forest (FOC1-2)	Dominant species include White Pine and / or Red Pine.		0 (WTG, WTG construction footprint, access road and collector line, and transmission line in feature)	
PIM-011	Dry – Fresh White Pine – Red Pine Coniferous Forest (FOC1-2)	Dominant species include White Pine and / or Red Pine.		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
PIM-015	Dry – Fresh Poplar Mixed Forest (FOM5-2)	Dominant species include White Pine and / or Red Pine.		0 (access road and collector line in feature)	
PIM-017	Coniferous Forest (FOC)	Dominant species include White Pine and / or Red Pine.		0 (WTG, WTG construction footprint, and access road and collector line in feature)	

Table 3-28: Pine Imperial Moth

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
PIM-019	Dry – Fresh White Birch Mixed Forest (FOM5-1)	Dominant species include White Pine and / or Red Pine.		0 (WTG and WTG construction footprint in feature)	
PIM-023	Dry – Fresh Poplar Mixed Forest (FOM5-2)	White Pine is a dominant species.		0 (access road and collector line in feature)	
PIM-024	Coniferous Forest (FOC)	Dominant species include White Pine and / or Red Pine.		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
PIM-025	Coniferous Forest (FOC)	Dominant species include White Pine and / or Red Pine.		0 (WTG and WTG construction footprint in feature)	
PIM-026	Dry – Fresh Poplar Mixed Forest (FOM5-2)	White Pine is a dominant species.		0 (access road and collector line in feature)	
PIM-027	Dry – Fresh White Pine – Red Pine Coniferous Forest (FOC1-2)	Dominant species include White Pine and / or Red Pine.		0 (access road and collector line in feature)	
PIM-028	Dry – Fresh White Pine – Red Pine Coniferous Forest (FOC1-2)	Dominant species include White Pine and / or Red Pine.		0 (access road and collector line in feature)	
PIM-029	Dry – Fresh White Birch Mixed Forest (FOM5-1)	White Pine is a dominant species.		0 (access road and collector line, and transmission line in feature)	
PIM-030	Dry – Fresh White Birch Mixed Forest (FOM5-1)	White Pine is a dominant species.		0 (access road and collector line in feature)	
PIM-032	Dry – Fresh White Pine – Red Pine Coniferous Forest (FOC1-2)	Dominant species include White Pine and / or Red Pine.		0 (access road and collector line, and transmission line in feature)	
PIM-034	Dry – Fresh Poplar Mixed Forest (FOM5-2)	White Pine is a dominant species.		0 (access road and collector line, and transmission line in feature)	
PIM-035	Dry – Fresh Poplar Mixed Forest (FOM5-2)	White Pine is a dominant species.		0 (access road and collector line, and transmission line in feature)	
PIM-036	Dry – Fresh White Pine – Red Pine Coniferous Forest (FOC1-2)	Dominant species include White Pine and / or Red Pine.		0 (WTG construction footprint in feature)	
PIM-037	Dry – Fresh White Pine – Oak Mixed Forest (FOM2-1)	Dominant species include White Pine and / or Red Pine.		0 (access road and collector line in feature)	
PIM-038	Dry – Fresh White Birch Mixed Forest (FOM5-1)	White Pine is a dominant species.		0 (access road and collector line and transmission line in feature)	

Table 3-28: Pine Imperial Moth

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
PIM-039	Dry – Fresh Poplar Mixed Forest (FOM5-2)	White Pine is a dominant species.		0 (access road and collector line in feature)	
PIM-040	Dry – Fresh White Birch – Poplar – Conifer Mixed Forest (FOM2)	Dominant species include White Pine and / or Red Pine.		0 (access road and collector line in feature)	
PIM-041	Dry – Fresh White Pine – Red Pine Coniferous Forest (FOC1-2)	Dominant species include White Pine and / or Red Pine.		0 (access road and collector line in feature)	
PIM-042	Dry – Fresh White Pine – Red Pine Coniferous Forest (FOC1-2)	Dominant species include White Pine and / or Red Pine.		0 (access road and collector line in feature)	
PIM-043	Coniferous Forest (FOC)	White Pine is a dominant species.		0 (access road and collector line, and transmission line in feature)	
PIM-044	Coniferous Forest (FOC)	Feature identified through Alternative Site Investigation.		0 (access road and collector line, and transmission line in feature)	
PIM-045	Coniferous Forest (FOC)	Feature identified through Alternative Site Investigation.		0 (access road and collector line in feature)	
PIM-046	Dry – Fresh White Birch Mixed Forest (FOM5-1)	White Pine is a dominant species.		0 (access road and collector line in feature)	
PIM-047	Dry – Fresh Poplar Mixed Forest (FOM5-2)	White Pine and Red Pine are dominant species.		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
PIM-048	Mixed Forest (FOM)	Feature identified through Alternative Site Investigation.		0 (access road and collector line, and transmission line in feature)	
PIM-049	Coniferous Forest (FOC)	Dominant species include White Pine and / or Red Pine.		0 (WTG, WTG construction footprint, and access road and collector line in feature)	
PIM-050	Dry – Fresh White Birch – Poplar – Conifer Mixed Forest (FOM2)	Dominant species include White Pine and / or Red Pine.		0 (access road and collector line in feature)	
PIM-051	Mixed Forest (FOM)	Feature identified through Alternative Site Investigation.		0 (access road and collector line in feature)	
PIM-052	Dry – Fresh Poplar Mixed Forest (FOM5-2)	Feature identified through Alternative Site Investigation.		0 (transmission line in feature)	
PIM-053	Dry – Fresh White Pine Oak Mixed Forest (FOM2-1)	Dominant species include White Pine and / or Red Pine.		0 (access road and collector line in feature)	
PIM-057	Dry – Fresh White Birch – Poplar – Conifer Mixed Forest (FOM5)	White Pine is a dominant species.		0 (access road and collector line in feature)	

Table 3-28: Pine Imperial Moth

Feature ID	Composition	Attributes	Functions	Minimum Distance to HIWEC Location (m)	Rationale for carrying feature forward to EOI
PIM-058	Dry – Fresh White Birch Mixed Forest (FOM5-1)	White Pine is a dominant species.		0 (WTG construction footprint in feature)	
PIM-059	Dry – Fresh White Birch Mixed Forest (FOM5-1)	Dominant species might include White Pine and / or Red Pine.		0 (WTG construction footprint in feature)	
PIM-060	Dry – Fresh Poplar Mixed Forest (FOM5-2)	White Pine is a dominant species.		0 (access road and collector line in feature)	
PIM-061	Dry – Fresh White Pine – Oak Mixed Forest Type (FOM2-1)	Dominant species include White Pine and / or Red Pine.		0 (access road and collector line in feature)	
PIM-062	Dry – Fresh Poplar Mixed Forest (FOM5-2)	White Pine is a dominant species.		0 (access road and collector line in feature)	
PIM-063	Dry – Fresh White Pine - Red Pine Coniferous Forest (FOC1-2)	Dominant species include White Pine and / or Red Pine.		0 (access road and collector line in feature)	
PIM-064	Dry – Fresh White Pine - Red Pine Coniferous Forest (FOC1-2)	Dominant species include White Pine and / or Red Pine.		0 (access road and collector line in feature)	
PIM-065	Dry – Fresh Poplar Mixed Forest (FOM5-2)	White Pine is a dominant species.		0 (access road and collector line in feature)	
PIM-066	Dry – Fresh White Birch Mixed Forest (FOM5-1)	White Pine is a dominant species.		0 (access road and collector line in feature)	
PIM-067	Dry – Fresh Poplar Mixed Forest (FOM5-2)	White Pine is a dominant species.		0 (access road and collector line in feature)	
PIM-068	Dry – Fresh White Pine – Oak Mixed Forest Type (FOM2-1)	Dominant species include White Pine and / or Red Pine.		0 (transmission line in feature)	
PIM-069	Dry – Fresh White Pine – Red Pine Coniferous Forest (FOC1-2)	Dominant species include White Pine and / or Red Pine.		0 (access road and collector line in feature)	
PIM-070	Dry – Fresh White Birch – Poplar – Conifer Mixed Forest (FOM5)	White Pine is a dominant species.		0 (access road and collector line and transformer station in feature)	
PIM-071	Dry – Fresh White Birch – Poplar – Conifer Mixed Forest (FOM5)	White Pine is a dominant species.		0 (access road and collector line in feature)	
Generalized Candidate IWH	A total of 27 features comprised of a variety of qualifying vegetation communities.	Various		Varied; all >120 m of the HIWEC location and not overlapped by HIWEC infrastructure.	

3.9.16 Milksnake

Milksnakes are found in farmlands, meadows, hardwood or aspen stands, pine forest with brushy or woody cover, river bottoms or rock barrens (MNRF, 2000). This species hides under logs, stones, or boards or in outbuildings, and often uses communal nest sites.

Habitat for this species was assessed as part of Reptile Hibernacula as described in **Section 3.6.6** above. A total of 99 potential reptile hibernacula sites were identified within 120 m of the HIWEC location, including 98 Candidate IWH and one (1) Generalized Candidate IWH, and were carried forward to the EOI.

3.9.17 Northern Map Turtle

Northern Map Turtles prefer large bodies of water with soft bottoms, and aquatic vegetation (MNRF, 2000). This species basks on logs or rocks or on beaches and grassy edges, uses soft soil or clean dry sand for nest sites, and may nest at some distance from water. Female Northern Map Turtles have larger home ranges (about 70 ha) than males (about 30 ha), and these include hibernation, basking, nesting and feeding areas (MNRF, 2000). Aquatic corridors (e.g., stream) are required for movement.

Habitats for this species were assessed as part of Turtle and Lizard Nesting Areas, as described in **Section 3.8.4** above, as well as Turtle Wintering Areas, as described in **Section 3.6.5** above. In the turtle nesting areas assessment, 34 Candidate IWH features and one (1) Generalized Candidate IWH feature were carried forward to the EOI (refer to **Table 3-19** and **Figure 3-5o**). In the turtle wintering areas assessment, 65 Candidate IWH features and 86 Generalized Candidate IWH features were carried forward to the EOI (refer to **Table 3-8** and **Figure 3-5e**).

3.9.18 Snapping Turtle

Snapping Turtles prefer permanent or semi-permanent fresh water, including marshes, swamps or bogs, rivers and streams with soft muddy banks or bottoms (MNRF, 2000). The species often uses soft soil or clean dry sand on south-facing slopes for nest sites, and may nest at some distance from the water. Snapping Turtles often hibernate together in groups in mud under water. They have a home range size of approximately 28 ha (MNRF, 2000).

Habitats for this species were assessed as part of Turtle and Lizard Nesting Areas, as described in **Section 3.8.4** above, as well as Turtle Wintering Areas, as described in **Section 3.6.5** above. In the turtle nesting areas assessment, 34 Candidate IWH features and one (1) Generalized Candidate IWH feature were carried forward to the EOI (refer to **Table 3-19** and **Figure 3-5o**). In the turtle wintering areas assessment, 65 Candidate IWH features and 86 Generalized Candidate IWH features were carried forward to the EOI (refer to **Table 3-8** and **Figure 3-5e**).

3.10 Animal Movement Corridors

Animal movement corridors are described in the *Significant Wildlife Habitat Technical Guide (SWHTG)* (MNRF, 2000) and *Draft Ecoregion 5E Criterion Schedule Addendum to the SWHTG* (MNRF, 2012b). The following animal movement corridors were identified as potentially occurring in the HIWEC study area through the Records Review:

- Amphibian Corridors;
- Cervid Movement Corridors; and
- Furbearer Movement Corridors.

A description of the Site Investigation results pertaining to each of these types of animal movement corridors follows.

3.10.1 Amphibian Corridors

Amphibian corridors generally consist of natural vegetation that links amphibian breeding habitat and summer habitats or home ranges. In the context of the HIWEC study area, there are numerous sites where amphibians breed in an entirely natural landscape with an absence of areas that would impede movement and therefore amphibian movement is not confined. As a result, amphibians are able to move in any direction or broadly across the landscape, between breeding sites and potential summer habitat. Therefore, attempts to define and map specific corridors are not practical for the HIWEC study area.

3.10.2 Cervid Movement Corridor

Potential Deer Yarding Areas and Aquatic Feeding Habitat were identified within 120 m of the HIWEC location; however, no potential Mineral Licks were identified within 120 m of the HIWEC location during the Site Investigation. Cervid Movement Corridors consist of wooded areas that link habitats important to cervids for survival (e.g., deer yards, mineral licks, and aquatic feeding habitat). In the context of the HIWEC study area, there are numerous sites where cervids carry out their life processes in an entirely natural landscape with an absence of areas that would impede their movement and therefore cervid movement is not confined. As a result, cervids are able to move in any direction or broadly across the landscape, including between their important winter and feeding habitats. Therefore, attempts to define and map specific corridors are not practical for the HIWEC study area.

3.10.3 Furbearer Movement Corridors

Denning sites for American Mink (*Neovison vison*) and North American River Otter (*Lontra canadensis*) are usually found in riparian or wetland habitats and may be associated with Furbearer Movement Corridors. As the identification of denning sites is rare, it is important to maintain corridors to and from confirmed denning sites, which are important for local populations. The presence of furbearer movement corridors associated with candidate denning sites for American Mink and North American River Otter was assessed during the Site Investigation. No Mink or Otter dens were identified within the HIWEC location and therefore Furbearer Movement Corridors was not a type of Important Wildlife Habitat carried forward to the EOI.

4. Species at Risk

4.1 Federal Species At Risk

Species listed as Endangered and Threatened under Schedule 1 of SARA are protected and may require permits and / or authorization administered by EC-CWS if the proposed HIWEC negatively affects the species or its habitat. Permit requirements, if any, will be determined in consultation with EC-CWS. There is no provincial requirement or guidance for completing an NHA on Federal Species at Risk, however these species are included in the NHA to be complete in providing the Site Investigation information obtained for these species.

A total of 18 Federal Species at Risk, including one restricted species¹³, were identified as potentially occurring within the HIWEC study area through the Records Review. AECOM biologists reviewed the specific habitat requirements of these species and searched for suitable habitats during the Site Investigation. A description of the Site Investigation results pertaining to habitats for these Federal Species at Risk follows. The locations of potential Federal Species at Risk habitat are shown on **Figure 3-6a to 3-6r**.

In addition, AECOM biologists searched for and documented any occurrences of other Federal Species at Risk not identified through the Records Review. Complete lists of the plant and wildlife species observed during the Site Investigation are provided in **Appendix C** and **Appendix D**, respectively. One (1) additional Federal Species at Risk, Kirtland's Warbler (*Setophaga kirtlandii*), an Endangered species, was recorded within the HIWEC study area during the Site Investigation.

4.1.1 Western Chorus Frog (Great Lakes / St. Lawrence – Canadian Shield Population)

Western Chorus Frogs are found in roadside ditches or temporary ponds in fields, swamps or wet meadows, woodland or open country with cover and moisture, small ponds and temporary pools (MNR, 2000). Suitable habitat for this species was searched for during the Site Investigation.

Habitat for this species was assessed as part of Amphibian Breeding Habitat (Woodland and Wetland), as described in **Section 3.8.9** above. The locations of potential Western Chorus Frog Habitat are shown on **Figure 3-6a**. Further refinement of Western Chorus Frog habitat delineation (e.g., based on the species recovery strategy) may occur in consultation with Environment Canada – Canadian Wildlife Service (EC-CWS) during the permitting phase of this project.

4.1.2 Canada Warbler

This species breeds in moist mixed woods or deciduous forests with a dense, complex understorey (shrubs, downed trees, hummocks, or ferns) near standing water or streams (Environment Canada, 2015a). Canada Warbler is an interior forest species that requires at least 30 ha of habitat which includes forested swamps, riparian woodland and moist forests. Suitable habitat for this species was searched for during the Site Investigation.

All forest (FO) coniferous swamp (SWC), deciduous swamp (SWD) and mixed swamp (SWM) Ecosites were examined to determine whether they formed wooded areas of at least 30 ha in size. The locations of potential Canada Warbler habitat are shown on **Figure 3-6b**. Further refinement of Canada Warbler habitat delineation (e.g., based on the species recovery strategy) may occur in consultation with EC-CWS during the permitting phase of this project.

13. 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.

4.1.3 Chimney Swift

The Chimney Swift is now mainly found in urban and rural areas, as it has adopted unused chimneys for nesting and roosting with the rapid expansion of development. Prior to European settlement, it roosted and nested in large hollow trees (> 60 cm DBH) such as White Pine and Yellow Birch, as well as cave walls and rocky crevices (COSEWIC, 2007b). Therefore, in a completely natural setting, the Chimney Swift is associated with old-growth or mature forests. Suitable habitat for this species was searched for during the Site Investigation.

Habitat for this species was assessed as part of Old-growth Forests as described in **Section 3.7.5** above. The locations of potential Chimney Swift habitat are shown on **Figure 3-6c**. Further refinement of Chimney Swift habitat delineation (e.g., based on the species recovery strategy) may occur in consultation with EC-CWS during the permitting phase of this project.

4.1.4 Common Nighthawk

This species breeds and forages in a wide range of habitats, including sandy areas (e.g., dunes and beaches), open forests (e.g., burns and clear-cuts in mixed wood and coniferous stands), grasslands, wetlands (e.g., marshes, lakeshores and riverbanks), rock barrens and cultivated / landscaped areas (Environment Canada, 2015b). Suitable habitat for this species was searched for during the Site Investigation.

The following relatively open vegetation communities were considered suitable for Common Nighthawk breeding and / or foraging habitat: rock barren (RB), sand barren (SB), cultural meadow (CUM), marsh (MA), fen (FE), bog (BO), open water (OA) and shallow water (SA). The locations of potential Common Nighthawk habitat are shown on **Figure 3-6d**. Further refinement of Common Nighthawk habitat delineation (e.g., based on the species recovery strategy) may occur in consultation with EC-CWS during the permitting phase of this project.

4.1.5 Eastern Whip-poor-will

The following habitats for this species are summarized below as described in the *Recovery Strategy for the Eastern Whip-poor-will (Antrostomus vociferus) in Canada* (Environment Canada, 2015c):

- *Nesting habitat:* consists of well-drained soils (sand or sandy-loam), sparse to dense tree cover, and sparse to moderate shrub and herbaceous cover. This includes most types of forest (deciduous and mixed), forests at early successional stages, forest edges, rock or sand barrens with scattered trees, savannahs and old burns. Nesting habitat for this species is typically adjacent to open habitats required for foraging.
- *Foraging habitat:* includes areas of low tree cover and an availability of foraging perches (e.g., sparse forests, prairies, shrubby wetlands, regenerating clear-cuts, rock and sand outcrops, agricultural fields). Foraging usually takes place within 500 m of nest sites.

Suitable nesting and foraging habitats for this species were searched for during the Site Investigation.

The majority of vegetation communities within the HIWEC location are considered to be potential Eastern Whip-poor-will habitat, with the exception of coniferous forest (FOC) and coniferous swamp (SWC), as the canopy cover of these vegetation communities is considered to be too dense to accommodate nesting Eastern Whip-poor-will. Shallow water (SA) and Open water (OA) communities were also excluded as these communities type are not considered to be suitable habitat for the species. Potential Whip-poor-will nesting and foraging habitat encompasses most of the HIWEC study area (**Figure 3-6e**). Further refinement of Eastern Whip-poor-will habitat delineation (e.g., based on the species recovery strategy) may occur in consultation with EC-CWS during the permitting phase of this project.

4.1.6 Golden-winged Warbler

Nesting habitat for this species tends to be associated with open or disturbed habitat (ten (10) to 30 years into succession) such as hydro / utility right-of-ways, field edges, recently logged areas and patches of herbs and low shrubs for nesting located adjacent to forested edges that are used for perching and foraging (Environment Canada, 2014). Suitable habitat for this species was searched for during the Site Investigation.

Cultural woodland (CUW), cultural meadow (CUM) and swamp thicket (SWT) Ecosites that have a prominent shrub or sub canopy layer dominated by either Speckled Alder, Mountain Holly, Buttonbush or Winterberry and a sparse canopy consisting of scattered trees were identified as being potentially suitable habitat for Golden-winged Warbler (**Figure 3-6f**). Further refinement of Golden-winged Warbler habitat delineation (e.g., based on the species recovery strategy) may occur in consultation with EC-CWS during the permitting phase of this project.

4.1.7 Kirtland's Warbler

Kirtland's Warbler requires a specialized habitat of early successional Jack Pine, typically breeding in stands that cover an area larger than 30 ha (COSEWIC, 2008b). These types of habitat may be present in open, shrub and treed rock barrens within the HIWEC study area, which are comprised of sparsely treed areas and forest openings and therefore, are structurally similar to young Jack Pine stands that are created from forest fires or timber harvest (COSEWIC, 2008b). Suitable habitat for this species was searched during the Site Investigation.

Treed, shrub and open rock barrens were considered as potentially suitable Kirtland's Warbler habitat if adjacent rock barren communities covered a combined area of at least 30 ha. The locations of potential Kirtland's Warbler habitat are shown in **Figure 3-6g**. Further refinement of Kirtland's Warbler habitat delineation (e.g., based on the species recovery strategy) may occur in consultation with EC-CWS during the permitting phase of this project.

4.1.8 Least Bittern

This species can be found in deep marshes, swamps and bogs, as well as marshy borders of lakes, ponds, streams and ditches with dense emergent vegetation of cattail, bulrushes or sedges (COSEWIC, 2009). Least Bitterns preferentially breed in marshes containing abundant vegetation consisting of robust emergent vegetation (*Typha* spp.) and with high interspersion of open water (COSEWIC, 2009). This species tends to occur in larger wetlands with breeding densities of one (1) to five (5) nests per hectare (Gibbs *et al.* 1992; Arnold, 2005; Winstead and King, 2006). The HIWEC location occurs in the northern extent of the species' breeding range; nonetheless, suitable habitat for this species was searched for during the Site Investigation.

Potential Least Bittern habitat was identified through field investigations and aerial photograph interpretation. All shallow marsh (MAS) and shallow water (SA) vegetation communities greater than one (1) ha in size were searched for suitable habitat conditions during the Site Investigation. Features that lacked dense, robust emergent vegetation or standing water were not considered potential Least Bittern habitat. Only shallow marsh communities (MAS) were considered for the Alternative Site Investigation as these typically support dense, robust emergent vegetation required by this species. The locations of potential Least Bittern Habitat are shown on **Figure 3-6h**. Further refinement of Least Bittern habitat delineation (e.g., based on the species recovery strategy) may occur in consultation with EC-CWS during the permitting phase of this project.

4.1.9 *Olive-sided Flycatcher*

This species prefers natural forest edges and openings. Olive-sided Flycatchers will use forests that have been logged or burned, if there are ample tall snags and trees to use for foraging perches. This species breeds and forages in open coniferous or mixed-coniferous forests, often near water or wetlands with the presence of tall snags from which the species sallies for prey. It prefers mature conifer stands in a mosaic of wet areas and clearings created by natural disturbance (e.g., recent burns) (Environment Canada, 2015d). In Ontario, Olive-sided Flycatchers commonly nest in conifers such as White and Black Spruce, Jack Pine and Balsam Fir. Suitable habitat for this species was searched for during the Site Investigation.

Vegetation communities including treed bogs (BOT), coniferous swamps (SWC), mixed forests (FOM) and coniferous forests (FOC) that have a tree layer with an abundance of snags were considered to be potentially suitable Olive-sided Flycatcher habitat (**Figure 3-6i**). Further refinement of Olive-sided Flycatcher habitat delineation (e.g., based on the species recovery strategy) may occur in consultation with EC-CWS during the permitting phase of this project.

4.1.10 *Little Brown Bat*

This species uses caves, quarries, tunnels, hollow trees or buildings for roosting, and winters in humid caves (COSEWIC, 2013a). Maternity sites can be found in dark warm areas such as attics and barns, as well as cavity trees. The Little Brown Bat feeds primarily over wetlands, forests and forest edges. Suitable habitat for this species was searched for during the Site Investigation.

All forest (FO) and swamp (SW) Ecosites were considered as potentially suitable Little Brown Bat maternity colony habitats because of their potential to contain suitable cavity trees. The locations of potential Little Brown Bat maternity colony habitats are shown on **Figure 3-6j**. In addition, hibernation habitats for this species were assessed as part of Bat Hibernacula as described in **Section 3.6.3** above. The locations of potential Little Brown Bat hibernacula are also presented on **Figure 3-6j**. Further refinement of Little Brown Bat habitat delineation (e.g., based on the species recovery strategy) may occur in consultation with EC-CWS during the permitting phase of this project.

4.1.11 *Northern Myotis*

Northern Myotis habitat is composed of maternity sites as well as hibernacula. The Northern Myotis typically overwinters in mines or caves. In the spring, females leave winter hibernacula to give birth and raise pups in maternity colonies which may contain hundreds of females (COSEWIC, 2013a). Maternity sites of this species are rarely found in houses or other manmade structures, as the species prefers to roost in large cavity trees, typically ranging from 25 cm to 44 cm diameter-at-breast-height (COSEWIC, 2013a). Suitable habitat for this species was searched for during the Site Investigation.

All forest (FO) and swamp (SW) Ecosites were considered as potentially suitable Northern Myotis maternity colony habitats because of their potential to contain suitable cavity trees. The locations of potential Northern Myotis maternity colony habitats are shown in **Figure 3-6j**. In addition, hibernation habitats for this species was assessed as part of Bat Hibernacula as described in **Section 3.6.3** above. The locations of potential Northern Myotis hibernacula are also presented in **Figure 3-6j**. Further refinement of Northern Myotis habitat delineation (e.g., based on the species recovery strategy) may occur in consultation with EC-CWS during the permitting phase of this project.

4.1.12 *Tri-colored Bat*

Tri-colored Bat habitat is composed of maternity sites as well as hibernacula. The Tri-colored Bat typically overwinters in the deepest part of caves where temperature and humidity levels are the most stable (COSEWIC, 2013a). Maternity sites of this species are typically found in cavity trees, and females may return to the same area and use the same few trees per year (COSEWIC, 2013a). Suitable habitat for this species was searched for during the Site Investigation.

All forest (FO) and swamp (SW) Ecosites were considered as potentially suitable Tri-colored Bat maternity colony habitat because of their potential to contain suitable cavity trees. The locations of potential Tri-colored Bat maternity colony habitats are shown on **Figure 3-6j**. In addition, hibernation habitat for this species was assessed as part of Bat Hibernacula as described in **Section 3.6.3** above. The locations of potential Tri-colored Bat hibernacula are also presented on **Figure 3-6j**. Further refinement of Tri-colored Bat habitat delineation (e.g., based on the species recovery strategy) may occur in consultation with EC-CWS during the permitting phase of this project.

4.1.13 *Branched Bartonia*

Branched Bartonia is one (1) of several Atlantic Coastal Plain Species that occur in southcentral Ontario in the Muskoka area (COSEWIC, 2003). Branched Bartonia grows in bog Ecosites with Sphagnum ground cover and peat substrate. This species is commonly associated with Tamarack and Mountain-holly (COSEWIC, 2003). Populations often grow in small clumps (COSEWIC, 2003). Suitable habitat for this species was searched for during the Site Investigation.

Habitats for this species were assessed as part of Bogs, as described in **Section 3.7.6** above. Locations of potential Branched Bartonia habitat are shown in **Figure 3-5l**. Further refinement of Branched Bartonia habitat delineation (e.g., based on the species recovery strategy) may occur in consultation with EC-CWS during the permitting phase of this project.

4.1.14 *Blanding's Turtle*

The preferred habitats for this species are summarized below as described in the *Recovery Strategy for the Blanding's turtle (Emydoidea blandingii), Nova Scotia Population, in Canada* (Parks Canada, 2012):

Overwintering habitat (September / October to March / April):

- Dense aggregations of individuals may occur;
- Mating activity occurs at sites in the fall and basking activity occurs in nearby areas in the spring; and
- Includes wooded pools or channels, specific sections of streams or wetlands, sites with deep organic sediment or undercut banks.

Summer habitat (April to late September):

- Areas with shallow (< 2 m deep) water (e.g., fens, bogs, vernal pools, slow flowing streams), abundant aquatic vegetation, and deep organic substrate (few rocks).

Nesting habitat (evenings in June to early July):

- Females may spend several days at or near the site prior to nesting;
- Include a variety of habitats that are a variable distance from water;
- Sites often southwest facing (require adequate exposure to sunlight);
- Also require exposed substrate (gravel, soil or sand) in which the turtle can dig a nest;

- Includes lakeshores, beaches, woodland outcrops, gravel pits, roadsides; and
- Hatchlings emerge from late August to mid-October and may remain in the vicinity of the nest for several days before dispersing.

Travel routes:

- Blanding's turtles can move considerable distance among seasonal habitats; and
- Variety of terrestrial and aquatic habitats (e.g., woodlands, meadows, along waterbody boundaries, through wetlands and vernal pools).

Suitable habitats for this species were searched for during the Site Investigation.

Suitable habitat for Blanding's Turtle was addressed as part of Turtle Wintering Areas, as described in **Section 3.6.5**, as well as Turtle and Lizard Nesting Areas, as described in **Section 3.8.4**. In addition, all wetland features are considered to be potentially suitable Blanding's Turtle habitat (refer to **Figure 3-3**). The locations of potential Blanding's Turtle habitats are presented in **Figures 3-3, 3-6I and 3-6m**. Further refinement of Blanding's Turtle habitat delineation (e.g., based on the species recovery strategy) may occur in consultation with EC-CWS during the permitting phase of this project.

4.1.15 Eastern Foxsnake (Georgian Bay Population)

This species is typically found in shrub swamps, marshes, and rock barrens, as well as deciduous forest containing openings with shrubs and saplings, and prefers woodland-marsh edges for hunting and breeding. The Georgian Bay population primarily occurs within one (1) km of the Georgian Bay coast (COSEWIC, 2008a) and therefore the species is considered unlikely to occur within the majority of the HIWEC location. Suitable habitat for this species was searched for during the Site Investigation.

Habitats for this species were assessed as part of Reptile Hibernacula as described in **Section 3.6.6** above. Potential Reptile Hibernacula features located within one (1) km of Henvey Inlet, the Key River or the Georgian Bay coast are considered potential Eastern Foxsnake habitat. The locations of potential Eastern Foxsnake habitat are presented on **Figure 3-6n**. Further refinement of Eastern Foxsnake habitat delineation (e.g., based on the species recovery strategy) may occur in consultation with EC-CWS during the permitting phase of this project.

4.1.16 Eastern Hog-nosed Snake

This species is typically found in sandy upland fields, pastures, savannahs, sandy beaches, as well as dry open oak-pine-maple forest with sandy soils. Eastern Hog-nosed Snakes generally prefer forest areas greater than 5 ha in size (MNR, 2000). A telemetry study completed near Parry Sound suggests that Eastern Hog-nosed Snakes in the area prefer meadow, sand, human-impacted areas and forest habitats over rock, wetland, and aquatic habitats (COSEWIC, 2007c). The Eastern Hog-nosed Snake is a prey specialist therefore the abundance of American Toads is also an important factor in identifying habitat for this species (COSEWIC, 2007c). Eastern Hog-nosed Snakes nest and hibernate in areas of sandy substrate (COSEWIC, 2007c; Ontario Nature, 2015). Suitable habitat for this species was searched for during the Site Investigation.

Habitats for this species were assessed as part of Sand Barren features as described in **Section 3.7.4**. The locations of potential Eastern Hog-nosed Snake habitat are presented in **Figure 3-5o**. Further refinement of Eastern Hog-nosed Snake habitat delineation (e.g., based on the species recovery strategy) may occur in consultation with EC-CWS during the permitting phase of this project.

4.1.17 Eastern Musk Turtle

This species prefers shallow slow moving water of lakes, streams, marshes and ponds (MNR, 2000). The Eastern Musk Turtle hibernates in underwater mud, in banks or in muskrat lodges (MNR, 2000). This highly aquatic species prefers shallow water with abundant floating and submerged vegetation, and usually does not venture onto land except to nest or move to access adjacent wetlands (COSEWIC, 2012). Eastern Musk Turtles generally nest within 3 m to 11 m of the shore, and typically lay their eggs in shallow excavations in sand, at the base of dune grasses, decaying vegetable matter, rotting wood, and in the walls of Muskrat or Beaver lodges (COSEWIC, 2012). Suitable habitat for this species was searched for during the Site Investigation.

Suitable habitat for Eastern Musk Turtle was addressed as part of Turtle Wintering Areas, as described in **Section 3.6.5**, as well as Turtle and Lizard Nesting Areas, as described in **Section 3.8.4**. In addition, all wetland features are considered to be potentially suitable Eastern Musk Turtle habitat (refer to **Figure 3-3**). The locations of potential Eastern Musk Turtle habitats are presented in **Figures 3-3, 3-6l and 3-6m**. Further refinement of Eastern Musk Turtle habitat delineation (e.g., based on the species recovery strategy) may occur in consultation with EC-CWS during the permitting phase of this project.

4.1.18 Massasauga Rattlesnake (Great Lakes / St. Lawrence Population)

The Massasauga Rattlesnake is a viviparous species, requiring three (3) months of gestation prior to giving live birth. Multiple individuals may congregate at high-quality sites of preferred habitat for this species, which are distinguished by function and summarized below as described in the *Recovery Strategy for the Massasauga (Sistrurus catenatus) in Canada* (Parks Canada Agency, 2013):

Hibernation sites:

- Provide insulated and moist subterranean spaces below the frost line (e.g., burrows created by other animals, rock crevices, root systems, and Sphagnum hummocks);
- Hibernation of the eastern Georgian Bay regional population usually characterized by sparse tree cover or shrubs with Sphagnum moss or sedge hummocks;
- Site needs to provide insulated and moist subterranean spaces below the frost line (e.g., burrows created by other animals, rock crevices, root systems, and Sphagnum hummocks); and
- Include conifer or shrub swamps and swales, poor fens, or water saturated soils formed in rock barren depressions.

Foraging and mating sites (May to October):

- Prefer areas with surrounding vegetative ground cover (low-lying shrubs, grasses) and low canopy cover (e.g., forest openings, old burn areas, rock barrens, marshes, fens and swamps, fields and grasslands); and
- Avoids dense forests, open water, and areas lacking ground cover.

Gestation and basking sites:

- Similar to foraging and mating sites, basking sites are found in areas with low canopy cover (e.g., forest openings, bedrock outcrops, shorelines of water bodies, alvars) and high low-lying vegetative cover (e.g., shrubs, grasses); and
- Includes a feature that provides relatively warm refuge during cool weather (e.g., large flat and thin rock with crevices, rock piles, old tree stump, earth mounds, brush or debris pile).

Suitable habitats for this species were searched for during the Site Investigation.

Massasauga Rattlesnake habitat described in the *Recovery Strategy for the Massasauga (Sistrurus catenatus) in Canada* (Parks Canada Agency, 2013) overlaps considerably with Reptile Hibernacula habitat as described in the *Draft Ecoregion 5E Criterion Schedule Addendum to the SWHTG* (MNR, 2012b). For this reason, habitats of this species were assessed as part of Reptile Hibernacula, as described in **Section 3.6.6** above.

Massasauga Rattlesnake hibernacula in the eastern Georgian Bay are most often found in vegetation communities that support the development of Sphagnum moss or sedge hummocks. Of the 99 identified Reptile Hibernacula features, 24 are considered potentially suitable hibernacula for Massasauga Rattlesnake (refer to **Figure 3-6q** for locations). These features are characterized by Sphagnum or sedge hummocks potentially providing access to below the frost line.

In the Reptile Hibernacula assessment, a subset of the remaining features may also provide Massasauga Rattlesnake with suitable habitats for gestation and basking or foraging and mating because these sites have low canopy cover and structural or vegetative structure that could provide refuge and / or support prey populations. Additionally, field staff recorded the locations of suitable Massasauga Rattlesnake gestation habitat during the 2014 and 2015 Site Investigation. In total, 126 features within 120 m of the HIWEC location were identified as potentially suitable Massasauga Rattlesnake gestation habitat (**Figure 3-6r**). Further refinement of Massasauga Rattlesnake habitat delineation (e.g., based on the species recovery strategy) may occur in consultation with EC-CWS during the permitting phase of this project.

4.2 Provincial Species At Risk

Species listed as Endangered or Threatened under the *ESA* but not listed under Schedule 1 of *SARA* are treated as Provincial Species at Risk for the purpose of this NHA. There is no provincial requirement or guidance for completing an NHA on Provincial Species at Risk, however these species are included in the NHA to ensure that potential effects of the HIWEC and mitigation measures, if required, are appropriately addressed through the HIWEC EA.

A total of two (2) Provincial Species at Risk were identified as potentially occurring within the HIWEC study area through the Records Review. AECOM biologists reviewed the specific habitat requirements of these species and searched for suitable habitats during the Site Investigation. A description of the Site Investigation results pertaining to habitats for these Provincial Species at Risk follows.

In addition, AECOM biologists searched for and documented any occurrences of other Provincial Species at Risk not identified through the Records Review. Complete lists of the plant and wildlife species observed during the Site Investigations are provided in **Appendix C** and **Appendix D**, respectively. No additional Provincial Species at Risk were recorded within the HIWEC study area during the Site Investigation.

4.2.1 Bank Swallow

Bank Swallows form breeding colonies in a wide variety of natural and anthropogenic habitats that provide a nearly vertical face in which nest burrows can be excavated; this includes shorelines of rivers and lakes, sand piles, steep slopes, and active or decommissioned aggregate pits (MNR, 2000). This species prefers eroding banks of sand-silt substrates and breeding sites that are adjacent to foraging habitats, such as rivers, lakes, wetlands, grasslands, meadows, and agricultural areas (COSEWIC, 2013b). Suitable habitats for this species were searched for during the Site Investigation.

Habitats for this species were assessed as part of Cliffs and Talus Slopes, as described in **Section 3.7.2** above, as well as Colonially-Nesting Bird Breeding Habitat (Bank and Cliff), as described in **Section 3.6.7** above. While six (6) Cliff and Talus Slope features were identified, no nests were observed at these locations; therefore, no potentially suitable habitat for Bank Swallow was identified during the Site Investigation.

4.2.2 Barn Swallow

This species prefers farmlands or rural areas, cliffs, caves, rock niches, buildings or other man-made structures for nesting (MNRF, 2000). Barn Swallows forage over open country, often near bodies of water.

Habitats for this species were assessed as part of Cliffs and Talus Slopes, as described in **Section 3.7.2** above, as well as Colonially-Nesting Bird Breeding Habitat (Bank and Cliff), as described in **Section 3.6.7** above. While six (6) Cliff and Talus Slope features were identified, no nests were observed at these locations; therefore, no potentially suitable habitat for Bank Swallow was identified during the Site Investigation.

4.3 Summary of Corrections to the Records Review

The following corrections to the Records Review were made as a result of the Site Investigation:

- Numerous changes to ELC vegetation communities, as delineated by Stantec in 2013 (refer to AECOM, 2015a), were made during ELC and vascular plant field surveys within the HIWEC location (refer to **Table 3-1**); and
- MNRF indicated presence of an Osprey nest in the general location of three (3) unoccupied Great Blue Heron stick nests observed during Site Investigation surveys completed in 2015. It is presumed that this observation was of a Great Blue Heron nest and not an Osprey nest.

4.4 Summary of Key Findings of the Site Investigation

Table 4-1 summarizes the natural features identified through the Records Review and confirmed through the Site Investigation as occurring within 120 m of the HIWEC location; these are the features that were carried forward to the EOI.

Table 4-1: Summary of Natural Features Carried Forward to the Evaluation of Importance

Feature	Results of Site Investigation
Conservation Reserves	The North Georgian Bay Shoreline and Islands Conservation Reserve is located within 120 m of the HIWEC location and was carried forward to the EOI.
Provincially Important Wetlands	All wetlands features that were confirmed in or within 120 m of the HIWEC location and were carried forward to the EOI.
Important Wildlife Habitat	The following Candidate or Generalized Candidate IWH types were identified within 120 m of the HIWEC location and were carried forward to EOI: <ul style="list-style-type: none"> • Waterfowl Stopover and Staging Areas (Aquatic); • Shorebird Migratory Stopover Areas; • Bat Hibernacula; • Bat Maternity Colonies; • Turtle Wintering Areas; • Reptile Hibernacula; • Colonially-Nesting Bird Breeding Habitat (Trees / Shrubs);

Table 4-1: Summary of Natural Features Carried Forward to the Evaluation of Importance

Feature	Results of Site Investigation
	<ul style="list-style-type: none"> • Deer Yarding Areas; • Cliffs and Talus Slopes; • Precambrian Rock Barren; • Sand Barren; • Old-growth Forest; • Bog; • Waterfowl Nesting Areas; • Bald Eagle and Osprey Nesting, Foraging and Perching Habitat; • Woodland Raptor Nesting Habitat; • Turtle and Lizard Nesting Areas; • Seeps and Springs; • Aquatic Feeding Habitat; • Denning Sites for Mink, Otter, Marten, Fisher and Eastern Wolf; • Amphibian Breeding Habitat (Woodland and Wetland); • Mast Producing Areas; • Marsh Bird Breeding Habitat; • Black Tern Habitat; • Eastern Wood-peewee Habitat; • Prairie Warbler Habitat; • Wood Thrush Habitat; • Yellow Rail Habitat; • Mottled Darner Habitat; • Horned Clubtail Habitat; • Pine Imperial Moth Habitat; • Eastern Wolf Habitat; • Common Five-lined Skink Habitat; • Eastern Ribbonsnake Habitat; • Milksnake Habitat; • Northern Map Turtle Habitat; and • Snapping Turtle Habitat.
<p>Federal Species At Risk</p>	<p>Potential habitat for a total of 19 Federal Species at Risk, including one restricted species¹⁴ as well as the following 18 species, was identified during the Site Investigation:</p> <ul style="list-style-type: none"> • Western Chorus Frog; • Canada Warbler; • Chimney Swift; • Common Nighthawk; • Eastern Whip-poor-will; • Golden-winged Warbler; • Least Bittern; • Olive-sided Flycatcher; • Little Brown Bat; • Northern Myotis; • Tri-coloured Bat; • Branched Bartonia; • Blanding’s Turtle; • Eastern Foxsnake; • Eastern Hog-nosed Snake; • Eastern Musk Turtle; • Massasauga Rattlesnake; and, • Kirtland’s Warbler.
<p>Provincial Species At Risk</p>	<p>No potential habitat for Provincial Species at Risk was identified during the Site Investigation.</p>

14 .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.

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