NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Jericho Wind Energy Centre

2016 Wildlife Behaviour Monitoring

Natural Resource Solutions Inc. (NRSI) conducted post-construction monitoring at the operational Jericho Wind Energy Centre (Jericho WEC) located in the Municipality of Lambton Shores and the Township of Warwick, Lambton County, Ontario. This wind energy project has a generating capacity of 150MW and consists of 92 turbines. This document provides an executive summary of the methods and results of the second year of post-construction wildlife monitoring conducted at the Jericho WEC in 2016.

Methods

NRSI biologists conducted post-construction wildlife behaviour monitoring at the Jericho WEC following methods approved by the Ontario Ministry of Natural Resources and Forestry (MNRF) as part of the project's Natural Heritage Assessment (NHA) and Environmental Effects Monitoring Plan (EEMP) (AECOM 2013a, 2013b). As outlined in these documents, a total of 14 provincially significant wildlife habitats required post-construction surveys, including:

- Six Bat Maternity Colony habitats (BMC-143, BMC-155, BMC-168, BMC-216, BMC-217, BMC-382);
- Six Amphibian Woodland Breeding Habitats (AWO-03, AWO-05, AWO-08, AWO-11, AWO-12, AWO-13);
- One Amphibian Movement Corridor Habitat (AMC-01); and
- One Bald Eagle Nesting, Foraging, and Perching Habitat (BEN-01).

These habitats were identified to be provincially significant in the NHA, completed prior to the construction of the project. Provincial significance of habitats was identified based on criteria established by the MNRF.

As per the Environmental Impact Study (EIS) report of the NHA and the EEMP (AECOM 2013a, 2013b), the following methods were implemented for the monitoring study:

- Acoustic through-the-night bat monitoring and evening visual bat surveys were conducted on at least 10 nights in June and early July;
- Amphibian surveys were conducted during the spring, including:
    - Calling anuran (frog) surveys (once in each of April, May, and June);
    - Egg mass surveys targeting salamanders/newts (once in March and if no egg masses found in March, once again in April); and
    - Larval surveys targeting salamanders/newts (twice in early June).
- Bald eagle behaviour surveys were conducted twice per week during the nesting season, beginning on February 16, and ending on August 19.

Results

Bat Maternity Colony Habitats

The results of the post-construction Bat Maternity Colony Habitat surveys completed by NRSI in 2016, in comparison with the baseline data collected from 2010-2011, are outlined in the table below.

Habitat ID	Pre-Construction Results (2010-2011)	Post-Construction Results (2015)	Post-Construction Results (2016)
BMC-143	**Significant** Big Brown Bat Silver-haired Bat	**Significant** Big Brown Bat Silver-haired Bat	**Significant** Little Brown Myotis Big Brown Bat Silver-haired Bat
BMC-155	**Significant** Big Brown Bat Silver-haired Bat	**Significant** Big Brown Bat Silver-haired Bat	**Significant** Big Brown Bat Silver-haired Bat
BMC-168	**Significant** Big Brown Bat Silver-haired Bat	**Significant** Big Brown Bat Silver-haired Bat	**Significant** Big Brown Bat Silver-haired Bat
BMC-216	**Significant** Big Brown Bat Silver-haired Bat	**Significant** Big Brown Bat Silver-haired Bat	**Significant** Big Brown Bat Silver-haired Bat
BMC-217	**Significant** Big Brown Bat Silver-haired Bat	**Significant** Big Brown Bat Silver-haired Bat	**Significant** Big Brown Bat Silver-haired Bat
BMC-382	**Significant** Little Brown Myotis Northern Myotis	**Not Significant** Does not meet standards of significance for any bat species	**Not Significant** Does not meet standards of significance for any bat species

The results observed at BMC-382 indicate this habitat does not currently meet the provincial standards of significance, due to a reduction in documented calls of *Myotis* species. This decline in calls is expected to be a result of the influence of the fungal disease white-nose syndrome. This disease has decimated populations of *Myotis* species in Ontario since the disease was first discovered in the province in 2010. The decline is not expected to be a result of any indirect change in use resulting from the nearby operational wind turbines. Monitoring will continue for one additional year at each bat habitat to observe any other variation in bat activity or species composition.

Amphibian Woodland Breeding and Movement Corridor Habitats

The results of the post-construction Amphibian Woodland Breeding and Movement Corridor Habitat surveys completed by NRSI in 2016, in comparison with the baseline data collected in 2013, are outlined below:

Habitat ID	Pre-Construction Results (2013)	Post-Construction Results (2015)	Post-Construction Results (2016)
AWO-03	**Significant** ≥20 individuals, 2 salamander species and ≥20 individuals, 2 frog species	**Significant** ≥20 individuals, 1 salamander species and ≥20 individuals, 4 frog species	**Significant** ≥20 individuals, 1 salamander species and ≥20 individuals, 4 frog species
AWO-05	**Significant** ≥20 individuals, 1 salamander species and ≥20 individuals, 2-3 frog	**Significant** ≥20 individuals, 4 frog species	**Significant** ≥20 individuals, ≥1 salamander species and ≥20 individuals, 4 frog

Habitat ID	Pre-Construction Results (2013)	Post-Construction Results (2015)	Post-Construction Results (2016)
	species		species
AWO-08	**Significant** ≥20 individuals, 1 salamander species	**Significant** ≥20 individuals, 3 frog species	**Significant** ≥20 individuals, 2 frog species
AWO-11	**Significant** ≥20 individuals, 1 salamander species	**Significant** ≥20 individuals, 3 frog species	**Significant** ≥20 individuals, 3 frog species
AWO-12	**Significant** ≥20 individuals, 3 frog species	**Significant** ≥20 individuals, 1 salamander species and ≥20 individuals, 4 frog species	**Significant** ≥20 individuals, 1 salamander species and ≥20 individuals, 3 frog species
AWO-13	**Significant** ≥20 individuals, 3 frog species	**Significant** ≥20 individuals, 3 frog species	**Significant** ≥20 individuals, 2 frog species
AMC-01	**Significant** ≥20 individuals, 3 frog species	**Significant** ≥20 individuals, 3 frog species	**Significant** ≥20 individuals, 3 frog species

All significant amphibian woodland breeding habitats continue to meet the provincial standards for significance.

Bald Eagle and Osprey Nesting, Foraging, and Perching Habitat

The results of the post-construction Bald Eagle and Osprey Nesting, Foraging, and Perching habitat surveys completed by NRSI in 2016, in comparison with the baseline data collected in 2013, are outlined below:

Habitat ID	Pre-Construction Results (2013)	During-Construction Results (2014)	Post-Construction Results (2015)	Post-Construction Results (2016)
BEN-01	**Significant** Adult pair of bald eagles, egg incubation, and first year juvenile	**Significant** Adult pair of bald eagles, egg incubation, and first year juvenile	**Significant** Adult pair of bald eagles, egg incubation, and first year juvenile	**Significant** Adult pair of bald eagles, egg incubation, and two first year juveniles

The identified bald eagle nesting, foraging, and perching habitat continues to meet the provincial standards for significance.

Additional Monitoring Commitments

Post-construction wildlife monitoring conducted by NRSI in 2016 represents the second year of post-construction monitoring conducted at the Jericho Wind Energy Centre.

Post-construction surveys are required to be conducted for one additional year for the majority of significant wildlife habitats in the Jericho WEC project area. Surveys will be conducted in 2017 for the following habitats, in accordance with the EIS of the NHA and EEMP (AECOM 2013a, 2013b):

- Bat Maternity Colony Habitats (BMC-143, BMC-155, BMC-168, BMC-216, BMC-217, BMC-382);

- Amphibian Woodland Breeding Habitats (AWO-03, AWO-05, AWO-08, AWO-11, AWO-12, AWO-13);
- Amphibian Movement Corridor Habitat (AMC-01); and
- Bald Eagle and Osprey Nesting, Foraging, and Perching Habitat (BEN-01).