Bowfin Environmental Consulting

168 Montreal Road
Cornwall, ON
Tel: 613.935.6139
Fax: 613.935.6295

Glen Tomkinson
Ridgefield Solar Farm Partnership
620 Righters Ferry Road
Bala Cynwyd PA 19004
Phone:(610) 668-0300 x1000
Fax:(610) 668-0365

May 30, 2018

Dear Mr. Tomkinson:

RE: Post-Construction (Year 3) Results for Ridgefield Solar Farm Partnership

Background

The Natural Heritage Assessment – Environmental Impact Study Report for the Penn Energy – Ridgefield Solar Energy Facility (NHA) prepared by Bowfin Environmental Consulting Inc. (Bowfin) indicated that pre-construction surveys were required for four candidate significant wildlife habitat (SWH). These were:

1. Reptile Hibernacula
2. Turtle Overwintering Habitat
3. Amphibian Breeding Habitat (woodland)
4. Amphibian Breeding Habitat (marsh)

Following the results of the pre-construction report (December 2013) it was determined that only the Turtle Overwintering Habitat met the significance criteria as established by the Ministry of Natural Resources and Forestry (MNRF) in their *SWH Ecoregion 6E Criterion Schedule* (SWHECS). Mitigation measures and post-construction monitoring for Turtle Overwintering Habitat as described in the NHA remained in place. These are listed below for ease of reference.

<u>Mitigation Measures:</u>

- Construction crews would be educated about the location and significance of this feature and will be trained to avoid turtles by conducting a visual inspection of the work site prior to the commencement of the daily activities. The crew would be made aware that they need to avoid harming turtles. Workers will be provided with an ID

manual of turtles and protocol of what to do if turtles are present (i.e. wait for turtles to pass, avoid turtles). The contact information of a SAR biologist who will be responsible for safely transporting turtles will be provided. Construction crews will record the number and species of any turtles observed.

- The access road use and vehicular speeds will be minimized during mid-October to November (when turtles are moving towards the wintering area) and early spring (i.e. after ice melt till mid-end of June, when turtles leave the wintering area for nesting sites). During these same periods a thorough sweep of the work areas within 100 m of the wintering area will be performed daily prior to any work commencing within this area.

Post-Construction Monitoring:
The same protocol as followed for the pre-construction monitoring were used to determine impacts to use of the habitat by turtles. Monitoring began the first spring following the completion of the construction works and continued for an additional 2 years (total of 3 years of post-monitoring, now including this year). A report outlining the annual findings has been provided to MNRF on an annual basis.

Contingency:
If the post-monitoring results find that a negative impact occurred, then the proponent will contact MNRF to discuss additional measures.

The following letter report provides a summary of post-construction monitoring for Year 3.

METHODOLOGY

The protocol followed were visual surveys as agreed to in the NHA and used during the pre-construction monitoring. These are summarized below, and the location of the area surveyed is identified on Figure 1.

Data to be recorded:

- Date
- Name of observer(s) conducting field work
- Time (start and end time, duration)
- Weather conditions (temperature, % cloud cover, wind)
- GPS location
- Species presence and abundance information

Areas to be searched: Community 15 (Wetland 2)

Timing: Spring

Duration: 3 years (2016-2018)

Frequency and Timing:

- 2 visits to candidate turtle over-wintering areas
  - 1st visit will occur in late March
  - 2nd visit will occur in late April
- Visits will be on warm sunny days when the turtles are most likely basking

RESULTS

Spring 2018 was wet and cold. The surveys were not undertaken during late March due to the presence of snow/ice cover. Instead the first visit took place on April 26, 2018. This was followed up with a visit on April 30, 2018 (Table 1). All visits were completed by Michelle Lavictoire (M. Sc. Natural Resources). The results are summarized below and depicted on Figure 2.

Table 1 Site Visit Summary

Date	Time (h)	Staff	Staff Hours	Air Temperature (Min-Max) °C	Weather
April 26, 2018	1440-1530	M. Lavictoire	1	12.0 (-1.0-13.5)	Clear skies, gentle breeze
April 30, 2018	1030-1430	M. Lavictoire	4	15.0 (0.6-18.8)	Clear skies, light to breeze

M. Lavictoire – Michelle (Nunas) Lavictoire – B. Sc. Wildlife Resources and M.Sc. Natural Resources

*Min-Max Temp Taken From: Environment Canada. National Climate Data and Information Archive. Peterborough, Trent University, Ontario. Available http://climate.weatheroffice.gc.ca/ [May 30, 2018]

Painted turtles were present during both visits. During the April 26 visit, 2 to 4 painted turtles were observed (not all were seen at the same time). On the April 30 visit, 5 painted turtles were observed basking within the cattails, all at the same time.

Table 2 Summary of Turtle Observations 2018

Date	Species	Number/Comments
April 26	Painted Turtle	2-4 (±10-15 cm)
April 30	Painted Turtle	5 (±10-15 cm)

Photo 1 Painted turtles basking (April 30, 2018)

Figure 1 Location of Survey Areas

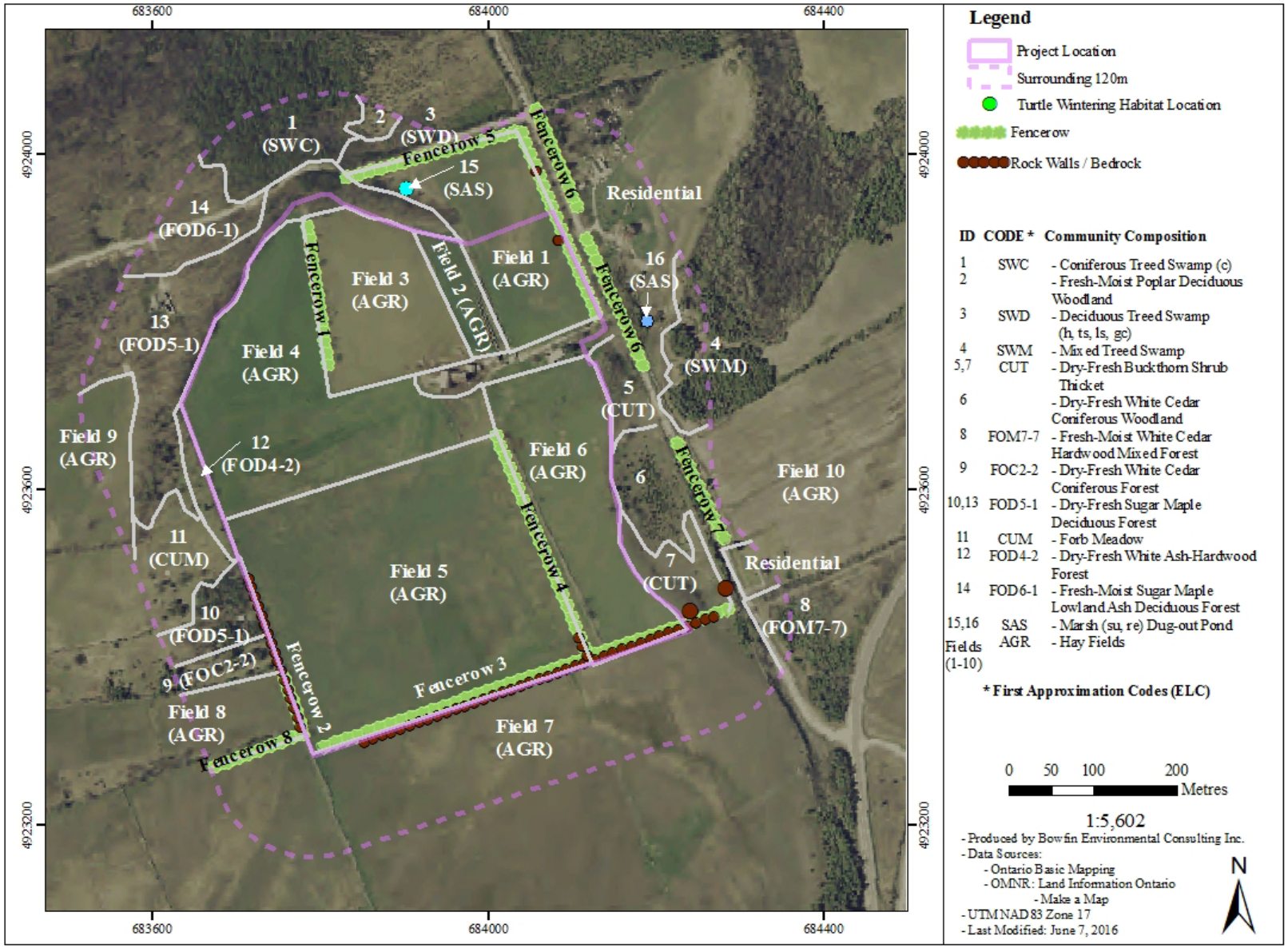
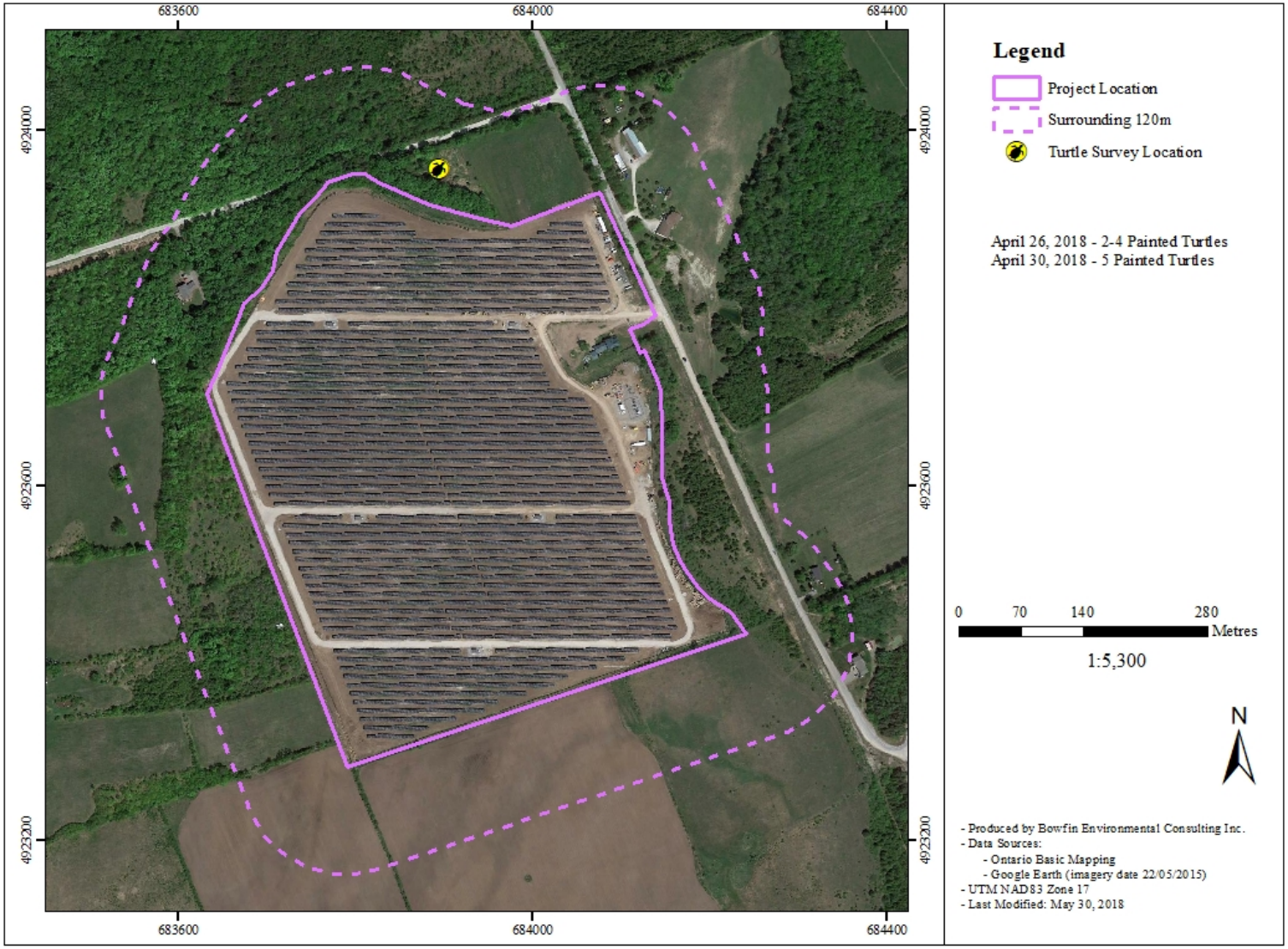


Figure 2 Results



CONCLUSION

The purpose of the post-construction monitoring is to verify that the SWH continues to meet the appropriate SWHECS defining criteria to remain significant. For Turtle Wintering Habitat the criteria are as follows:

- Presence of minimum of 5 overwintering midland painted turtles; or
- Presence of ≥1 northern map OR snapping within a wetland.

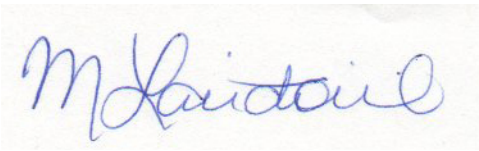
Post Construction year	Results	SWHECS Criteria Met (yes/no)
2016	6 Painted Turtles (April 15)	Yes
2017	5 Painted Turtles (April 18 and 27)	Yes
2018	5 Painted Turtles (April 30)	Yes

These results indicate that this pond continues to provide SWH for Turtle Wintering Habitat. No negative impacts were observed.

The post-construction monitoring is now completed and no contingency measures are required. This represents the final monitoring year and report.

Should you have any questions or comments, please do not hesitate to contact me at 613.935.6139.

Yours Sincerely,



Michelle Lavictoire
Biologist/Principal

Table 3 Summary of Mitigation Measures for Turtle Wintering Habitat (from NHA Table 12)

Feature ID	Distance to Project Location	Potential Negative Effects	Mitigation Measures	Objectives, Post-Construction Monitoring, and Contingency Plans
Wetland 2	41m	• Sedimentation and/or erosion (construction)	• Design and implement a sediment and erosion control plan prior to any removal of vegetation or grading. • Install, monitor, and maintain erosion and sediment control measures (i.e. silt fences) around the periphery of the construction area. This will also serve to demarcate boundaries to keep workers and equipment out of these features.	Performance Objectives: • Maintain vegetated buffers between wetland and project location. • Minimize impacts to natural features and associated wildlife habitats. Monitoring: • Construction monitoring to ensure proper installation and maintenance of erosion control measures. • Monitoring of silt fencing daily in areas where work is taking place and prior to and after any storm events. • Correcting silt fencing that is not working properly. Contingency Measures: None required.
		• Spills (i.e. oil, gasoline, grease, etc.) (construction and operation)	• All maintenance activities, vehicle refueling or washing, and chemical storage will be located more than 30m from any significant natural feature in a designated area where proper precautions (i.e. tarps) have been installed to ensure that no contamination of the soil occurs. • Develop a spill response plan and train staff on appropriate procedures. • Keep emergency spill kits on site. • Dispose of waste material by authorized and approved offsite vendors.	Performance Objectives: • Minimize impacts to natural features and associated wildlife habitats. Monitoring: None required. Contingency Measures: None required.
		• Changes in soil moisture and compaction (construction and operation)	• Implement infiltration techniques to the maximum extent possible. • Minimize paved surfaces and design roads to promote infiltration. • Limit work activities to the area outside of the drip line of the woodland.	Performance Objectives: • Minimize impact to soil moisture regime and vegetation species composition. Monitoring: None required. Contingency Measures: None required.

Feature ID	Distance to Project Location	Potential Negative Effects	Mitigation Measures	Objectives, Post-Construction Monitoring, and Contingency Plans
		• Changes to surface water hydrology (construction)	• Limit changes in land contours. • Maintain direction and quantity of surface flow. • Minimize construction of impermeable surfaces.	Performance Objectives: • Maintain existing surface water flow patterns. Monitoring: None required. Contingency Measures: None required.
		• Contamination of runoff water by herbicides (operational)	• The vegetation within the project location will be mowed on a regular basis. This will minimize and possibly eliminate the need for herbicides thereby reducing/eliminating the potential to create poor water quality of the runoff. • Minimize herbicide application. • Herbicide application will not exceed the manufacturer's directions.	Performance Objectives: • Minimize indirect impacts on wetland habitat and their communities. Monitoring: Monitor operational activities to ensure any herbicide application follows safe practices. Contingency Measures: None required.