Future Solar Developments Inc.

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Water Assessment Site Investigation Report
Proposed Groundmount Solar Facility LP 9 and 10
1572 Story Road
Midhurst, ON

Project Number
WSL-00002250-00

Prepared By:

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Date Submitted
August 2012

Legal Notification

This report has been prepared by **exp** Services Inc. on behalf of Mr. Sam Qin of Future Solar Developments Inc. for the submission to the Ontario Ministry of the Environment as part of the Renewable Energy Approval process.

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Report Distributed To: Ontario Ministry of Environment

Mr. Sam Qin
Future Solar Developments Inc.

1 Introduction & Background

Exp Services Inc. (**exp**) was retained by Mr. Sam Qin of Future Solar Developments Inc. to conduct a Site Investigation of waterbodies located on, and/or in the surrounding areas of the proposed ground-mounted solar facility set for plot LP 9 and 10 located at 1572 Story Road, Midhurst, Ontario. For the purpose of this report the entire Site including the 120 metre buffer from each of the solar panels will be identified as "subject property", those areas including the panel and construction limits will be identified as "Site". The project involves the design and construction of two (2) 100 kW solar farms.

The purpose of this investigation was to confirm the presence or absence of waterbodies outlined in the records review as completed by **exp** (2012).

1.1 Legislative Requirements

Ontario Regulation 359/09 – *Renewable Energy Approvals* under Part V.0.1 of the Act, made under the *Environmental Protection Act* (herein referred to as the REA Regulation) identifies the Renewable Energy Approval (REA) requirements for renewable energy projects in Ontario. As per Section 4 of the REA Regulation, ground mounted solar facilities with a name plate capacity greater than 10 kilowatts (kW) are classified as Class 3 solar facilities, and therefore, require an REA.

Section 30 of the REA Regulation requires proponents of Class 3 solar projects to undertake a water body records review to identify whether the project location is:

a. In a water body.

b. Within 120 metres of the average annual high water mark of a lake, other than a lake trout lake that is at or above development capacity.

c. Within 300 metres of the average annual high water mark of a lake trout lake that is at or above development capacity.

d. Within 120 metres of the average annual high water mark of a permanent or intermittent stream.

e. Within 120 metres of a seepage area.

Subsection 30 (2) of the REA Regulation requires the proponent to prepare a report "setting out a summary of the records searched and the results of the analysis" (Ontario Regulation 359/09). This water assessment records review report has been prepared to meet these requirements.

Section 31 of the REA Regulation requires proponents of Class 3 solar projects to undertake a waterbody site investigation for the purpose of determining:

a) whether the results of the analysis summarized in the (waterbody records review) report prepared under Subsection 30 (2) are correct or require correction, and identifying any required corrections;

b) whether any additional waterbodies exist, other than those that were identified in the (Water Body Records Review) report prepared under Subsection 30 (2);

c) the boundaries, located within 120 metres of the Project location, of any water body that was identified in the records review or the site investigation; and,

d) the distance from the Project location to the boundaries determined under Clause (c).

The REA Regulation has specific requirements if designated lake trout lakes occur within 300 metres of the Project area. These requirements were not applicable to this particular Project as no lake trout lakes of any status were identified during the waterbody records review (**exp** 2012).

In Section 1(1) of the REA Regulation, a waterbody is defined as a lake, a permanent stream, an intermittent stream or a seepage area, but does not include:

a) grassed waterways;
b) temporary channels for surface drainage, such as furrows, or shallow channels that can be tilled or driven through;
c) rock chutes and spillways;
d) roadside ditches that do not contain a permanent or intermittent stream;
e) temporarily ponded areas that are normally farmed;
f) dugout ponds; and, or,
g) artificial bodies of water intended for the storage, treatment or recirculation of runoff from farm animal yards, manure storage facilities and sites and outdoor confinement areas.

Also within Section 4.1 of Water Assessment Requirements in the REA Technical Guide, an intermittent stream is defined as “a natural or artificial channel, other than a dam, that carries water intermittently and does not have established vegetation within the bed of the channel, except vegetation dominated by plant communities that require or prefer the continuous presence of water or continuously saturated soils for their survival” (Ontario Regulation 359/09).

Seepage areas are defined as “a site of emergence of groundwater where the water table is present at the ground surface, including a spring” (Ontario Regulation 359/09).

Subsection 3 of Section 31 of the REA Regulation requires the proponent to prepare a report setting out the following:

1. A summary of any corrections to the report prepared under Subsection 30 (2) and the determinations made as a result of conducting the site investigations under Subsection (1);

2. Information relating to each water body identified in the records review and in the site investigations, including the type of water body, plant and animal composition and the ecosystem of the land and water investigated;

3. A map showing

i. the boundaries mentioned in Clause (1) (c);

ii. the location and type of each water body identified in relation to the Project location; and,

iii. the distance mentioned in Clause (1) (d).

4. A summary of methods used to make observations for the purposes of the site investigation;

5. The name and qualifications of any person conducting the site investigation;
6. If an investigation was conducted by visiting the site:
    a. The dates and times of the beginning and completion of the site investigation.
    b. The duration of the site investigation.
    c. The weather conditions during the site investigation.
    d. Field notes kept by the person conducting the site investigation.

7. If an alternative investigation of the site was conducted:
    a. The dates of the generation of the data used in the site investigation.
    b. 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.

This waterbody Site Investigation report has been prepared with the guidance of the Ministry of Environment's DRAFT Technical Bulletin – Guidance for Preparing the Water Assessment and Water Body Reports (dated January 28, 2011).

1.2 Summary of Results of Records Review

The Site has been identified to contain natural features, as presented in **Table 1-1** (**exp**, 2012). The following Site Investigation will delineate the boundaries of those waterbodies identified.

Table 1-1: Summary of Records Review for LP 9 and 10

Project Location	Yes/No/Unknown	Feature Existence
Is the Project within a water body?	No	The Site is not located within a water body.
Is the Project within 120 metres of the average annual high water mark of a lake, other than a lake trout lake that is at or above development capacity?	No	The Site is not located within 120 metres of an average annual high water mark Lake that is at or above development capacity.
Is the Project within 300 metres of the average annual high water mark of a lake trout lake that is at or above development capacity?	No	The Site is not located within 300m of a lake trout lake of any status.

Project Location	Yes/No/Unknown	Feature Existence
Is the Project within 120 metres of the average annual high water mark of a permanent or intermittent stream?	No	The Site is not located within 120m of the annual high water mark of a permanent or intermittent stream.
Is the Project within 120 metres of a seepage area?	Unknown	The LP 10 Site lies within area affected by Ontario Regulation 172/06. Seepage areas will need to be identified during the Site Investigation.

1.3 Site Visit

A visit to the Site was completed on January 11, 2012. Weather at the time of the visit was sunny. Temperature at the time of visit ranged from 1 to 2 °C. The Site visit was conducted over the course of 1.5 hours, between 11:00 AM and 12:30 PM. . A second Site visit was completed on August 15, 2012 between 7:30 AM and 12:30 PM, with temperatures ranging between 15 and 20 °C.

1.3.1 Name and Qualifications of Person Conducting Site Investigation

Ms. Melissa Torchia, M.A.Sc., is a junior ecologist with **exp** Services Inc., that specializes in ecological inventories for sites across the province of Ontario. In this regard she is familiar with methods required for natural heritage assessments that help quantify the natural environment in support of environmental assessments, environmental impact studies and endangered species screening. She is a certified Ontario Wetland Evaluator; in addition she has also completed natural heritage data sensitivity training provided by the Ontario Ministry of Natural Resources (OMNR). Examples of past studies include riparian habitats and forest investigations in cities such as, Brantford, Welland, Ivy Lea, Algonquin Park and Picton. These assessments were guided by the *Ontario Environmental Protection Act*, *Ontario Environmental Assessment Act*, *Ontario Endangered Species Act*, and the *Ontario Planning Act*. Melissa has also been involved with the preparation of a planting plan for the endangered species of butternut, in addition to planting plans for creek restoration projects. Melissa Torchia received her Honours Bachelor of Science degree in environmental science at York University. She then received her Master's in Applied Science degree, specializing in urban forestry from Ryerson University. Her Master's thesis focused on the use of trees to cool the urban microclimate, which was conducted in the downtown core of Toronto on the University of Toronto Campus.

Mr. David Praskey, B.Sc., is an aquatic ecologist with **exp** Services Inc. He has over ten years of experience in the aquatic ecology field across Ontario, northern Labrador and British Columbia. David's professional experience includes projects in the fields of municipal and private development; baseline ecological studies and Environmental Effects Monitoring for metal mines; B.C. stream classification for forestry projects; and various MNR and CWS fisheries programs. He has also been responsible for monitoring MTO construction projects as an approved Fisheries Compliance during Contracts Specialist in RAQS, as well as other culvert replacement projects. He has also conducted several fish removal operations. David

has a wide range of experience conducting fish, invertebrate, water and sediment sampling using various methods and gear types in lakes, streams, ponds, rivers and wetlands. He has also been involved in Species at Risk mussel relocation projects and has participated in the Mussel Species at Risk Workshop.

1.4 Site Description

This Site is located in Midhurst, Ontario, and is proposed to contain two (2) 100 kW solar farm plots identified as LP 9 and 10. A general land classification for the Site is noted as vacant land, previously used as a quarry. The Site visit in January revealed the ground was covered with snow, but evidence of herbaceous plants was observed throughout the area. The Site visit conducted in August confirmed the presence of herbaceous plants within the plot areas, as agricultural practices have ceased in these areas.

The Site areas for the proposed new solar panels are located on the north side of Story Road between Russell Road to the west and the gravel driveway of the property owner's residence off of Story Road to the east. The area slated for LP10 was relatively flat at the time of investigation. A small patch of woodland exists between the two (2) areas where the two (2) proposed solar panels are to be placed. Woodlands and/or plantations are also present approximately 50 metres north of the Site. The LP 9 Site is located on rolling topography.

A large wetland area exists on the east side of the residential house; within 120 metres of LP10, and a small dugout pond exists just north of LP 9, also within the subject property.

For surface water feature boundaries refer to **Figure 1**.

2 Methodology

Waterbodies were identified within the records review prepared by **exp** (2012), whereby, unknown and known features were further investigated to identify their presence or absence within the subject property, as well as to delineate boundary limits.

The entire project location and lands within 120 metres were investigated by the observer on foot in order to document and identify the presence of waterbody features present. Boundaries outside 120 metres were also investigated in order to determine connectivity of other water features in surrounding areas to those that may have been found within the subject property.

Photographs of the Site were taken in addition to those that pertained to any known or documented water feature.

3 Site Investigation Results

This section identifies the results of the Site Investigation and discusses the water features observed and noted in the records review as presented in **Table 1-1**. Features documented in relation to the proposed project location are illustrated on **Figure 1**.

3.1 Permanent or Intermittent Stream

As documented in the records review by Ontario Ministry of Natural Resources, Ontario Ministry Agricultural, Food and Rural Affairs, Nottawasaga Valley Conservation Authority, and Simcoe County there are no water features noted to exist within 120 metres from the Site.

During the Site Investigation, it was confirmed that the project does not occur within 120 metres of a defined creek channel. The project Site occurs within 120 metres of at least one isolated, dugout pond north of the LP9 Site. However, this/these pond(s) are not connected to any streams or permanent or intermittent drains.

The wetland area located east of the residential property did not contain fish at the time the Site visit was conducted. However, based upon the Site conditions, it likely provides habitat to herpetofaunal species (snakes, frogs and turtles).

Therefore, there were no permanent or intermittent streams found to exist within 120 metres of each of the solar panel areas (LP9 and LP10).

3.2 Seepage Areas

No seepage areas were explicitly identified in the records review. However, since a part of the subject property does fall within an area regulated by Ontario Regulation 172/06 (the Conservation Authorities Act that regulates development interference with wetlands and alterations to shorelines and watercourses), it is possible that seepage areas may occur on the subject property of LP10. The Site Investigation identified the absence of seepage areas within the subject property. Wetland ponds are often formed by partial contribution of groundwater seepages as well as surface water from precipitation. Similarly, some streams remain wet all year due to the contribution of groundwater which maintains, at minimum, a base flow during hot, dry summer months. Although groundwater flowing into a wetland pond through the sediments may be referred to as seepage, it does not meet the “seepage” definition referred to in the Ontario Regulation 359/09.

4 Summary

Based on the results of this Site Investigation, it can be confirmed that no permanent or intermittent streams exist within 120 metres from the Site. No seepage areas were found during the Site Investigation, and can therefore be inferred as absent from the subject property.

Overall, no components of the project, including construction, will be within 120 metres from any water body feature as identified by the Ontario Regulation 359/09.

5 Closure

We trust this report is satisfactory for your purposes. We would be pleased to provide additional information, to clarify any questions that arise following the review of this report.

Sincerely,

exp Services Inc.

DRAFT

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Environmental Scientist
Environmental Sciences Division

DRAFT

Dean Fitzgerald, M.Sc., Ph.D.
Team Leader – Ecological Services
Environmental Sciences Division

6 References

Exp Services Inc. (**exp**). 2012. Waterbody Assessment Records Review Report LP1. Prepared August 2012.

Government of Ontario. Ontario Regulation 359/09: Renewable Energy Approvals under Part V.0.1 of the Act. (Environmental Protection Act). http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_090359_e.htm

Figures

N

Legend

- Pond
- Proposed Solar Panel
- Construction Limit
- 120 m Buffer
- Forest
- Hedgerow

Source: County of Simcoe GIS Mapping, basd on 2008 Aerial Photography

0 10 20 40 60 80 100 Meters

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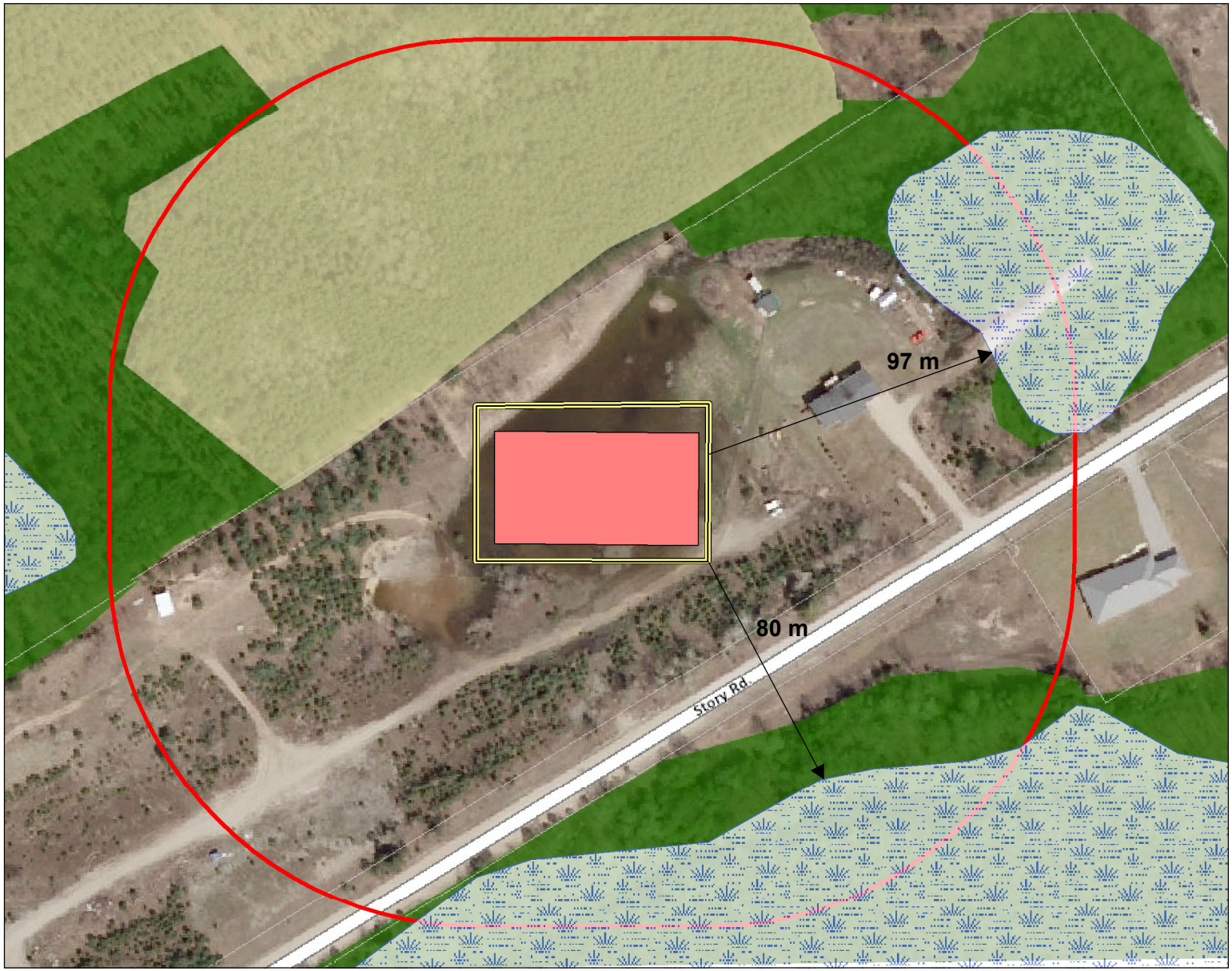
PROJECT TITLE:
SOUTHERN ONTARIO LAND RESOURCE INFORMATION SYSTEM (SOLRIS)
WATER ASSESSMENT MAP LP9
MIDHURST, ONTARIO

DRAWING TITLE:
WATER ASSESSMENT SITE MAP

PROJECT No.: WSL-00002250-00	DWN: PS
SCALE: AS NOTED	CHKD: DF
DATE: AUGUST 2012	FIG. No.: 2



N

Legend

- MNR Unevaluated Wetland
- Proposed Solar Panel
- Construction Limit
- 120 m Buffer
- Forest
- Hedgerow

Source: County of Simcoe GIS Mapping, basd on 2008 Aerial Photography

0 5 10 20 30 40 50 Meters

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PROJECT TITLE:
SOUTHERN ONTARIO LAND RESOURCE INFORMATION SYSTEM (SOLRIS)
WATER ASSESSMENT MAP LP10
MIDHURST, ONTARIO

DRAWING TITLE:
WATER ASSESSMENT
SITE MAP

PROJECT No.: WSL-00002250-00	DWN: PS
SCALE: AS NOTED	CHKD: DF
DATE: AUGUST 2012	FIG. No.: 2

Appendix A – Site Photographs

Photograph 1: Isolated wetland located east of the owner's residence; January 2012.

Photograph 2: Small, isolated pond north of LP 9; January 2012.

Photograph No. 3: Isolated wetland located east of the residential property; August, 2012

Photograph No. 4: Small dug-out pond located just north of LP9; August 2012.