

# RE BREEN 2 SOLAR PROJECT

Water Body Site Investigations Report

August 19, 2011

RECURRENT  
ENERGY





RE Breen 2 ULC

Water Body  
Site Investigations Report

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Project Report

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**RE Breen 2 ULC**  
**RE Breen 2 Solar Project**

**Water Body Site Investigations Report**

**Table of Contents**

**1. Introduction ..... 3**

    1.1 Project Description ..... 3

    1.2 Legislative Requirements..... 3

**2. Summary of Results of Records Review..... 4**

**3. Site Investigation Methodology ..... 5**

    3.1 Date, Time, and Duration of Site Investigation ..... 5

    3.2 Weather Conditions During Site Investigation ..... 5

    3.3 Name and Qualifications of Person Conducting Site Investigation..... 5

    3.4 Survey Methods ..... 6

**4. Results of Site Investigation..... 6**

    4.1 Permanent or Intermittent Streams..... 6

        4.1.1 Reynolds Creek ..... 6

**5. Conclusions..... 11**

**6. References..... 11**

**Appendix A Site Investigation Field Notes**

## List of Tables

Table 2.1	Summary of Records Review Determinations .....	4
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## List of Figures

Figure 4.1	Water Body and Project Boundaries .....	7
Figure 4.2	Reynolds Creek Adjacent to the Project Location – View Downstream from Hamilton Road .....	9
Figure 4.3	Riparian Vegetation Between Reynolds Creek and the Project Location.....	10

## 1. Introduction

### 1.1 Project Description

RE Breen 2 ULC is proposing to develop and operate a 10-megawatt (MW) solar photovoltaic (Solar PV) facility, on an approximately 32-hectare (ha) parcel of land, located in the Municipality of Thames Center, County of Middlesex, approximately 8.5 km southwest of the City of Ingersoll; herein referred to as “RE Breen 2” or the “Project”.

### 1.2 Legislative Requirements

Ontario Regulation (O. Reg.) 359/09 – *Renewable Energy Approvals Under Part V.0.1 of the Act*, (herein referred to as the REA Regulation) made under the *Environmental Protection Act* 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 require an REA.

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

- a) whether the results of the analysis summarized in the (Water Body 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 m of the Project location, of any water body that was identified in the records review or the site investigation
- 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 are present within 300 m of the Project area. These requirements were not deemed applicable to the Project as no such lakes were found during the Water Body Records Review (Hatch Ltd., 2010).

Waterbodies are defined in Section 1(1) of the REA Regulation to include 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, 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.

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 (Water Body Records Review) 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. The dates and times of the beginning and completion of the site investigation.
5. The duration of the site investigation.
6. The weather conditions during the site investigation.
7. A summary of methods used to make observations for the purposes of the site investigation.
8. The name and qualifications of any person conducting the site investigation.
9. Field notes kept by the person conducting the site investigation.

This Water Body Site Investigations Report has been prepared to meet these requirements. It has also been prepared in accordance with the Ministry of Environment’s DRAFT Technical Bulletin – Guidance for Preparing the Water Assessment and Water Body Reports (dated January 28, 2011).

## 2. Summary of Results of Records Review

Table 2.1 summarizes the results of the Water Body Records Review (Hatch Ltd., 2010).

**Table 2.1 Summary of Records Review Determinations**

Determination to be Made	Yes/No	Description
Is the Project in a water body?	No	No part of the Project will be constructed within an identified water body.
Is the Project within 120 m of the average annual high water mark of a lake, other than a lake trout lake that is at or above development capacity?	No	No lakes are present on or within 120 m of the Project location.

Determination to be Made	Yes/No	Description
Is the Project within 300 m of the average annual high water mark of a lake trout lake that is at or above development capacity?	No	No lake trout lakes are present on or within 300 m of the Project location.
Is the Project within 120 m of the average annual high water mark of a permanent or intermittent stream?	Yes	Reynolds Creek is located to the east of the Project location and the average annual high water mark encroaches onto the Project location.
Is the Project within 120 m of a seepage area?	No	No seepage areas were identified during the Records Review.

Therefore, depending on the layout of the proposed solar facility, some components of the Project could potentially be located within 120 m of the average annual high water mark of Reynolds Creek.

### 3. Site Investigation Methodology

#### 3.1 Date, Time, and Duration of Site Investigation

- Date: May 12, 2010
- Start Time: 08:00 a.m.
- Duration: approximately 4 hours

#### 3.2 Weather Conditions During Site Investigation

- Temperature: 14°C
- Beaufort Wind: 2 (7 to 11 km/h)
- Cloud Cover: 20%

#### 3.3 Name and Qualifications of Person Conducting Site Investigation

The site investigation was completed by Sean K. Male.

Sean K. Male, M.Sc. is a Terrestrial Ecologist specializing in assessments of terrestrial habitat, flora and fauna. Sean received his Bachelors of Science (Honours) in Biology from Queen's University, where he completed his Honour's thesis under Dr. Raleigh J. Robertson, studying the impacts of nestbox density in Tree Swallows (*Tachycineta bicolor*) on nest-building behaviour. He then completed a Master's of Science degree in the Watershed Ecosystem Graduate Program at Trent University under Dr. Erica Nol. Sean's thesis focussed on examining the impacts of a Canadian diamond mine on a population of breeding passerines.

Sean joined Hatch as a Terrestrial Ecologist in 2006. Since joining Hatch, Sean has participated in several environmental assessments for hydro and wind power developments. He has developed and implemented baseline monitoring and impact assessment programs for both terrestrial wildlife and plant communities, including detailed bird and bat studies for several wind power developments, including the proposed 100-MW Coldwell Wind Power Development near Marathon, Ontario, a

proposed 20-MW facility near Port Dover, ON, and a proposed 110-MW wind facility in southwestern Ontario. Sean has also conducted terrestrial and wetland vegetation for several hydropower projects in southern and northern Ontario and has participated in fisheries surveys for several of these projects.

### 3.4 Survey Methods

The entire site was searched by the observer on foot in order to document waterbodies. Photographs of the site were taken and any observations of waterbodies, including the type of water body, instream habitat types, surrounding riparian areas and wildlife use were noted. The average annual high water mark of Reynolds Creek in the reach adjacent to the Project location was located using a GPS during the site investigation.

A copy of the field notes kept by the observer is provided in Appendix A.

## 4. Results of Site Investigation

This section documents the results of the Site Investigation and discusses specific water features observed on and adjacent to the Project location. Features noted in the following sections, including the proposed Project footprint boundary, are shown in Figure 4.1.

### 4.1 Permanent or Intermittent Streams

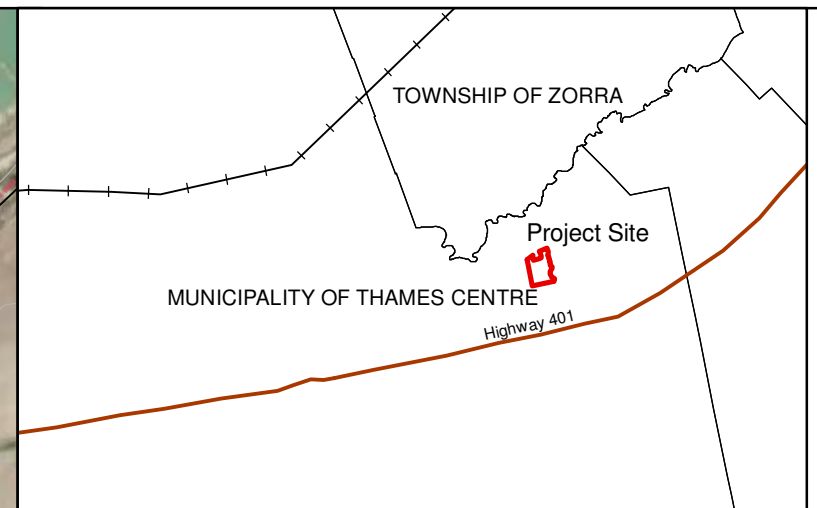
No permanent or intermittent streams were observed on the Project location within the footprint area. Reynolds Creek was observed to the east of the Project location boundary and is described in the following section.

No seepage areas or lakes were observed within 120 m of the Project location.

#### 4.1.1 Reynolds Creek

Reynolds Creek flows past the eastern boundary of the Project location. UTRCA (2007) notes that Reynolds Creek is approximately 130 km in length, with 96% of the creek being designated as warm water habitat. Based on observations made during the site investigation, this designation likely applies to the portion of Reynolds Creek adjacent to the Project location. UTRCA (2007) also notes that 62% of the overall length of Reynolds Creek is permanent flowing and this designation likely applies to the portion adjacent to the Project location, given that it is located at the downstream end of the watershed.

The riparian corridor includes the creek channel itself and surrounding low lands. The creek channel was approximately 10 m wide, consisting primarily of relatively low gradient, slow moving run type morphology (Figure 4.2). UTRCA (2007) notes that a total of 20 fish species, including game fish species such as largemouth bass (*Salmoides micropterus*) and brown trout (*Salmo trutta*), and six mussel species have been recorded in the Reynolds Creek watershed. Greenside darter (*Etheostoma blennioides*), federally designated as a species of Special Concern, have been found in the creek (UTRCA, 2007).



**LEGEND**

- Road
  - +— Railway
  - Topographic Contour (5 m interval)
  - Watercourse
  - Average Annual High Water Mark
  - == 30 m Buffer from High Water Mark
  - ▭ Parcel
  - ▭ Authorized Aggregate Site
  - ▭ Putnam Tract Provincially Significant Wetland
  - ▭ Woodland
- Project Components**
- Connection Point
  - ▭ Project Location
  - ▨ Temporary Construction Laydown Area
  - ▭ 120 m from Project Location

Notes:  
 1. Base data downloaded from [www.geographynetwork.ca](http://www.geographynetwork.ca), other environmental data from LIO.  
 2. Spatial referencing UTM NAD 83.  
 3. Satellite imagery downloaded March 4, 2010 from Google Earth Pro with permission.



Figure 4.1  
 Recurrent Energy  
**RE Breen 2**  
 Project Location and Water Body Features **HATCH™**

Back of figure



**Figure 4.2 Reynolds Creek Adjacent to the Project Location –  
View Downstream from Hamilton Road**

During the site investigation, the vegetation community within the valley was classified as primarily meadow community, with a small amount of pastureland near the southern portion of the Project location (UTRCA, 2008). The portions in the meadowland are composed primarily of grasses, with scattered shrubs/trees (as is seen in Figure 4.3). The vegetation community of the riparian area is primarily terrestrial type vegetation, and is not indicative of any annual flooding.



**Figure 4.3 Riparian Vegetation Between Reynolds Creek and the Project Location**

The primary natural functions of both the meadow and pastureland portions of the valleyland is to provide protection for Reynolds Creek by stabilizing the surrounding banks, providing potential for absorption of pollutants from runoff, and providing habitat for terrestrial and aquatic species. The valleyland would also provide a natural corridor for wildlife movement.

Therefore, the site investigation has confirmed that Reynolds Creek is a permanent stream and would be classified as a water body, based on the definition in the REA Regulation. The boundaries of the water body would be the average annual high water mark (i.e., the normal water's edge during the annual flood). To establish this boundary, riparian vegetation was assessed to determine the boundary of vegetation species tolerant of annual flooding. Based on this, the average annual high water mark was determined to be the top of the channel bank immediately adjacent to Reynolds Creek, since the riparian vegetation consists of terrestrial grasses and forbs with no affinity for annual submergence. The average annual high water mark boundary is shown in Figure 4.1.

The REA Regulation requires solar panels, transformers and inverters to be set back at least 30 m from the water body boundary (i.e., the average annual high water mark). Therefore, the distance from the water body boundary to the Project footprint will be 30 m, particularly in the northeast corner of the Project area, where development activities will occur up to the 30-m setback. However, this distance will be increased along the majority of Reynolds Creek, since the high water mark meanders away from the Project boundary in a number of locations. In addition, restrictions on development of prime agricultural lands limit the extent of the Project in proximity to Reynolds Creek, as shown in Figure 4.1.

The REA Regulation prohibits construction of the Project within 120 m of the water body boundary, unless an Environmental Impact Study (EIS) is done to assess potential effects and mitigation requirements. Construction of Project components will occur within 120 m of Reynolds Creek. Therefore, an EIS will be required to assess potential adverse effects on the water body due to the Project and identify mitigation requirements to prevent/minimize adverse effects.

## 5. Conclusions

Based on the results of the site investigation, there are no corrections to be made to the conclusions of the Water Body Records Review Report (Hatch Ltd., 2010). However, the Project Footprint and associated study area has been refined in this Site Investigation Report compared to that shown in the Records Review Report.

Based on the results of the site investigation and the distance (< 120 m) from the proposed Project components to the water features noted herein, an EIS will be required to assess potential adverse effects of the Project on Reynolds Creek.

## 6. References

Hatch Ltd. 2010. RE Breen 2 Solar Project – Water Body Records Review Report. Prepared for RE Breen 2 ULC.

Upper Thames River Conservation Authority (UTRCA). 2010. Re: 6955 Hamilton Road, County of Oxford – Recurrent Energy Solar Projects – Breen 2. Correspondence from T. Arnett (UTRCA) to N. Boucher (Hatch). March 12, 2010.

UTRCA. 2009. Re: Conservation Authorities Act Inquiry – 6955 Hamilton Road, Thames Centre Ontario. Correspondence from C. Creighton (UTRCA) to S. Caffyn (UPC Solar). August 26, 2009.

UTRCA. 2007. Reynolds Creek Watershed Report Card. On-line at [http://www.thamesriver.on.ca/watershed\\_report\\_cards/images\\_2007/Report\\_Cards\\_Reynolds.pdf](http://www.thamesriver.on.ca/watershed_report_cards/images_2007/Report_Cards_Reynolds.pdf). Accessed March 16, 2010.

**Appendix A**  
**Site Investigation**  
**Field Notes**

Project: Breen 2 - Recurrent Energy  
Location: 6955 Hamilton Rd, Putnam

Date: May 12, 2010  
Time: 0900 - 1300  
% C.R.: 100%  
Temp: 70°  
Beaufort Wind Scale: 3

Dr. R. Putnam & Al Macomber @ 515 for <sup>microbes</sup>  
spoke to Bob & Heather Bruletto  
regarding creek

- Remond's Creek - flows north  
- Bob has lived at property for  
10 yrs & hasn't seen the creek  
flood up to his property  
- North side of Hamilton Rd  
creek overflows & floods the  
field to the west of creek if  
up to cement wall on east  
side of creek

West side of creek heading south

Photos 1-9 - North of Hamilton Rd  
photos taken west to east

- walking along watercourse
- large wet ponded areas west of creek
- wet area that meander west -

Photos 10-31 South of Hamilton Rd  
photos taken west to East

towards Subject Lands & turns south along perimeter of property  
17 503543 E  
4759321 N

- appear to be a defined channel - substrate is grasses

south  
- watercourse - west side of bank = 12' steep bank ends @ 17 503544

~~4759320~~ 4759230

Willows in floodplain, black cherry

open area

milkweed - 17503571  
4759245

- creek flowing  
 - substrate - unknown  
 - murky water  
 - current along meander curves  
 observed on east side  
 - American vegetation sparse  
 along part of creek.  
 - vegetation = grasses  
 - no other vegetation  
 - water present throughout  
 - pipe - 17503591, barbed wire  
 4759150 fence in 1/2  
 - wood debris  
 chipmunk  
 17503600, stream high at 0  
 4759109 / water bank  
 deer tracks

East side of creek winding  
 North  
 17503679 } concrete block  
 4758924 } stream bank on  
 west-side of creek  
 stream bank ~ 8' high  
 - pipe - barbed wire fence  
 from east side of creek goes  
 right in west water course in  
 west-side. - fence created  
 pipe - damaged debris trapped  
 by fence  
 - culvert - 17503644  
 4759203  
 - timber, white - east of  
 creek - flowing into creek

