Future Solar Developments Inc.

Site Investigation
Proposed Groundmount Solar Facility LP 5 & 6
8338 Scotchmere Drive
Strathroy, ON
WSL-00002250-00

Project Number
WSL-00002250-00

Prepared By:

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Legal Notification

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Mr. Sam Qin
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Chapter 1 – Introduction & Background

1 Introduction & Background

Exp Services Inc. (**exp**) was retained by Mr. Sam Qin of Future Solar Developments Inc. to conduct a site investigation of natural heritage features located on and or in the surrounding areas of the proposed groundmount solar facility set for plots LP 5 & LP 6 located at 8338 Scotchmere Drive, Strathroy-Caradoc, Ontario. For the purpose of this report the entire Site including the 120 metre buffer from the solar panel 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 natural history inventory, the recommendations and ancillary comments in this report will be considered preliminary.

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

1.1 Legislative Requirements

Ontario Regulation (O. Reg.) 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 green energy projects in Ontario. In accordance with Section 4 of the REA Regulation, ground mounted solar facilities with a name plate capacity greater than 12 kilowatts (kW) are classified as a Class 3 solar facility and therefore, require an REA.

Section 25 of the REA Regulation requires the following natural heritage records review for Class 3 solar projects in order to identify whether the project is:

a) In or within 120 m of a provincial park or conservation reserve area;
b) In a natural feature;
c) Within 50 m of an area of natural or scientific interest (ANSI) (earth sciences); and,
d) Within 120 m of a natural feature that is not an ANSI (earth science).

Natural features are defined in Part 1.1 of the REA Regulation as:

a) An ANSI (earth science)
b) An ANSI (life science)
c) A coastal wetland
d) A northern wetland
e) A southern wetland
f) A valleyland
g) A wildlife habitat
h) A woodland

According to Subsection 3 of 26 the proponent (Future Solar Developments Inc.) shall conduct the following Site investigation in order to determine the following:

a) A physical investigation of the air, land and water within 120 metres of the project location in order to determine if:
    i. the results of the analysis summarized in the "records review" report are correct or require correction , and identify any required corrections;
    ii. Whether any additional natural features exist, other than those that were identified in the "records review" report;

iii. The boundaries, located within 120 metres of the project location, of any natural feature that was identified in the records review or the site investigation; and,

iv. The distance from the project location to the boundaries determined under clause (c).

b) The proponent must also prepare a report setting out the following as part of Subsection 3 of Section 26:

i. any corrections to the "records review" report and the determinations made as a result of conducting the site investigation;

ii. information that relates to each natural feature identified in the records review and in the site investigation including the type, attributes, composition and function of the feature.

iii. A map the shows the following features:

- The boundaries that are located within the 120 metres of the project location of any natural feature that was identified in the records review and site investigation;
- The location and type of each natural feature identified in relation to the project location; and,
- The distance of the boundaries from the project location.

iv. The date and time of the beginning and completion of the Site investigation;

v. The duration of the site investigation;

vi. The weather conditions at the time the Site visit was conducted;

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

viii. The name and qualifications of any person conducting the site investigation; and,

ix. Field notes kept by the person conducting the site investigation.

This natural heritage site investigation report has been prepared to meet the above requirements as presented in subsection 3 section 26 of the REA Regulation. The methodology utilized as part of the site investigation follow the Ontario Ministry of Natural Resources Natural Heritage Assessment Guidelines for Renewable Energy Projects dated December 2010.

1.2 Summary of Results of Records Review

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

Table 1-1: Summary of Records Review for LP5 & LP6

REA Regulation	Natural Heritage Feature Existence as per Records Review (Yes/No/Unknown	Records Review Result Requirements
Is in or within 120 m of a provincial park or conservation reserve?	No	Records searched in addition to the OMNR records review indicate no provincial parks or conservation reserves are located on-Site or within 120 m.
Is the project located in a natural feature?	Unknown	A provincially significant wetland is located outside of the subject property. Other natural features need to be confirmed during the Site investigation.
Is the project area located within 50 m of an ANSI (earth science)?	No	Records indicated the Site and subject property is not located within 50 m of an ANSI.
Is the project area located within 120 m of a natural feature that is not an ANSI?	Unknown	The presence of absence of natural features will be confirmed during a Site investigation.

1.3 Site Visit

A visit to the Site was completed on January 12, 2012. Weather at the time of the visit was cloudy and raining. Temperature at the time of visit ranged from -2 to 2 °C. The Site visit was conducted over the course of two (2) hours, between 1:00pm and 3:00 pm.

During the Site visit, incidental observations of wildlife and birds were recorded, in addition to terrestrial species that were observed.

1.3.1 Name and Qualifications of Person Conducting Site Investigation

Ms. Melissa Torchia, M.A.Sc, is a junior ecologist 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.

1.4 Site Description

This Site is located in Strathroy-Caradoc, Ontario, and is proposed to contain two (2) 100 kW solar farm plots; LP 5 & LP 6. It is estimated that the size of each 100 kW plot is 0.24 hectares. A general land classification for the Site is noted as agricultural land. At the time the Site visit was conducted the ground was barren.

The Site area for the proposed new solar farm is located north west of an existing house. The area was relatively flat at the time of investigation, and devoid of vegetation. Northwest of the agricultural field is a large woodland area that is fairly dense, with abundant new growth of deciduous trees. This woodland extends west and is outside the subject property. There were visible signs of tracks and vehicle use in the woodlot area, with extensive evidence of logging and rubbish material.

A provincially significant wetland (Komoka/South Strathroy Creek Wetland Sc.9) is located at the south corner of the property boundary, just outside the subject property. The South Strathroy Creek runs through the wetland area, exiting southeast under a bridge. Both the creek and wetland area are a part of the Sydenham River watershed, which is the only watershed in Ontario that is inside the Carolinian life zone (SCRCA, 2011). Approximately 82 species of fish and 34 species of freshwater mussels exist in the Sydenham River watershed, which makes it one of the most species-rich watersheds in Canada, and the largest river that supports primarily endangered freshwater mussels (SCRCA, 2011). A total of 23 species found this watershed (fishes, reptiles and mussels) are considered nationally or provincially significant and thereby protected (SCRCA, 2011).

Agricultural land is located southwest of the subject property. This particular agricultural property is located in a floodplain that displayed signs of flooding at the time of the Site visit. For natural feature boundaries refer to Figure 1; photos of the Site and surrounding areas are found in Appendix A.

Chapter 2 – Methodology

2 Methodology

Natural heritage features 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 m were investigated by the observer on foot in order to document and characterize the natural features present. Boundaries outside 120 metres were also investigated in order to better understand the ecological systems present within the subject property.

Photographs of the Site were taken in order to document the vegetation communities found on-Site in addition to any other natural features that may be considered for significance. Wildlife observations were made throughout the Site investigation either through visual sightings, auditory calls and tracks noted on the subject property. Areas searched as part of the investigation included the identification of habitat for wildlife, in addition to habitat for species of special concern.

A list of vegetation and wildlife species observed during the Site visit is documented in Chapter 3 of this Report).

Chapter 3 –
Site Investigation Results

3 Site Investigation Results

3.1 Stand Composition

A stand characteristic is the classification of a collection of plants having a relatively uniform composition and structure. The purpose of identifying the stand characteristics at a given Site is to categorize the habitats present in order to determine the types of natural features and to investigate the wildlife expected to be at the Site.

The Site and subject property is located within an actively farmed agricultural field, and was devoid of woody vegetation. The woodland located northwest outside of the subject property contained both mature and immature deciduous trees. Towards the west, the woodland transitions into a mixed forest containing both coniferous and deciduous tree species, likely from the coniferous plantation located southwest. Composition of the woodland was fairly dense, with signs of new growth. Gaps exist in the canopy as a result of deadfall, logging and clearings for vehicle use. The understory present in the surrounding area was dominated by small shrubs and herbaceous plants. Trees present in the woodland were between 10 to 24 metres in height. There was occasional evidence of logs and rare evidence of snags present.

The wetland area located south outside of the subject property contained a mix of small deciduous trees, and herbaceous plants. Composition in the area was fairly dense. A hedge row of trees exists within the subject property that line the drive way. These trees were between 5 to 24 metres in height.

3.2 Plant Community

A plant community is a unit of vegetation within a given area. Identifying a plant community within a Site is necessary to determine the type of environment present (e.g. shade-tolerant area) and to identify the type of wildlife expected to be at the Site, in addition to sensitive areas. This information will also aid in the identification of any locally, regionally or provincially rare, threatened or endangered vegetative species on the Site. If identified, these species will need to be preserved and protected.

The Site and subject property were devoid of vegetation, as the Site is presently farmed containing a crop of carrots. In terms of the woodland and wetland areas outside the subject property the plant community contained a mixture of immature and mature deciduous trees as well as herbaceous plant species. Trees found in the surrounding area include sugar maple (*Acer saccharum*), red maple (*Acer rubrum*), white spruce (*Picea glauca*), common hackberry (*Celtis accidentalis*), red oak (*Quercus rubra*), black locust (*Robinia pseudoacacia*), swamp white oak (*Quercus bicolour*), bur oak (*Quercus macrocarpa*), staghorn sumac (*Rhus typhina*), american beech (*Fagus grandifolia*), black walnut (*Juglans nigra*), red pine (*Pinus resinosa*), willow species (*Salix spp.*), and silver maple (*Acer saccharinum*).

The understory in the woodland and wetland consisted primarily of herbaceous plants and some small shrubs. This includes wild red raspberry (*Rubus idaeus*), wild grape vine (*Vitis spp.*), goldenrod (*Solidago spp.*), common cattail (*Typha latifolia*), and Queen Anne's lace (*Daucus carota*).

Table 3-1: List of dominant vegetation found in surrounding areas

Vegetation Type	Scientific Name	Common Name
Trees / Shrubs	*Acer saccharaphorum*	Sugar Maple
	Acer rubrum	Red Maple
	Picea glauca	White Spruce
	Celtis accidentalis	Common Hackberry
	Quercus rubra	Red Oak
	Robina pseudoacacia	Black Locust
	Quercus macrocarpa	Bur Oak
	Quercus bicolor	Swamp White Oak
	Rhus typhina	Staghorn Sumac
	Fagus grandifolia	American Beech
	Juglans nigra	Black Walnut
	Picea resinosa	Red Pine
	Salix spp.	Willow Species
	Acer saccharinum	Silver Maple
	Rubus Idaeus	Wild Red Raspberry
	Vitis spp.	Wild Grape Vine
Herbaceous Plants	*Solidago spp.*	Goldenrod
	Typha latifolia	Common Cattail
	Daucus carota	Queen Anne's Lace

3.3 Extent of Disturbance

A Site can also be described by the extent and intensity by which management or disturbance has occurred on the Site. It is important to note disturbance as it can influence community structure and function. Anthropogenic disturbances are usually more selective, and directly affect one (1) or several specific species, where as physical forces such as earthquakes or drought can affect the entire plant community.

Disturbances such as alien species, gaps in forest canopy, plantations, tracks and trails, noise, disease and death of trees as well as wind throw (blown down) are recorded and observed at a given Site location.

The Site and subject property did not contain any evidence of disturbance, with the exception of farming activities.

In the woodland located outside of the subject property there appeared to be no alien species that would be considered invasive species of concern at the time the Site visit was conducted. In addition, there were no signs of noise, or flooding present. There were moderate widespread signs of recreational use in terms of tracks and trails from vehicles and rubbish materials in the back woodlot. There was also widespread wind throw and dead trees, along with gaps in the forest canopy as a result of clearing.

There was evidence of moderate widespread deer (*Odocoileus virginianus)* browse activity in the woodland, as tracks were noted throughout, in addition to presence of skat.

3.4 Wildlife and Wildlife Habitat

In terms of wildlife and wildlife habitat, the Site may contain elements that can provide suitable habitats for wildlife. For example, small mammals and birds often inhabit soils or

use fallen logs. In addition, the presence of trees, or species of trees that produce fruits such as nuts or berries, may prove to be an important food source for some species.

The Site and subject property were devoid of vegetation or any wildlife habitat as it is presently being farmed. The woodland and wetland areas outside of the subject property do contain few tree species that produce fruit (*Quercus spp.* and *Juglans sp.*) and seeds (*Acer spp.*) that local birds and wildlife may feed upon.

On the whole, wildlife observations included deer tracks and skat present in the woodland area and rabbit skat. An opossum (*Didelphis spp.*) was seen running through the woodland, before climbing a tall tree. No fish were present in the creek located in the provincially significant wetland area. Due to the habitat characteristics of the wetland, and its connection with the Sydenham River watershed it likely contains fish and herpetofaunal species (frogs, turtles and snakes) at certain time periods of the year. All observations are summarized in **Table 3-2**.

The presence of long grass and wildflowers located throughout the edges of the Site could indicate a suitable area for species of Lepidopetera (butterfly) and Odonata (damselflies and dragonflies) to exist.

Table 3-2: Wildlife observations at the time of Site visit

Scientific Name	Common Name	Notes/Evidence
Odocoileus virginianus	White-tailed deer	Scat/tracks present
Leporidae spp.	Rabbit species	Scat present
Didelphis spp.	Opossum	Sighting

3.5 Adjacent Land

The adjacent land to the property consists mainly of maintained agricultural land. The woodlot extends northwest relative to the Site, with another residential property located south east.

Chapter 4 –
Confirmation of Records Review Results

4 Confirmation of Records Review Results

4.1 Key Natural Heritage Features

Natural heritage features and like areas are defined as those that contain significant wetlands, fish habitat, significant woodlands, significant valleylands, significant portions of habitat for endangered and threatened species, significant wildlife habitat, and significant areas of natural and scientific interest (ANSIs). All of these features are important for their environmental and social values as a legacy of the natural landscapes of an area as defined within Ontario's *Planning Act* and explained within the Provincial Policy Statement (PPS, 2005).

The following sections confirm the presence or absence of natural features on-Site and within the subject property that were identified or unknown in the records review prepared by **exp** (2012).

4.1.1 Surface Water Bodies, Wetlands and Fish Habitat

Wetlands are those areas that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface (Lee *et al.*, 1998). A significant wetland is an area identified as provincially significant by the OMNR using evaluation procedures established by the province, as amended from time to time (Lee *et al.,* 1998).

Fish habitats are identified as spawning grounds and nursery, rearing, food supply, and migration areas on which fish depend directly and or indirectly in order to carry out their life processes (Lee *et al.,* 1998). Fish can be identified as fish, shellfish, crustaceans, and marine animals, at all stages of their life cycle (PPS, 2005). Lakes, rivers, streams, ponds and wetlands are known fish habitats (Lee *et al.*, 1998). Fish habitats commonly occur in many other natural heritage areas such as wetlands, valleylands, woodlands and ANSIs.

Record Review Results:

The NHIC database and Strathroy-Caradoc Official Plan (S-COP) indicated that there were no significant wetlands, or surface water bodies located within the subject property. Aerial imagery and LIO indicate a waterbody is located south east just outside of the subject property boundary.

Additionally, the OMNR has identified the Komoka/South Strathroy Creek Provincially Significant Wetland (PSW) to be located approximately 130 metres away, just beyond the subject property. Due to the declaration of the wetland area being classified as provincially significant, it is subject to protection under the Regulation 359/09 Renewable Energy Approvals under Part V.0.1 of the *Environmental Protection Act.* As such, no construction, installation or expansion of a renewable energy resource shall be within 120 metres from the provincially significant wetland.

The OMNR office also indicated that the Sydenham River Provincially Significant Wetland Complex is located 3.5 kilometres away.

OMNR requested a site investigation to verify the boundaries of the Komoka/South Strathroy Creek Provincially Significant Wetland relative to the Site and construction zones.

Site Investigation Results:

The site investigation confirmed that the boundaries of the PSW were outside of the subject property at an approximate distance of 130 metres from the construction limits.

4.1.2 Significant Woodlands

Woodlands are treed areas that provide environmental or economic benefits such as erosion prevention, water retention, recreation and the sustainable harvest of woodland products. Woodlands include treed areas, woodlots or forested areas, and vary in their level of significance (PPS, 2005). Woodland significance is typically determined by evaluating key criteria which relate to woodland size, ecological function, uncommon woodland species, and economic and social value.

Larger woodlands are more likely to contain a greater diversity of plant and animal species and communities than smaller woodlands, and are better buffered against edge effects or agricultural and urban activities.

Records Review Results:

The NHIC database and S-COP indicated that there are no significant woodlands located at the Site or on the subject property. Aerial imagery indicated a woodland is located north west, however it is outside the Site and subject property limits.

The Records Review conducted by OMNR indicates that no such natural feature is present on or within the subject property.

Site Investigation Results:

No site investigation was required, as this natural feature was confirmed to be outside the subject property during the records review.

4.1.3 Significant Valleylands

The PPS (2005) identifies significant valleylands as a “natural area that occurs in a valley or landform depression that has water flowing through or standing for some period of the year”.

Records Review Results:

No valleylands were documented in the S-COP, or indicated by the NHIC database.

The OMNR has not yet evaluated the presence of valleylands at this Site, and was therefore unable to provide information about this natural feature in their Records Review. Therefore, the OMNR indicated that a site investigation was required to gather more information about this feature.

Site Investigation Results:

The site investigation confirmed the absence of this natural feature within the subject property boundary.

4.1.4 Areas of Natural and Scientific Interest (ANSIs)

Significant ANSIs are defined as areas of land and water containing natural landscapes or features. Such features concern life science or earth science values related to protection, scientific study or education.

An area is identified as provincially significant by the MNR using evaluation procedures established by the province, as amended from time to time (PPS, 2005). The ANSIs are divided into two (2) types: life science ANSI and earth science ANSI. Specifically, a life science ANSI can contain specific types of forests, valleys, prairies and wetlands of ecological importance. That is, they represent examples that are relatively undisturbed in terms of vegetation community and/or landforms associated with that vegetation. Those listed as provincially significant life science ANSIs are the best examples of the particular natural heritage features in the province. In contrast, earth science ANSIs includes representative examples of bedrock, fossil, and landforms in Ontario, and on-going geological processes.

Records Review Results:

The NHIC database, S-COP and OMNR District office indicated that no provincially or regionally identified ANSIs located at the Site or on the subject property.

Site Investigation Results:

No site investigation was required, as this natural feature was confirmed to be outside the subject property during the records review.

4.1.5 Significant Wildlife Habitat

Wildlife habitats are defined as areas where plants, animals and other organisms live and are able to find adequate amounts of food, water, shelter and space needed to sustain their populations. Specific wildlife habitats of concern may include areas where species concentrate at a point in their annual life cycle, and those areas which are important to migratory and non-migratory species.

A wildlife habitat is referred to as significant if it is deemed ecologically important in terms of feature, function, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or Natural Heritage System (PPS, 2005).

A significant wildlife habitat is described under four (4) categories:

- Seasonal concentrations of animals;
- Rare vegetation communities or specialized habitats for wildlife;
- Animal movement corridors; and,
- Habitats of species of conservation concern.

4.1.5.1 Seasonal Concentration Areas

Areas of seasonal concentrations of animals are defined as “areas where animals occur in relatively high densities at specific periods in their life cycle and/or during particular seasons” (Lee *et al.*, 1998; PPS, 2005). Areas of seasonal concentrations are typically small in comparison to larger habitat areas that the species uses at other times of the year.

An assessment of the potential for the Site as a wildlife concentration area was carried out. Resources outlined in both the OMNR Significant Wildlife Habitat Technical Guide (2000) and the Significant Wildlife Habitat Ecoregion 7E Criterion Schedule were utilized to evaluate the potential for species concentration occurrence.

4.1.5.2 Deer Winter Congregation Areas

Deer and moose often inhabit forested regions and may venture onto disturbed areas. Deer winter congregation areas are defined by woodlots that are greater than 100 hectares in size or larger, or if those areas are in rare woodlots that are greater than 50 hectares in size. Deer movements in this ecoregion (7E) are not constrained by snow depth.

Records Review Results:

The OMNR has not yet identified deer winter congregation areas at this Site, and was therefore unable to provide information about this feature in their Records Review. They advised in their Records Review that this information must be identified by OMNR.

Given this Site and subject property are located on active agricultural lands, it is unlikely this natural feature exists.

Site Investigation Results:

The site investigation confirmed the absence of this habitat within the subject property boundary.

4.1.5.3 Waterfowl Stopover and Staging Areas (Terrestrial & Aquatic)

Terrestrial waterfowl stopover and staging areas are usually comprised of fields that contain flooding and/or sheet water during spring snowmelt and run-off. These habitats often contain important invertebrate foraging opportunities for migrating waterfowl such as American Wigeon (*Anas americana*) and American Black Duck (*Anas rubripes*). Aquatic stopover and staging areas contain ponds, marshes, lakes, bays, coastal inlets and watercourses that may be used during their migration. Reservoirs managed as a large wetland or pond/lake are also included.

Records Review Results:

The OMNR has not yet evaluated the presence of terrestrial waterfowl stopover and staging areas on the Site, and was therefore unable to provide information about this feature in the Records Review. The OMNR indicated that a site investigation was required to gather more information about this feature.

In terms of aquatic waterfowl stopover and staging areas, the management biologist has verified that this natural feature is not present on or within the subject property.

Site Investigation Results:

Rain had been received on-Site during and prior to the site investigation. Given the Sites present condition, there was no evidence of flooding on the Site, or within the subject property. Given the signs of flooding on the neighbouring property during the site investigation, it confirmed that sheet water during spring snowmelt and/or runoff is not common within the subject property. Therefore, the site investigation confirmed the absence of this habitat area on Site or within the subject property boundaries.

4.1.5.4 Shorebird Migratory Stopover Area

These habitats include shorelines of lakes, rivers, and wetlands, including beach areas, bars, and seasonally flooded, muddy and un-vegetated shoreline habitats. Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October.

Sewage treatment ponds and storm water ponds do not qualify as a significant wildlife habitat.

Records Review Results:

According to the Records Review conducted by the OMNR, the management biologist verified that there are no shorebird migratory stopover areas on or within the subject property.

Site Investigation Results:

No site investigation was required, as this natural feature was confirmed to be outside the subject property during the records review.

4.1.5.5 Raptor Wintering Area

Raptor wintering areas can be described as a combination of fields and woodlands that provide roosting, foraging and resting for wintering raptors. These areas need to greater than 20 hectares with a combination of forest and upland. These habitats are often least disturbed sites, idle/fallow or lightly grazed fields and/or meadows.

Records Review Results:

According to Records Review conducted by the OMNR, the management biologist verified that there is no raptor wintering areas on or within the subject property.

Site Investigation Results:

No site investigation was required, as this natural feature was confirmed to be outside the subject property during the records review.

4.1.5.6 Bat Hibernacula, Maternity and Migratory Stopover Areas

Bat hibernacula are often not well known, but may be found in caves, mine shafts, underground foundation and karsts.

Bat maternity colonies are normally found in tree cavities and in buildings, however, habitats found in buildings are not considered significant wildlife habitat. Maternity roosts are not found in caves or mines in Ontario. Maternity colonies are located in mature deciduous or mixed forest stands that are greater than 10 hectares in area with tree snags that are greater than 25 centimetres diameter-at-breast-height (dbh). Female bats tend to prefer tree snags in the early stages of decay. Northern myotis (*Myotis septentrionalis*) prefer contiguous tracts of older forest cover for foraging and roosting in snags and trees. Silver-haired bats (*Lasionycteris noctivagans*) tend to prefer mature forest stands comprised of deciduous or mixed deciduous species, and those older areas that have approximately 21 snags per hectare.

Migratory bats that travel long distances typically migrate during the late summer and early fall from summer breeding habitats throughout Ontario to southern wintering areas. During migration in the fall, bats tend to congregate at unknown areas at stopover habitats.

Records Review Results:

According to Records Review conducted by the OMNR, there are no bat maternity colonies on or within the subject property, as no woodlands exist within 120 metres. The OMNR has not yet identified any bat hibernacula on the Site, and was therefore unable to provide

information about this feature in the Records Review. The OMNR indicated that a site investigation was required to gather more information about this feature.

Additionally, according to the Records Review conducted by the OMNR, bat migratory stopover areas only apply to the Long Point region, and is therefore, not relevant to this Site.

Site Investigation Results:

The site investigation revealed no habitat for bat hibernacula to exist within the subject property.

4.1.5.7 Turtle Wintering Areas

Turtle wintering areas are normally the same area as their regular habitat. The water at these sites need to be deep enough not to freeze during the winter months and must contain soft mud substrates. Over winter sites are those that typically contain permanent waterbodies, large wetlands, bogs and fens that contain adequate amounts of dissolved oxygen.

Records Review Results:

The OMNR has not yet identified any turtle wintering areas at this Site, and was therefore unable to provide information about this natural feature in their Records Review. The OMNR indicated that a site investigation was required to gather information about this feature.

According to aerial imagery and Site information provided by the client, the Site is presently used for agricultural purposes. Therefore, given the absence of water on the Site and subject property, this natural feature is identified as absent.

Site Investigation Results:

The site investigation confirmed the absence of this natural feature to exist within the subject property.

4.1.5.8 Snake Hibernaculum

Snake hibernaculum is usually found in burrows, rock crevices and other natural locations below the frost line. Key areas are those that contain broken or fissured rock, which can provide access to subterranean sites below the frost line. Wetlands are also important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover.

Records Review Results:

The OMNR has not yet identified any snake hibernaculum areas at this Site, and was therefore unable to provide information about this natural feature in their Records Review. The OMNR indicated that a site investigation was required to gather information about this feature.

According to aerial imagery and Site information provided by the client, the Site is presently used for agricultural purposes. Therefore, given the absence of suitable habitat on the Site and subject property, this natural feature is identified as absent.

Site Investigation Results:

The site investigation confirmed the absence of this natural feature to exist within the subject property.

4.1.5.9 Colonial Nesting Bird Breeding Habitat (Bank and Cliff)

Colonial nesting bird breeding habitat near banks and cliffs consist of areas with exposed soil banks, are undisturbed or naturally eroding, and those which are not a licensed/permitted aggregate area. This does not include man-made structures such as bridges or buildings, or recently disturbed soil areas such as berms, embankments, soil and/or aggregate stockpiles.

Records Review Results:

According to the Records Review conducted by the OMNR using OMNR contour maps, there were no colonial nesting bird breeding habitats (bank and cliff swallows) on or within the subject property.

Site Investigation Results:

No site investigation was required, as this natural feature was confirmed to be outside the subject property during the records review.

4.1.5.10 Colonial Nesting Breeding Bird Habitat (Trees/Shrubs)

Tree and shrub habitat for colonial nests can be found in live or dead standing trees in wetlands, lakes, island and peninsulas. Shrubs and occasionally emergent vegetation may also be used. Most nests in trees are 11 to 15 metres from the ground near the top of the tree.

Records Review Results:

The OMNR has not yet evaluated the presence of colonial nesting bird breeding habitat (trees/shrubs) at this Site, and was therefore unable to provide information about this natural feature in their Records Review. The OMNR indicated that a site investigation was required to gather more information about this feature.

According to aerial imagery and Site information provided by the client, the Site is presently used for agricultural purposes. Therefore, given the absence of suitable habitat on the Site and subject property, this natural feature is identified as absent.

Site Investigation Results:

The site investigation confirmed the absence of this natural feature to exist within the subject property.

4.1.5.11 Colonial Nesting Bird Breeding Habitat (Ground)

Colonial ground nesting birds, such as gulls and terns are typically located on islands or peninsulas associated with open water or in marshy areas.

Records Review Results:

The OMNR has not yet evaluated the presence of colonial nesting bird breeding habitat (ground) at this Site, and was therefore unable to provide information about this natural feature in their Records Review. The OMNR indicated that a site investigation was required to gather more information about this feature.

Site Investigation Results:

The site investigation confirmed the absence of this natural feature to exist within the subject property.

4.1.5.12 Migratory Butterfly Stopover Area

Migratory butterfly stopover areas are typically at a minimum of 10 hectares in size with a combination of field and forest habitat present, and located within 5 kilometres of Lake Ontario and Lake Erie. This habitat typically provides an area for stopover during migration. They cannot be disturbed areas, and must contain fields or meadows with an abundance of nectar plants.

Records Review Results:

According to Records Review conducted by the OMNR and aerial imagery, migratory butterfly stopover areas are not relevant to this Site because it is not within 5 kilometres of Lake Erie.

Site Investigation Results:

No site investigation was required, as this natural feature was confirmed to be outside the subject property during the records review.

4.1.5.13 Landbird Migratory Stopover Area

Landbird migratory stopover areas are those that contain woodlots of 5 hectares in size or greater and within 5 kilometres of Lake Ontario. Woodlands that are less than 2 kilometres from Lake Erie or Lake Ontario are more significant. These sites can contain a wide variety of habitats that consist of forests, grasslands, and wetland areas.

Records Review Results:

According to Records Review conducted by the OMNR, and aerial imagery, landbird migratory stopover areas are not relevant to this Site because it is not within 5 kilometres of Lake Erie.

Site Investigation Results:

No site investigation was required, as this natural feature was confirmed to be outside the subject property during the records review.

4.1.6 Rare Vegetation Communities or Specialized Habitat

Rare or specialized habitats include rare vegetation communities or concentrations of rare plants. These specialized areas may also provide habitat to rare animal species. According to the Significant Wildlife Habitat Technical Guide (2000), the following definitions of each was provided:

Rare vegetation communities include:

- Areas that contain a provincially rare vegetation communities or one that is rare within a planning area.

Specialized Habitats include:

- Areas that support wildlife species that have highly specific habitat requirements;

- Areas with high species and community diversity; and,
- Areas that provide habitat that greatly enhance species survival.

Habitat types that meet these definitions were considered during the site investigation and their occurrence within 120 metres of the Site location. Both records review and site investigation results are presented in **Table 4-1** and **4-2** below.

Table 4-1: Rare Vegetation Communities

Habitat	Records Observation (Data & Imagery) Results	OMNR Records Review	Site Investigation Results
Cliff & Talus Slope	Habitat not present on-Site or within subject property.	Habitat not present on-Site or within subject property according to OMNR contour maps.	No Site Investigation required. Vegetation community absent.
Sand Barren	Habitat not present on-Site or within subject property.	Habitat not present on-Site or within subject property according to NRVIS soil survey complex clay soils	No Site Investigation required. Vegetation community absent.
Alvar	Habitat not present on-Site or within subject property.	Habitat not present on-Site or within subject property according to NRVIS soil survey complex clay soils.	No Site Investigation required. Vegetation community absent.
Old Growth Forest	Habitat not present on site or on subject property.	Habitat not present on-Site or within subject property, as no woodlands occur within 120 metres	No Site Investigation required. Vegetation community absent.
Savannah	Habitat not present on site or on subject property.	OMNR verified this natural feature is not present in or within subject property.	No Site Investigation required. Vegetation community absent.
Tall Grass Prairie	Habitat not present on site or on subject property.	OMNR verified this natural feature is not present in or within subject property.	No Site Investigation required. Vegetation community absent.
Other Rare Vegetation Communities	Unknown. Site investigation required.	No data from OMNR. Site investigation required.	Site Investigation revealed that the majority of the subject property is located on active agricultural field. Those areas that were vegetated did not contain rare vegetation communities.

Table 4-2: Specialized Habitat for Wildlife

Habitat	Records Observation (Data & Imagery) Results	OMNR Record Review	Site Investigation Results
Waterfowl Nesting Area	Unknown. Site investigation required.	No data from OMNR. Site investigation required to verify wetland boundaries. If wetland is present within 120 metres, then habitat may be present.	Site Investigation confirmed wetland boundary is outside 120 metres from the subject property. Therefore, this habitat is considered absent.

Habitat	Records Observation (Data & Imagery) Results	OMNR Record Review	Site Investigation Results
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	Unknown. Site investigation required.	No data from OMNR. Site investigation required.	Site Investigation confirmed absence of this habitat within subject property.
Woodland Raptor Nesting Habitat	Habitat not present on-Site.	Habitat not present on site or within subject property, as no woodlands occur within 120 metres.	Site Investigation confirmed absence of this habitat within subject property.
Turtle Nesting Area	Site and subject property is located in Agricultural field. Existence unlikely.	No data from OMNR. Site investigation required.	Site Investigation confirmed absence of this habitat within subject property.
Seep and Springs	Unknown. Site investigation required.	No data from OMNR. Site investigation required.	Site Investigation confirmed absence of this habitat within subject property.
Amphibian Breeding Habitat (Woodland)	Habitat not present on-Site.	Habitat not present on site or within subject property, as no woodlands occur within 120 metres.	Site Investigation confirmed absence of this habitat within subject property.
Amphibian Breeding Habitat (Wetland)	Unknown. Site investigation required.	No data from OMNR. Site investigation required.	Site Investigation confirmed absence of this habitat within subject property.

The site investigation confirmed the absence of both rare vegetation communities and specialized wildlife habitat, mainly as a result that the Site is located on active agricultural lands. The site investigation also revealed that the PSW boundary is located outside the subject property. Therefore, the solar panel and construction activities are outside any natural features and/or habitats, including the 120 metre buffer.

4.1.7 Animal Movement Corridors

Animal movement corridors listed for this Site as per OMNR Records Review, and Significant Wildlife Habitat Ecoregion 7E Criterion Schedule include amphibian movement corridors.

Records Review Results:

The OMNR has not yet evaluated the presence of amphibian movement corridors at this Site, and was therefore unable to provide information about this natural feature in their Records Review. The OMNR indicated that a site investigation was required to gather more information about this feature.

Site Investigation Results:

The site investigation confirmed the absence of amphibian movement corridors to exist within the subject property. The Site and subject property are located in an active agricultural field.

4.1.8 Species of Conservation Concern

Habitats for species of conservation concern include those species that are identified as special concern or rare. These habitats do not include those that pertain to threatened or endangered species that are protected by the *Endangered Species Act, 2007*. A summary of species of conservation concern habitats that may potentially exist on-Site or within the subject property is presented in **Table 4-4**.

Table 4-3: Species of Conservation Concern

Habitat	Records Observation (Data & Imagery) Results	OMNR Records Review	Site Investigation Results
Marsh Bird Breeding Habitat	Unknown. Site investigation required.	No data from OMNR. Site investigation required.	Site Investigation confirmed absence of this habitat within subject property.
Woodland Area – Sensitive Bird Breeding Habitat	Habitat not present on-Site.	Habitat not present on-Site or within subject property.	No Site Investigation required. Habitat absent
Open Country Breeding Bird Habitat	Unknown. Site investigation required.	No data from OMNR. Site investigation required.	Site Investigation confirmed absence of this habitat within subject property.
Shrub/Early Successional Bird Breeding Habitat	Unknown. Site investigation required.	No data from OMNR. Site investigation required.	Site Investigation confirmed absence of this habitat within subject property.
Special Concern Species	Unknown. Site investigation required.	No data from OMNR. Site investigation required.	Site Investigation confirmed absence of this habitat within subject property.
S1-S3, SH Species and Communities	Unknown. Site investigation required.	No data from OMNR. Site investigation required.	Site Investigation confirmed absence of this habitat within subject property.
Terrestrial Crayfish	Unknown. Site investigation required.	No data from OMNR. Site investigation required.	Site Investigation confirmed absence of this habitat within subject property.

A geographical search for significant or endangered species presence and associated habitat was conducted using the Ontario MNR NHIC (2011) database. A search was conducted on the one (1) km^2 to two (2) km^2 area surrounding and including the subject lands. The search revealed records of 14 species including those identified by OMNR as presented in **Table 4-4**.

Overall, none of these species were observed at the Site or on the subject property during the time the Site visit was conducted. It is important to note, however, that all species have not been observed within the surrounding areas of the Site for over two (2) decades, with the exception of Great Lakes sand reed (*Calamovilfa longifolia var. magna*). Given the level of disturbance present on-Site and on the subject property in terms of active agricultural lands, it is unlikely any of these species would be utilizing these areas as potential habitats.

Therefore, the site investigation confirmed the absence of habitats for special concern species to exist within the subject property.

Table 4-4: Rare, Endangered, Threatened and/or Special Concern Species in vicinity of the Site

Type of Organism	Scientific Name	Common Name	Global/Ontario Provisional Ranking	COSEWIC & SARO Ranking	Canada & Ontario General Status	Most Recent Years Observed	Relative Location
Birds	*Ammodramus henslowii*	Henslow's Sparrow	G4 SHB	END	At Risk	1975	Within one (1) km
	Tyto alba	Barn Owl	G5 S1	END	Sensitive / At risk	1933	Within one (1) km
	Hirundo rustica	Barn Swallow	G5 S4B	THR	Secure	N/A	MNR reported a potential for this Species at Risk to exist on-Site even though no known occurrences documented
	Dolichonyx oryzivorus	Bobolink	G5 S4B	THR	Secure	N/A	
Mammals	*Myotis leibii*	Small-footed Bat	G3 S2S3		May be at risk	1929	Within one (1) km
Moncotyledons	*Arisaema dracontium*	Green Dragon	G5 S3	SC	Sensitive	1973	Within one (1) km
	Carex careyana	Carey's Sedge	G4G5 S2		May be at risk	1934	Within one (1) km
	Calamovilfa longifolia var. magna	Great Lakes Sand Reed	G5T3T5 S3			1992	Within one (1) km
Dicotyledons	*Draba reptans*	Carolina Whitlow-grass	G5 S3		May be at risk	1986	Within one (1) km
	Lupinus perennis	Sundial Lupine	G5 S3		Sensitive	1936	Within one (1) km
	Sanicula canadensis var. grandis	Long-stlyed Canadian Sanicle	G5T3T5 S2			1935	Within one (1) km
Reptiles & Turtles	*Emydoidea blandingii*	Blanding's Turtle	G4 S3	THR	Maybe at risk/ At risk	N/A	MNR reported a potential for this Species at Risk to exist on-Site even though no known occurrences documented
	Apalone spinifera spinifera	Spiny Softshell	G5 S3	THR	At risk	N/A	
	Heterodon platirhinos	Eastern Hog-nosed Snake	G5 S3	THR	At risk	N/A	

COSEWIC = Committee on the Status of Endangered Wildlife in Canada; END = Endangered; SC = Special Concern; G1 = extremely rare; G2 = very rare; G3 = Rare to uncommon; G4 = Common; G5 = Very common; GH = historic (no records in past 20 years); GNR = Unranked; NAR = Not At Risk; SARO = Species At Risk in Ontario; SC = Special Concern; S1 = Critically Imperiled; S2 = Imperiled; S3 = Vulnerable; S4 = Apparently Secure; S#S# = range of uncertainty between ranks; SH = Possibly Extirpated; THR = Threatened

Chapter 5 – Summary

5 Summary

Based on the current Site and subject property the following **Table 5-1** summarizes the results as they pertain to the natural heritage features that are known to exist and confirmed during the site investigation, as described in subsection 3 section 26 of the REA Regulation.

Table 5-1: Summary of Results after Site Investigation

REA Regulation	Natural Heritage Feature Existence as per Records Review (Yes/No/Unknown)	Description Of Records Result Requirements	Site Investigation Results	Natural Heritage Feature Existence as per Site Investigation Results (Yes/No)
Is in or within 120 m of a provincial park or conservation reserve?	No	Official plan maps and OMNR records review indicate no provincial parks or conservation reserves are located on-Site or on the subject property.	Site investigation not required, as this feature is not located within the subject property	No
Is the project located in a natural feature?	Unknown	A provincially significant wetland is located outside of the subject property. In addition, significant woodland is located north and northwest of the proposed Site location, but is outside the 120 metre boundary. Other natural features presented in this review need to be confirmed during the Site investigation.	Site Investigation confirmed the absence of natural features within the subject property.	No
Is the project area located within 50 m of an ANSI (earth science)	No	Official plan, NHIC, and MNR have indicated the subject property is not located within 50 m of an ANSI.	Site investigation not required, as this feature is not located within the subject property	No
Is the project area located within 120 m of a natural feature that is not an ANSI	Unknown	The presence of absence of natural features presented in this review will be confirmed during a Site investigation.	Site Investigation confirmed the absence of natural features that are not an ANSI within the subject property.	No

The site investigation was carried out in accordance with subsection 3, section 26 of the REA Regulation and it confirmed the absence of natural heritage features as per Section 25 of the REA Regulation for Class 3 solar projects as summarized by **Table 5-1**. As such, no evaluation of significance report or EIS will be completed for this Site.

6 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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7 References

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Figures

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Legend

- Surface Water Feature
- Hedgerow
- Provincially Significant Wetland
- Proposed Solar Panel
- Construction Limit
- 120 m Buffer

Source: Google Maps, accessed 2012

0 10 20 40 60 80 100 Meters

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PROJECT TITLE:
FUTURE SOLAR DEVELOPMENTS INC. LP5 & LP6
304 PHASE NATURAL HERITAGE STUDY
9274 UNION DRIVE
STRATHROY, ONTARIO

DRAWING TITLE:
NATURAL HERITAGE
ASSESSMENT SITE MAP

PROJECT No.: WSL-00002250-00	DWN: EE
SCALE: AS NOTED	CHKD: DF
DATE: JULY 2012	FIG. No.: 1

Appendix A –

Site Photographs

Photograph No.1: Southern edge of property facing north east; proposed site consists of agricultural land

Photograph No. 2: North eastern corner of property facing southeast; recent landscaping work present

Photograph No. 3: Northern edge of property; large adjacent woodlot present north/northwest

Photograph No. 4: North western corner of property facing south east; slightly depressing topography present in the central portion of the property

Photograph No. 5: Western edge of property overlooking proposed site facing east; slight depressions in topography present

Photograph No. 6: Northern woodlot; fairly dense, primarily deciduous. Evidence for deer and rabbits present, opossum was observed within the woodlot.

Photograph No. 7: Provincially significant wetland located in the south corner of property. Predominately grasses and sedges present, with a few deciduous species. South Strathroy creek flows along the edge of the wetland.

Photograph No. 8: Creek flowing beside the provincially significant wetland in the south corner of the property; creek is approximately one meter wide, and 1-2 feet deep.