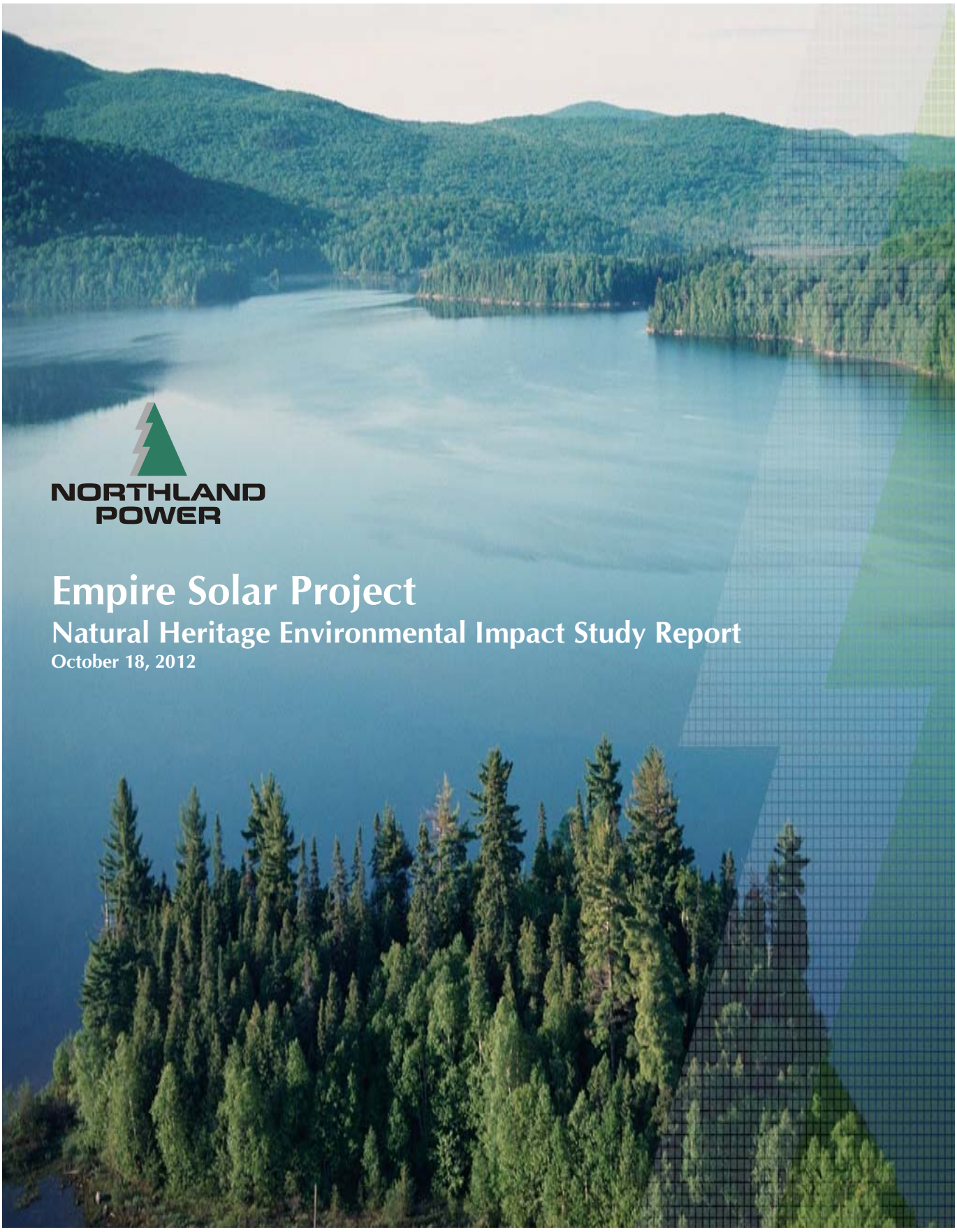

NORTHLAND POWER

Empire Solar Project

Natural Heritage Environmental Impact Study Report

October 18, 2012

Northland Power Inc.
on behalf of
Northland Power Solar
Empire L.P.
Toronto, Ontario

Natural Heritage
Environmental Impact Study Report

Empire Solar Project

H334844-0000-07-124-0272
Rev. 1
October 18, 2012

Project Report

October 18, 2012

Northland Power Inc.
Empire Solar Project

Natural Heritage Environmental Impact Study

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1. Introduction

Northland Power Solar Empire L.P. (hereinafter referred to as "Northland") is proposing to develop a Class 3 10-megawatt (MW) ground mounted solar photovoltaic (Solar PV) facility in the Town of Cochrane. This Project, known as the Empire Solar Project, is hereafter referred to as "Empire" or the "Project."

The Project location is comprised of two primary components. The first part of the Project is the location of the solar panels, including access roads, inverters, transformers, fencing, etc, and is hereafter referred to as the "solar panel Project location" The solar panel Project location approximately 122 hectares (ha) in size and located on Lots 17 and 18, Concession 7 of the Town of Cochrane. The solar panel Project location is situated on Glackmeyer Concession Road 7 (shown in Figure 1.1).

The second part of the Project is the approximately 20 km transmission line from the solar panel Project location to the connection point west of the Project location near Hunta, ON, as well as associated transition structure and switching station. This portion of the project is referred to as the transmission line Project location, with locations shown in Figures 1.2 and 1.3.

As stated in Sections 37 and 38 of Ontario Regulation (O. Reg.) 359/09 *Renewable Energy Approvals Under Part V.0.1 of the Act*, (herein referred to as the "REA Regulation"), an Environmental Impact Study (EIS) is required for all significant natural heritage features determined to be within a specified setback in order to obtain a Renewable Energy Approval (REA). The EIS identifies the potential negative environmental effects, documents the proposed mitigation measures, and describes the environmental effects monitoring plan for the natural heritage features.

1.1 Renewable Energy Approval Legislative Requirements

Per Section 4 of the REA Regulation, ground-mounted solar facilities with a nameplate capacity greater than 10 kilowatts (kW) are classified as Class 3 solar facilities and require a REA.

The REA process requires the preparation of several reports with respect to natural heritage features on and adjacent to the Project location, including the Records Review Report, Site Investigation Report, Evaluation of Significance, and if necessary, the EIS. The legislative requirements for these reports are summarized in the following sections.

1.1.1 Records Review Report

Section 35 of the REA Regulation requires proponents of Class 3 solar projects to undertake a natural heritage records review to identify "whether the Project is

1. in a natural feature
2. within 50 m of an area of natural and scientific interest (earth science)
3. within 120 m of a natural feature that is not an area of natural or scientific interest (earth science)." (O. Reg. 359/09, s. 25, Table).

Natural features are defined in Section 1 (1) of the REA Regulation to be all or part of

a) an area of natural and scientific interest (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.

Subsection 2 of Section 30 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" (O. Reg. 359/09). The Natural Heritage Records Review Report (Hatch Ltd., 2012a) was prepared to meet these requirements.

1.1.2 Site Investigation Report

Section 26 of the REA Regulation requires proponents of Class 3 solar projects to undertake a natural heritage site investigation for the purpose of determining

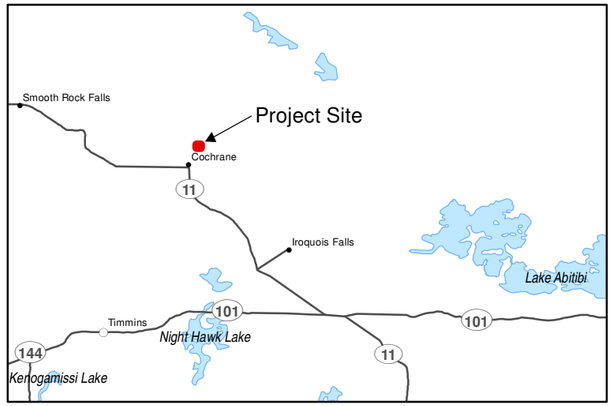
- whether the results of the analysis summarized in the Natural Heritage Records Review Report prepared under Subsection 25(3) are correct or require correction, and identifying any required corrections
- whether any additional natural features exist, other than those that were identified in the Natural Heritage Records Review Report prepared under Subsection 30(2)
- the boundaries, located within 120 m of the Project location, of any natural feature that was identified in the records review or the site investigation
- the distance from the Project location to the boundaries determined under clause (c).

The Natural Heritage Site Investigation Report (Hatch Ltd., 2012b) was prepared to meet these requirements.

1.1.3 Evaluation of Significance Report

Section 27(1) of the REA Regulation requires proponents of Class 3 solar projects to undertake an evaluation of significance for natural heritage features identified during the records review and site investigation that sets out

- a determination of whether the natural feature is
  - provincially significant
  - significant
  - not significant
  - not provincially significant



LEGEND

- Building
- Road
- Watercourse
- Parcel
- Waterbody
- Provincially Significant Wetland

Project Components

- Project Location
- 120 m from Project Location

Notes:
1. Produced by Hatch under licence from Ontario Ministry of Natural Resources, Copyright (c) Queens Printer 2011.
2. Spatial referencing UTM NAD 83.
3. Satellite imagery obtained from Google Earth Pro, captured 2003.
4. Wetland information provided by NRSI (2011).

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Figure 1.1
Northland Power Inc.
Empire Solar Project
Solar Panel Project Location and Evaluation of Significance

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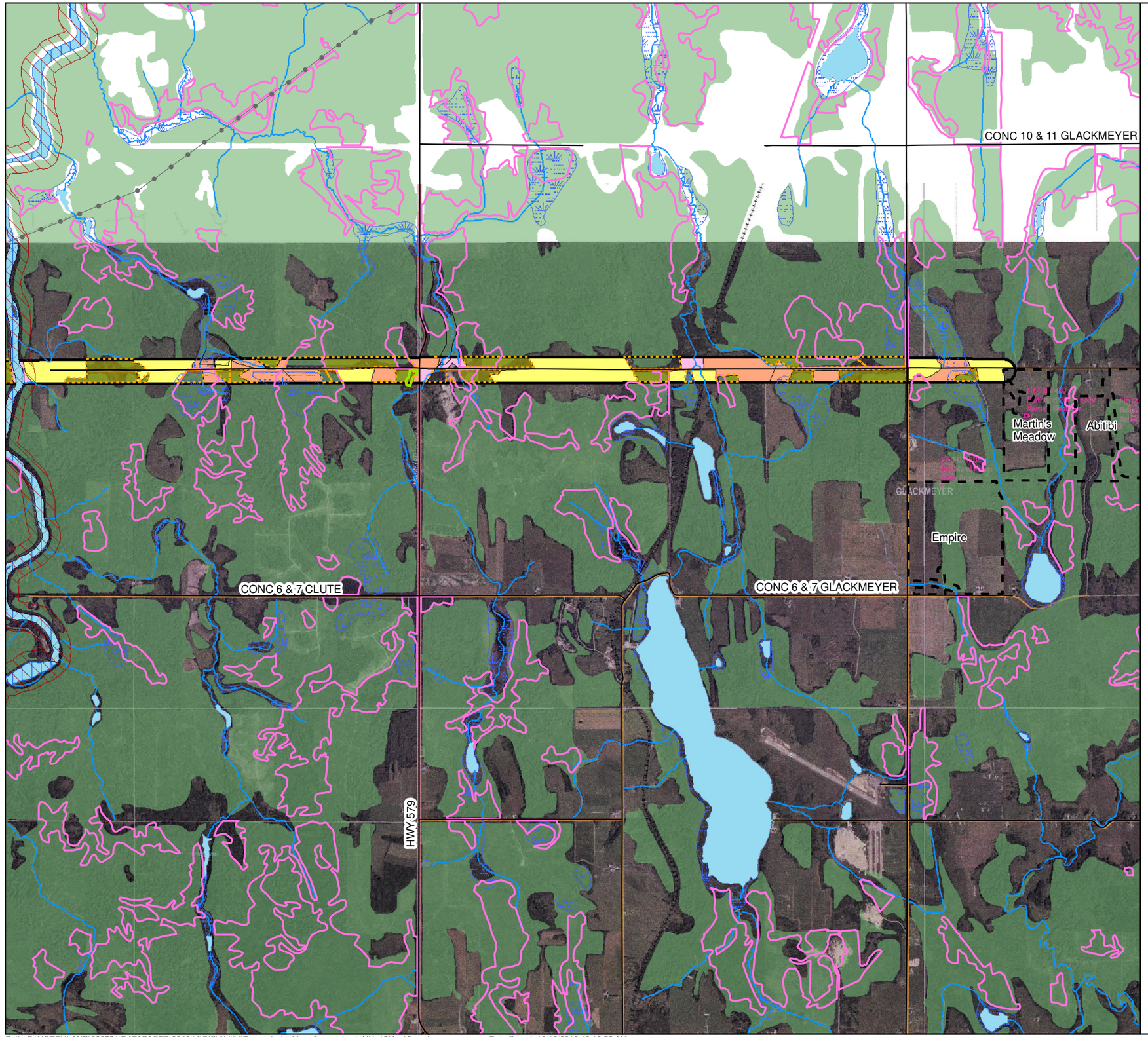

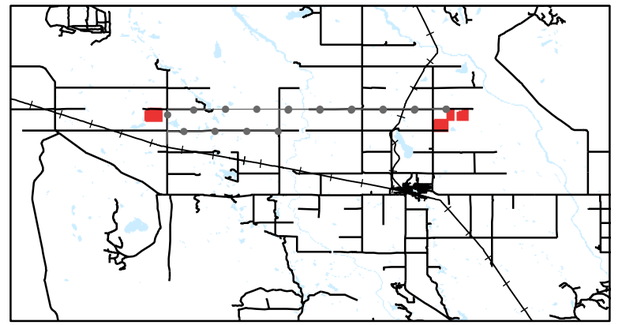

Legend

- Road
- Utility Line
- Watercourse
- Area Sensitive Grassland Habitat / Short-eared Owl Habitat
- Area Sensitive Shrubland Habitat / *Carex Wiegandii* Habitat
- Area Sensitive Woodland / Canada Warbler / Olive-sided Flycatcher / *Vaccinium ovalifolium* Habitat
- Bald Eagle Habitat
- *Carex haydenii* Habitat
- *Carex loliacea* Habitat
- Common Nighthawk Habitat
- Old Growth or Mature Forest / Northern Long-eared Bat and Specialized Raptor Nesting Habitat
- Mink, Otter, Marten, and Fisher Denning Site
- Moose Aquatic Feeding Area
- Moose Late Winter Habitat / Winter Deer Yard
- *Scirpus heterochaetus* Habitat
- Seeps and Springs / *Carex tetanica* Habitat
- Red-necked Grebe Habitat
- Waterbody
- Waterfowl Stopover and Staging Area
- Waterfowl Nesting Habitat
- Wetland Area
- Wetlands Supporting Amphibian Breeding Ponds

Project Infrastructure

- Connection Point
- Northland Power Project Location
- 120 m from Distribution Line
- Switchyard
- Transition Structure

Notes:
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2. Spatial referencing UTM NAD 83.
3. Satellite Imagery from Ministry of Natural Resources.

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Figure 1.2
Northland Power Inc.
Transmission Line Project Location (Eastern Half) - Generalized Candidate Significant Natural Heritage Features

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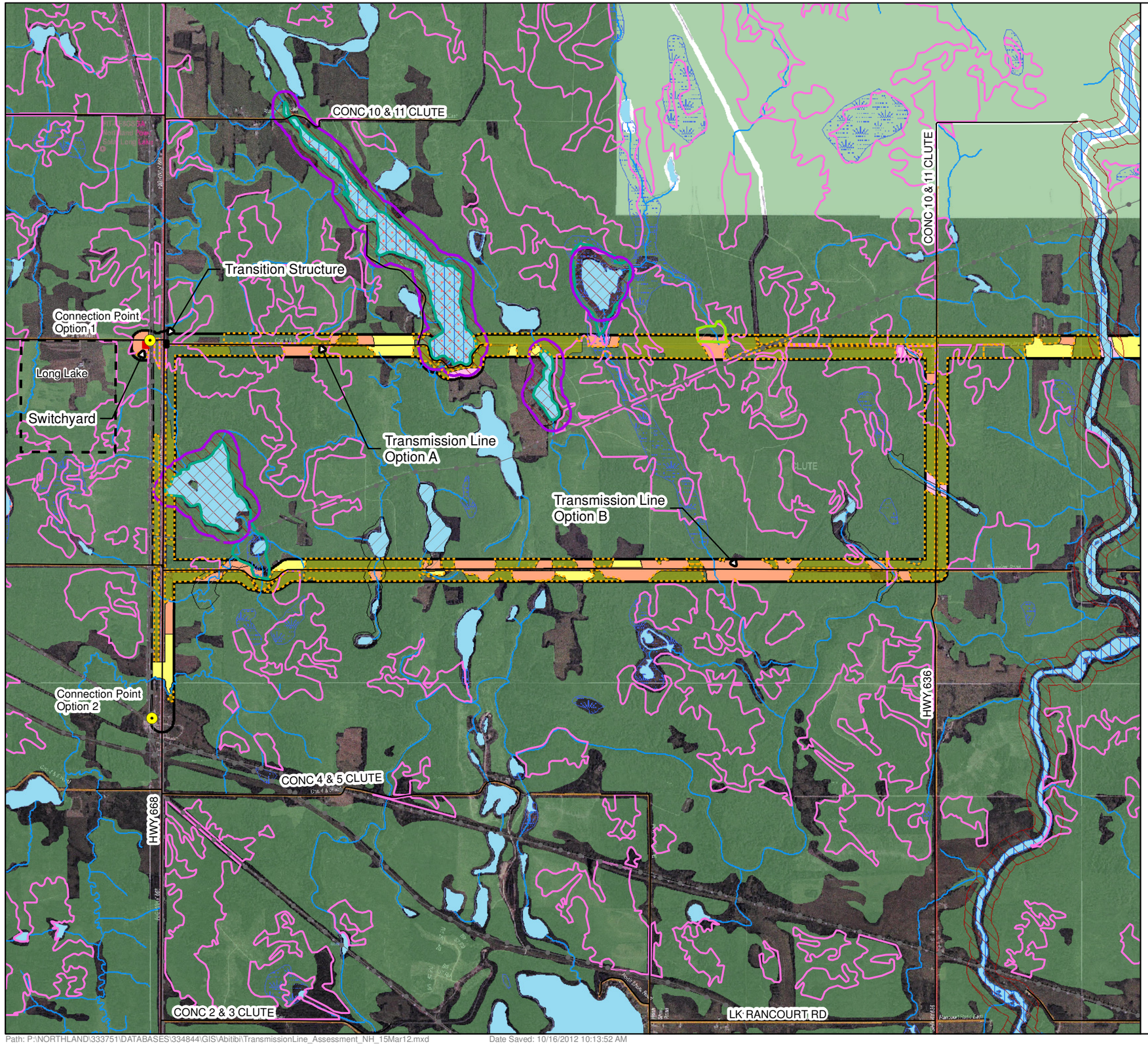

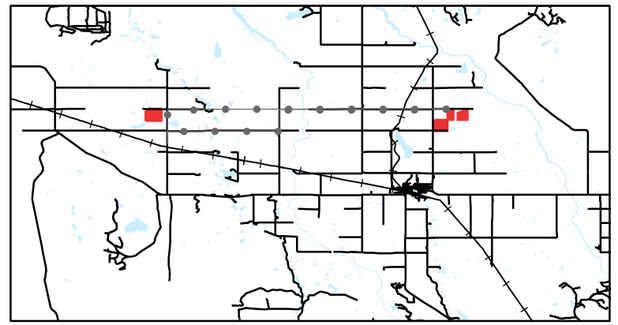

Legend

- Road
- Utility Line
- Watercourse
- Area Sensitive Grassland Habitat / Short-eared Owl Habitat
- Area Sensitive Shrubland Habitat / *Carex Wiegandii* Habitat
- Area Sensitive Woodland / Canada Warbler / Olive-sided Flycatcher / *Vaccinium ovalifolium* Habitat
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- Wetland Area
- Wetlands Supporting Amphibian Breeding Ponds

Project Infrastructure

- Connection Point
- Northland Power Project Location
- 120 m from Distribution Line
- Switchyard
- Transition Structure

Notes:
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2. Spatial referencing UTM NAD 83.
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Figure 1.3
Northland Power Inc.
Transmission Line Project Location (Western Half) - Generalized Candidate Significant Natural Heritage Features

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- a summary of the evaluation criteria or procedures used to make the determinations
- the name and qualifications of any person who applied the evaluation criteria or procedures.

The Evaluation of Significance Report (Hatch Ltd., 2012c) for the natural features identified on and within 120 m of the Project location was prepared to meet these requirements.

1.1.4 Environmental Impact Study Report

Section 38(1) of the REA Regulation prohibits the construction, installation or expansion of any component of a solar project within the following locations:

- provincially significant northern wetland or within 120 m of a provincially significant northern wetland
- within 120 m of a provincially significant southern wetland
- within 120 m of a provincially significant coastal wetland
- a provincially significant area of natural and scientific interest (ANSI) (earth science) or within 50 m of a provincially significant ANSI (earth science)
- a provincially significant ANSI (life science) or within 120 m of a provincially significant ANSI (life science)
- a significant valleyland or within 120 m of a significant valleyland
- a significant woodland or within 120 m of a significant woodland
- a significant wildlife habitat or within 120 m of a significant wildlife habitat
- within 120 m of a provincial park
- within 120 m of a conservation reserve.

However, Section 38(2) allows proponents to construct within the locations noted above, subject to the completion of an EIS to assess negative effects and evaluate appropriate mitigation and monitoring measures.

Section 38(2) of the REA Regulation indicate that the EIS report must

- identify and assess any negative environmental effects of the projects on natural features, provincial parks or conservation reserves referred to in Section 38(1)
- identify mitigation measures in respect of any negative environmental effects
- describe how the environmental effects monitoring plan in the Design and Operations Report (Hatch Ltd., 2012e) addresses any negative environmental effects
- describe how the Construction Plan Report (Hatch Ltd., 2012d) addresses any negative environmental effects.

This EIS has been prepared to address these requirements for the construction of Project components within 120 m of significant natural heritage features noted in Section 1.1.

1.2 Background Information on Natural Heritage Features

The Natural Heritage Records Review (Hatch Ltd., 2012a) and Natural Heritage Site Investigation Report (Hatch Ltd., 2012b) confirmed that the Project will be constructed within 120 m of several natural features. Of these natural features, several were identified as significant natural heritage features during the evaluation of significance (Hatch Ltd., 2012c).

The natural heritage features that were classified as significant are

- Solar panel Project location
  - Wetlands
- Transmission line Project location
  - Wetlands
  - Generalized Characterized Candidate Significant Wildlife Habitat
    - Seasonal Concentration Areas
      - Winter deer yards/moose late winter habitat
      - Waterfowl stopover and staging areas
      - Waterfowl nesting sites
    - Specialized Wildlife Habitats
      - Area-sensitive woodland/shrubland/grassland habitats
      - Moose aquatic feeding areas
      - Old growth or mature forest stands
      - Woodlands supporting amphibian breeding habitat
      - Wetlands supporting amphibian breeding habitat
      - Mink, otter, marten and fisher denning sites
      - Specialized raptor nesting habitat
      - Seeps and springs
    - Habitat for Species of Conservation Concern
      - Northern Long-eared Bat
      - Red-necked Grebe
      - Short-eared Owl
      - Common Nighthawk
      - Canada Warbler
      - Bald Eagle

- Olive-Sided Flycatcher
- *Vaccinium ovalifolium*
- *Scirpus heterochaetus*
- *Carex wiegandii*
- *Carex tetanica*
- *Carex loliacea*
- *Carex haydenii*

- Animal Movement Corridors associated with several waterbodies within 120 m of the Project location

These significant natural heritage features and their locations in relation to the Project development area are shown in Figure 1.1.

1.3 Environmental Impact Study Format

Section 1 of this EIS has identified the legislative requirements for an EIS under the REA Regulation and identified the reasons why an EIS is required for the Project. Section 2 provides the methodology of the EIS. Section 3 summarizes the activities associated with Project construction, operation and decommissioning, as described in the Project Description Report (Hatch Ltd., 2012h). Section 4 identifies and assesses negative environmental effects and the proposed mitigation measures to prevent/minimize the potential effects. Section 5 describes the environmental effects monitoring plan from the Design and Operations Report (Hatch Ltd., 2012e), and Section 6 describes how the Construction Plan Report (Hatch, 2012d) addresses the potential negative environmental effects. Section 7 summarizes the results of the EIS. References are included in Section 8.

2. Methodology

The following steps outline the methodology that was used to prepare this EIS:

1. Documentation of Project components and activities during all project phases, including construction, operations and decommissioning, including identification of temporal and spatial boundaries.
2. Background data collection on the natural features within 120 m of the Project location through the Records Review and Site Investigation processes.
3. Identification of the effects that is likely to occur on the environmental components as result of implementing the Project.
4. Development of mitigation measures to eliminate, alleviate or avoid the identified negative effects.
5. Design of an environmental effects monitoring program to confirm the predicted effects and the effectiveness of mitigation measures.

3. Project Components and Activities

The following sections briefly describe the construction, operation and decommissioning phases of the Project. The information is taken from the Project Description Report (Hatch Ltd., 2012h). More detailed information can be found in the Construction Plan Report (Hatch Ltd., 2012d), Design and Operations Report (Hatch Ltd., 2010e) and Decommissioning Plan Report (Hatch Ltd., 2012f). The Site Layout from the Construction Plan Report (Hatch Ltd., 2012d) is provided in Appendix A to show the detailed components of the facility including solar panel, inverter, transformer and access road locations.

3.1 Construction

Construction is anticipated to occur over an approximately 6-month period, likely commencing in Spring 2013 with commissioning scheduled for late 2013. The activities associated with construction are summarized in Table 3.1.

Table 3.1 General Description of Construction Activities (From Hatch, 2012h)

Activity	Description
Access Road Construction	Activities associated with construction of internal access roads will include • removal of topsoil and subsoil • placement of granular base (at least 30 cm) • installation of ditches and culverts • installation of sediment and erosion control features as necessary • replacement of topsoil on the temporary access roads if the roads are to be removed.
Site Preparation	Activities associated with the site preparation will include • consultation with the landowner to determine the locations of topsoil and subsoil stockpiles where topsoil is stripped. Note that the piles will not be within 30 m of waterbodies and drainage routes. • accumulation of uncut or shredded crops on the soil surface where topsoil is not stripped • removal of trees and shrubs as required [to occur outside of breeding bird period (May through July)] • installation of sediment and erosion control features as necessary.
Installation of Support Structures	Activities associated with the installation of support structures will include • creation of drilled holes for the purposes of stabilizing the support structures of the photovoltaic arrays • construction of foundations and/or support structures beneath transformers, inverters and photovoltaic panels • installation of photovoltaic panels on fixed racking structures • inspection of foundation construction and of support structures prior to the installation of photovoltaic modules, and wiring.
Underground Cable Installation	Activities associated with underground cable installation will include • installation of Direct Current (DC) wiring along the structural supports of the photovoltaic arrays. A network of underground DC cabling will be required at the termination point of the photovoltaic

Activity	Description
	arrays to centrally located inverters which will then convert the electricity to alternating current (AC). • utilization of a simple trenching device to install the cables; whereby a slot will be opened, the cable will be laid, and the soil replaced.
Site Security	Activities associated with site security will include • installation of gate and fence on Project location (in the vicinity of the woodland, the fence will be installed 30 m away from the woodland). • installation of additional security measures (e.g., security cameras, motion sensor flood lighting) if deemed necessary.
Transmission line Erection	Activities associated with transmission line erection will include • erection of a overhead distribution connection from the transformer to transport the generated power from the Project to the 44-kV connection point • utilization of new wooden poles. • For the majority of locations, work will be completed from the existing roadway or within the municipal right of way. However, Option A will entail removal of vegetation within the right of way along the southern edge of Lower Deception Lake.

3.2 Operation

Commercial operation is expected to be achieved by the end of 2013. The facility will operate 365 d/yr when sufficient solar radiation exists to generate electricity. The facility will be remotely monitored with no regular on-site employees. Maintenance is anticipated to occur quarterly. Maintenance activities will involve checking the structures and interconnections and cleaning the photovoltaic panels, as necessary. Maintenance activities associated with maintaining the fence, if required, will be conducted from the Project side (i.e., within the fence). All maintenance materials such as hydraulic fluids, will be brought on site as required and no on-site storage will be made available. Rain and snowfall are anticipated to be sufficient for the cleaning of the panels. Should extra water be required it will be brought on site from a licensed supplier/source. The system does not produce waste of any type. All debris as a result of maintenance or cleaning will be removed from the site immediately by the contracted party. The Project will also be inspected whenever the power output is lower than anticipated as this would be indicative of a mechanical problem. The current contract for the Project is 20 years, however, the life of the Project may be extended should additional contracts be offered.

Unless access is required for annual vegetation control, there will be no activities occurring within the 30-m vegetated buffer from the woodland south of the Project location.

3.3 Decommissioning

Decommissioning would occur when the decision has been made that it is no longer economically feasible to continue operation or refurbish generating equipment.

All decommissioning and site restoration activities would adhere to the requirements of appropriate regulatory authorities and would be conducted in accordance with all applicable federal, provincial

and municipal permits and other requirements. The decommissioning and restoration process comprises the following activities:

- removal of the fencing, scrap metal and cabling. Where possible, these materials will be recycled, with non-recyclables taken to an approved disposal site.
- removal of support structures and foundations unless the landowner requests otherwise. These materials will be recycled where possible.
- site cleanup and re-grading to original contours, and any damage to tile drainage system to be repaired/replaced.
- planting of leguminous crops to provide a rapid return of nutrients and soil structure.

Once the Project, other materials, and road network are removed from the site, the fields will be returned to their condition prior to the Project at the discretion of the landowner.

4. Potential Negative Environmental Effects and Proposed Mitigation Measures

This section describes the anticipated negative environmental effects on the identified significant natural features that could occur as a result of construction, operation and decommissioning phases of the Project (as described in Section 3).

Mitigation measures are proposed to minimize, eliminate or alleviate any negative effects. Potential negative effects are discussed by significant natural feature.

4.1 Wetlands on and within 120 m of the Solar Panel Project Location

A provincially significant wetland complex has been identified on and within 120 m of the Project location, which extends for several hundred metres from the Project location. Potential impacts to provincially significant wetland as a result of construction, operations, and decommissioning are addressed below by project phase.

4.1.1 Construction

Portions of the provincially significant wetland, consisting of both thicket swamp and marsh communities, will be cleared to permit construction of the Project. This will result in an overall removal of 18.7 ha, or 2.7% of the provincially significant wetland complex for this Project, and 46.2 ha, or 6.6% of the provincially significant wetland complex when this Project is considered in relation to the adjacent facilities (Martin's Meadows and Abitibi; Hatch, 2012i, j). Wetland removal on site is split 15.5 ha : 3.2 ha between the thicket swamp and marsh communities, respectively. Thicket swamp community types represent 56% of the wetland complex, while marsh communities represent 12.2% of the wetland complex, so these habitat types will remain abundantly represented within the overall wetland community. It is not possible to mitigate the effects of wetland removal. Therefore, though there will be reduction in the amount of wetland, this will not have an impact on the overall form of the wetland community as there will be several hectares of undisturbed wetlands present within the complex.

In order to ensure that the amount of vegetation removed from the wetland is minimized, work areas will be well marked and workers will be advised to remain within the bounds of the demarcated work areas. All trees will be felled into previously cleared areas, and any cleared and grubbed material will be piled away from the remnant vegetation. Further, workers will be advised not to enter natural areas beyond the boundaries of the work area.

In order to prevent impacts to wildlife within the wetland, vegetation removal will be timed to occur outside of the breeding wildlife period (May through July), with preference for construction to occur within the winter months to minimize potential impact to vegetation communities. This will ensure that disturbance of wildlife within the wetland is minimized.

In addition to the direct impacts described above, indirect impacts to the wetland may occur, and are addressed below.

Dust may be mobilized due to vehicular traffic and heavy machinery use, drilling (if necessary for solar panel installation) and soil moving activities (e.g., excavation, trenching).

However, it is anticipated that the potential impacts can be substantially mitigated through the use of standard construction site best management practices and mitigation measures. In this regard, the document entitled "Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities" (Cheminfo Services Inc., 2005) will be used as a guideline for contractors. Mitigation measures to be used, as required, to control dust include

- use of approved dust suppression (i.e., water or non-chloride based materials) on exposed areas including access roads, stockpiles and works/laydown areas as necessary
- hard surfacing (addition of coarse granular A material, free of fine soil particles) of access roads or other high-traffic working areas
- phased construction, where possible, to limit the amount of time soils are exposed
- avoid earth moving works during excessively windy weather. Stockpiles to be worked (e.g., loaded/unloaded) from the downwind side to minimize wind erosion
- stockpiles and other disturbed areas to be stabilized as necessary (e.g., tarped, mulched, graded, revegetated or watered to create a hard surface crust) to reduce/prevent erosion and escape of fugitive dust.

Visual monitoring of dust generation will occur during the construction period and if dust is observed to be of concern, additional mitigation will be implemented. Given the mitigation and monitoring proposed, it is anticipated that dust generation will be relatively low in magnitude and limited in duration and geographical area, such that no negative effects on vegetation communities will occur as a result of dust.

In addition to dust generation, vegetation communities may also be impacted by alterations to surface water runoff. Activities that could occur during the construction phase that would have the potential to affect surface water runoff patterns and rates include

- land grading and ditching associated with access roads
- soil compaction due to heavy equipment or stockpiling

- vegetation removal.

The potential negative effects and proposed mitigation measures associated with these activities are discussed in the Waterbodies Environmental Impact Study (Hatch Ltd., 2012g). In general, it was concluded that through the use of effective mitigation measures, there will be no measurable change in surface water runoff as a result of soil compaction and vegetation removal. Further, land will be graded such that surface water runoff flows in the same general direction as present, therefore no alterations in moisture regime are anticipated. Grading and grubbing of the Project location will be minimized to the greatest extent possible. In addition, as is specified within the Waterbodies Environmental Impact Study (Hatch Ltd., 2012g), best management practices with respect to sediment and erosion control will be used to prevent disturbed soils from entering waterbodies. This will ensure that there is no impact on the wetlands function or contribution to local and regional water quality.

Given the size of the wetland community, the characteristics of the wetland communities being removed (i.e., thicket swamp and reed canary grass marsh communities as opposed to open water communities), and the remaining abundance of these wetland communities found within the complex, the removal of some of these communities is not expected to impact the functions of the wetland community as

- the wetlands being removed are all at least 30 m away from the watercourses, and therefore there is no impact to primary production, watershed protection, or fish habitat
- the wetland types being removed are abundant in the wetland complex and therefore there would be no discernible impact on the wetland's contribution to preservation of biodiversity or support of natural cycles.

4.1.2 Operation

As the remaining wetlands will be located off the Project location, and outside of the fence, there is no potential for direct encroachment onto this feature during operations. Therefore, there is no potential for impact to the form of the wetland during operations.

No impact to the function of the remaining wetlands is anticipated as a result of operation activities. There will be limited disturbance associated with Project operations as requirements for maintenance are low and there is very little noise emitted from the facility.

4.1.3 Decommissioning

Disturbances present in the area will be similar to those that may occur during the construction phase as described in Section 4.2.1, and mitigation measures employed during construction will be used during decommissioning.

As a result, there will be no impact on the form or function of the wetland during decommissioning.

4.2 Generalized Candidate Significant Wildlife Habitat/Wetlands within 120 m of the Transmission line Project Location

Provincially significant wetlands and assumed provincially significant wetlands have been identified on or within 120 m of the transmission line Project location. In addition, the following generalized

candidate significant wildlife habitats were identified within 120 m of the transmission line Project location:

- Seasonal Concentration Areas
  - Winter deer yards/moose late winter habitat
  - Waterfowl stopover and staging areas
  - Waterfowl nesting sites
- Specialized Wildlife Habitats
  - Area-sensitive woodland/shrubland/grassland habitats
  - Moose aquatic feeding areas
  - Old growth or mature forest stands
  - Woodlands supporting amphibian breeding habitat
  - Wetlands supporting amphibian breeding habitat
  - Mink, otter, marten and fisher denning sites
  - Specialized raptor nesting habitat
  - Seeps and springs
- Habitat for Species of Conservation Concern
  - Northern Long-eared Bat
  - Red-necked Grebe
  - Short-eared Owl
  - Common Nighthawk
  - Canada Warbler
  - Bald Eagle
  - Olive-Sided Flycatcher
  - *Vaccinium ovalifolium*
  - *Scirpus heterochaetus*
  - *Carex wiegandii*
  - *Carex tetanica*
  - *Carex loliacea*
  - *Carex haydenii*

- Animal Movement Corridors associated with several waterbodies within 120 m of the Project location

As none of these features are located on the transmission line Project location, the following general mitigation measures are proposed to prevent indirect effects.

4.2.1 Construction Phase

As construction of the transmission line will be primarily completed along existing access roads, construction of the line will occur from the road, with minimal requirement for vehicle movement within the municipal right of way. Construction of the transmission line will be timed to occur outside of the breeding wildlife period (May through July), with preference for construction to occur within the winter months to minimize potential impact to vegetation communities within the right of way.

With respect to Transmission line Option A, there will be a small area where a new right of way will need to be created around the south end of Lower Deception Lake. To prevent impacts on environmental features within 120 m of this area, the following mitigation measures are proposed:

- In order to ensure that there is no accidental impact to surrounding natural features, the boundaries of the right of way will be well marked and workers will be advised to remain within the bounds of the demarcated work areas.
- Workers will be advised not to enter natural areas beyond the boundaries of the work area.
- Trees will be felled into previously cleared areas, and cleared and grubbed material will be piled away from remnant vegetation prior to removal.
- Sediment and erosion control measures will be used as required.

Where crossings of waterbodies are required, such as that of the Frederickhouse River, the Ontario Operational Statement for Overhead Line Construction (DFO, 2066) will be followed, including

- transmission poles or other structures to not be placed below the normal high water mark
- the amount of machinery fording to be limited. If required, machinery fording to avoid sensitive time periods (i.e., September 1 to June 20)
- heavy equipment to be operated from outside the watercourse to minimize disturbance to the watercourse banks
- mitigation measures to be in place to prevent watercourse contamination (proper refuelling and maintenance procedures, emergency spill kit and procedures).
- sediment and erosion control measures to be implemented and maintained until revegetation of disturbed areas is complete.
- minimize removal of riparian vegetation to the greatest extent possible (maintaining riparian shrubs).
- stabilizing waste materials (topsoil, grubbed materials) above the high water mark
- replanting disturbed areas with native vegetation.

4.2.2 Operations Phase

During the operations phase of the Project, potential impacts to the identified significant wildlife habitats are expected to occur as a result of periodic vegetation removal beneath the transmission line, as well as any ongoing maintenance of the transmission line, as required.

Where required, vegetation removal will be completed through either mechanical means, or the selective use of federally and provincially approved herbicides. Application of herbicides would follow the manufacturer's guidelines to ensure no impact to the surrounding environment. Wherever possible, vegetation management will be planned for the late summer/fall, outside of the breeding seasons for several species of wildlife to minimize impact to wildlife within surrounding natural features.

With respect to maintenance of the transmission line, wherever possible, maintenance activities will be planned for the late summer/fall, outside of the breeding seasons for several species of wildlife to minimize impact to wildlife within surrounding natural features. Further, all maintenance activities will occur from the roadside or within the transmission line right of way. Maintenance staff will be advised to not work beyond the boundaries of these areas, and will be advised not to enter adjacent natural features.

The use of these mitigation measures outlined above is expected to prevent impacts to generalized candidate significant wildlife habitat within 120 m of the transmission line Project location.

4.2.3 Decommissioning Phase

Potential impacts during the decommissioning phase will be the same as those identified for construction. Following removal of the transmission line, any disturbed lands will be re-seeded and restored to provide ecological functions consistent with the surrounding vegetation communities,

5. Environmental Effects Monitoring Plan – Design and Operations Report

As discussed in the Design and Operations Report (Hatch Ltd., 20102), environmental effects monitoring is proposed in respect of any negative environmental effects that may result from engaging in the Project. As per the REA Regulation, the monitoring plan identifies

- performance objectives in respect of the negative environmental effects
- mitigation measures to assist in achieving the performance objectives
- a program for monitoring negative environmental effects for the duration of the time the Project is engaged in, including a contingency plan to be implemented if any mitigation measures fail.

For the purposes of this EIS report, the effects monitoring measures with respect to negative effects on the significant natural features have been reproduced here, in Table 5.1.

The monitoring proposed in Table 5.1 will confirm that mitigation measures are functioning as designed to meet performance objectives. If monitoring shows that performance objectives are not being met, the contingency measures documented in Table 5.1 will be used to ensure that remedial action is undertaken as necessary to meet the performance objectives.

6. Construction Plan Report

The REA Regulation requires proponents of Class 3 solar projects to prepare a Construction Plan Report (CPR). Hatch completed the CPR for this Project (Hatch Ltd., 2010d). The CPR details the construction and installation activities, location and timing of construction and installation activities, any negative environmental effects that result from construction activities within 300 m of the Project and proposed mitigation measures for the identified negative environmental effects. The CPR addresses all potential effects of construction on natural features within 300 m of the Project location in a general manner. The mitigation proposed in the CPR with respect to preventing/minimizing negative effects on natural features is the same as that discussed in this EIS. Additional mitigation is proposed to address negative effects during construction not related to natural features. Therefore, the CPR and this EIS should be read in conjunction with each other, although all negative effects and mitigation requirements with respect to significant natural features are contained within this EIS and duplicated in the CPR.

7. Summary and Conclusions

As discussed in the Natural Heritage Records Review (Hatch Ltd., 2012a), the Natural Heritage Site Investigation (Hatch Ltd., 2012b) and the Evaluation of Significance (Hatch Ltd., 2012c), there are significant natural features found on and within 120 m of the solar panel and transmission line Project locations.

The EIS has been prepared to identify potential negative environmental effects that all phases of the Project may have on these significant natural features. Mitigation measures have been proposed to prevent these effects from occurring or minimize the magnitude, extent, duration and frequency in the event that they do occur. Monitoring measures have been proposed to confirm that mitigation measures are having the intended effect and that performance objectives are being met.

8. References

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Hatch Ltd. 2012b. Empire Solar Project – Natural Heritage Site Investigations Report. Prepared for Northland Power Inc. on behalf of Northland Power Solar Empire L.P.

Hatch Ltd. 2012c. Empire Solar Project – Natural Heritage Evaluation of Significance Report. Prepared for Northland Power Inc. on behalf of Northland Power Solar Empire L.P.

Hatch Ltd. 2012d. Empire Solar Project – Construction Plan Report. Prepared for Northland Power Inc. on behalf of Northland Power Solar Empire L.P.

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Hatch Ltd. 2012h. Empire Solar Project – Project Description Report. Prepared for Northland Power Inc. on behalf of Northland Power Solar Empire L.P.

Hatch Ltd. 2012i. Abitibi Solar Project – Natural Heritage Environmental Impact Study. Prepared for Northland Power Inc. on behalf of Northland Power Solar Abitibi L.P.

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Table 5.1 Summary of Environmental Effects Monitoring Requirements with Respect to Significant Natural Features

Negative Effect	Mitigation Strategy	Performance Objective	Monitoring Plan					Contingency Measures
			Methodology	Monitoring Locations	Frequency	Rationale	Reporting Requirements	
Construction Phase								
Clearing within naturally vegetated areas.	Demarcation of work areas. Restrictions on entry into natural areas beyond work areas.	Minimize disturbance to remaining vegetation community.	Visual inspection of work areas.	Throughout construction sites.	Daily during clearing activities within wooded areas.	Visual inspection will confirm that bounds of work areas are respected.	Reported in monthly environmental monitoring report during construction.	Contractor to be advised if they have worked beyond bounds of work areas. These sites to be replanted with trees to encourage reforestation.
Disruption of wildlife breeding within natural features	Vegetation removal on the solar panel project location/ construction of the transmission line to be timed outside of the bird breeding period (May through July), wherever possible.	Minimize impacts to breeding wildlife.	Inspection to ensure construction occurs outside of timing restriction.	Woodlands and shrublands subject to removal.	Periodically during all construction activities.	Inspection will ensure restriction window is followed.	Reported in monthly environmental monitoring report during construction.	If vegetation removal is required during this period, areas to be cleared will be searched for breeding wildlife. Should they be found, work will be ceased within 100 m of the occurrence
Dust generation and off-site transport	Standard construction site best management practices to prevent fugitive dust.	Minimize fugitive dust from the construction site.	Visual monitoring of visible dust plumes during construction.	Throughout construction site.	Periodically during all construction activities.	Visual dust monitoring would identify if dust plumes are an issue and where their source may be.	Reported in monthly environmental monitoring report during construction.	Dust control measures implemented as necessary to prevent/minimize dust generation.
Operations Phase								
Decommissioning Phase								
Disruption of wildlife breeding within natural features	Decommissioning to be timed outside of the bird breeding period (May through July), wherever possible.	Minimize impacts to breeding wildlife.	Inspection to ensure decommissioning occurs outside of timing restriction.	Woodlands and shrublands subject to removal.	Periodically during all decommissioning activities.	Inspection will ensure restriction window is followed.	Reported in monthly environmental monitoring report during decommissioning.	If vegetation removal is required during this period, areas to be cleared will be searched for breeding wildlife. Should they be found, work will be ceased within 100 m of the occurrence
Dust generation and off-site transport	Standard site best management practices to prevent fugitive dust.	Minimize fugitive dust from the Project location.	Visual monitoring of visible dust plumes during decommissioning.	Throughout Project location.	Periodically during all decommissioning activities.	Visual dust monitoring would identify if dust plumes are an issue and where their source may be.	Reported in monthly environmental monitoring report during decommissioning.	Dust control measures implemented as necessary to prevent/minimize dust generation.

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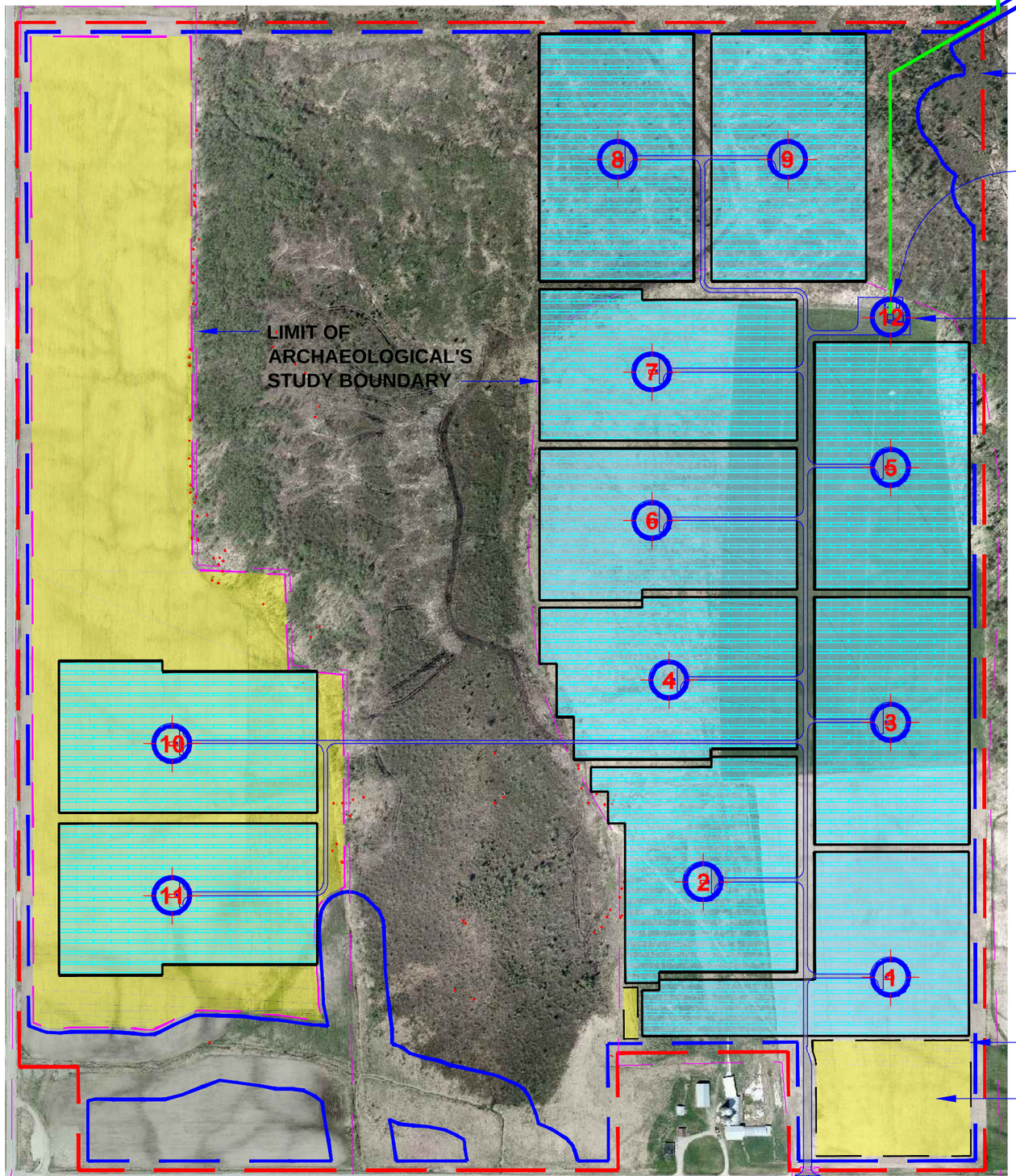
Appendix A

Site Layout



TO 115kV SUBSTATION
@ MARTIN'S MEADOWS SOLAR
(49.144649, -80.986700)

27.6 kV
O.H. LINE

34.5 kV
SUBSTATION

MAINTENANCE
BUILDING

LIMIT OF
ARCHAEOLOGICAL'S
STUDY BOUNDARY

AVAILABLE AREA
BOUNDARY

CONSTRUCTION
LAYDOWN AND
POTENTIAL SOLAR
MODULE AREA

GATE

Concession 6 & 7 Glackmeyer

LEGEND:

- GRAVEL ACCESS ROAD
- OVERHEAD 27.6 kV LINE
- PROPERTY BOUNDARY / FENCE LINE
- AVAILABLE AREA BOUNDARY
- CONSTRUCTION LAYDOWN AND POTENTIAL SOLAR MODULES AREA
- 7 INVERTER'S TRANSFORMER & SUBSTATION'S TRANSFORMER

PRELIMINARY LAYOUT
NOT FOR CONSTRUCTION

REVISIONS

NO	DATE	SYMBOL	REMARKS
P0	JULY/17 2012		ISSUED FOR CONSTRUCTION PLAN REPORT

N

0m 50m 100m 150m 200m

STAMP

COGENERATION
Associates Limited

PREPARED FOR

NORTHLAND POWER

PROJECT

NORTHLAND POWER SOLAR EMPIRE

DRAWN BY	TIEN PHAM	VERIFIED BY	
SCALE	N.T.S.	VERIFIED BY	
DATE	JULY 2012	APPROVED BY	

ISSUED FOR TENDER

PROJECT No.

TITLE: SOLAR FARM PROJECT SITE PLAN

DRAWING No.: SP-02 (EMPIRE) Rev.P0