



**NORTHLAND
POWER**

Long Lake Solar Project

Draft Water Body Site Investigation Report

April 27, 2012



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

DRAFT Water Body
Site Investigation Report

Long Lake Solar Project

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Disclaimer

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Project Report

April 27, 2012

Northland Power Inc
Long Lake Solar Project

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1. Introduction

1.1 Project Description

Northland Power Solar Long Lake 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 unorganized township of Calder. This Project, known as the Long Lake Solar Project, is hereafter referred to as “Long Lake” or the “Project.”

The Project location is approximately 123 hectares (ha) in size and located on Lots 2 and 3, in the unorganized Township of Calder. The Project location is situated on Clute, Concession Road 8 (shown in Figure 1.1).

1.2 Renewable Energy Approval Legislative Requirements

Ontario Regulation (O. Reg.) 359/09 – *Renewable Energy Approvals Under Part V.0.1 of the Act*, (herein referred to as the REA Regulation), came into force on September 24, 2009 and identifies the Renewable Energy Approval (REA) requirements for renewable energy generation facilities in Ontario. The REA Regulation has since been amended by O. Reg. 521/10, which came in effect as of January 1, 2011.

As per the REA Regulation (Part II, Section 4), ground-mounted solar facilities with a nameplate capacity greater than (>) 12 kilowatts (kW) are classified as Class 3 solar facilities and require an REA. Part IV, subsection 29 (1) of the REA Regulation requires proponents of Class 3 solar projects to conduct a water assessment consisting of a *Water Body Records Review* (Hatch Ltd., 2012) and a *Water Body Site Investigation*.

Subsection 1 (1) of the REA Regulation defines a “*water body*” as a lake, permanent stream, intermittent stream or seepage area, but does not include:

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

Furthermore, a *permanent stream* means “a stream that continually flows in an average year” (O. Reg. 359/09”).

An *intermittent stream* is defined as “a natural or artificial channel, other than a dam, that carries water intermittently and does not have established vegetation within the bed of the channel, except

vegetation dominated by plant communities that require or prefer the continuous presence of water or continuously saturated soils for their survival” (O. Reg. 359/09).

A seepage area is defined as “a site of emergence of groundwater where the water table is present at the ground surface, including a spring” (O. Reg. 359/09).

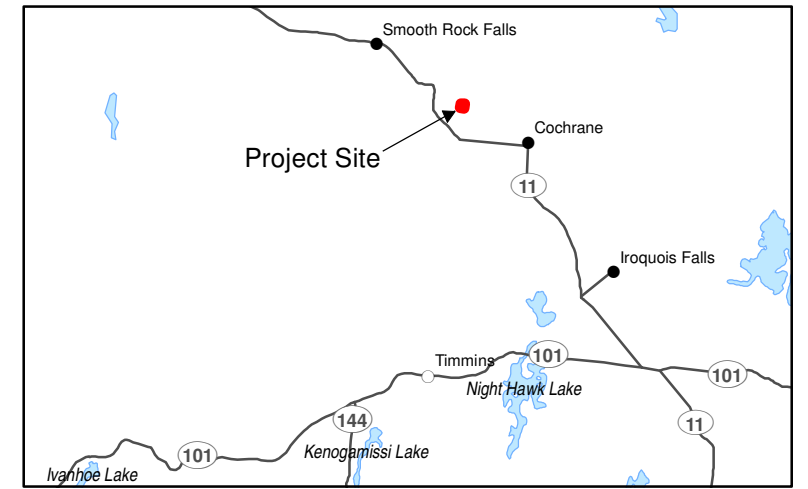
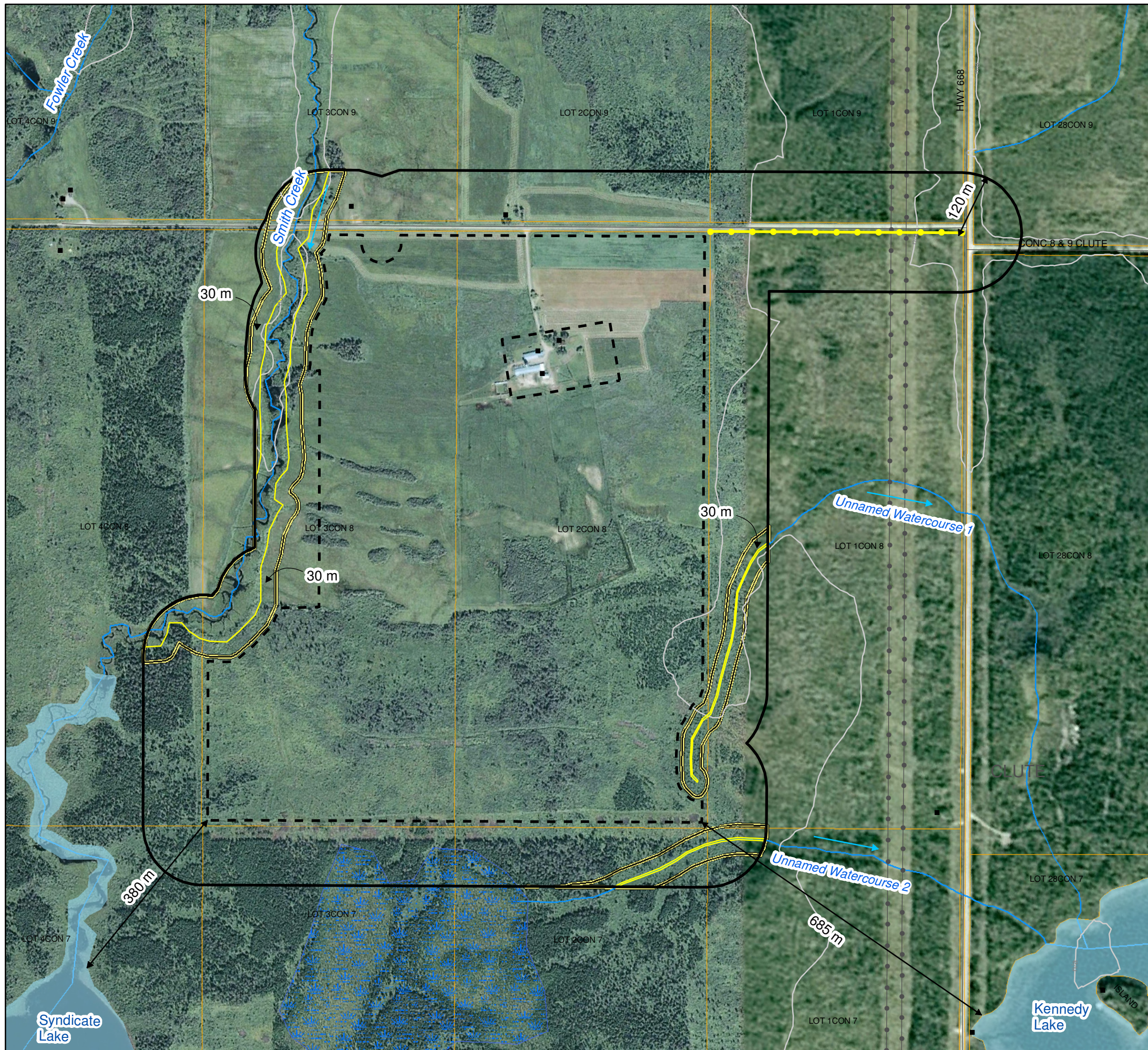
As amended by O. Reg. 521/10, subsection 31 (1) requires an investigation of the land and water within 120 metres of the Project Location, either by visiting the site or by alternative investigation of the site, in order to determine the following:

- a) whether the results of the analysis summarized in the Water Body Records Review Report (Hatch Ltd., 2012) prepared under subsection 30 (2) are correct or require correction, and identifying any required corrections;
- b) whether any additional water bodies exist, other than those that were identified in the Water Body Records Review Report (Hatch Ltd., 2012) prepared under subsection 30 (2);
- c) the boundaries, located within 120 m of the Project Location, of any water body that was identified in the Water Body Records Review Report (Hatch Ltd., 2012) or the site investigation; and
- d) the distance from the Project Location to the boundaries determined under clause (c).

Subsection 31 (2) of the REA Regulation has specific requirements if designated lake trout lakes are present within 300 m of the Project Location. These requirements were not deemed applicable to the Project as no such lakes were found in the Water Body Records Review Report (Hatch Ltd., 2012).

As amended by O. Reg. 521/10, subsection 31 (4) of the REA Regulation requires the proponent to prepare a report setting out the following:

1. A summary of any corrections to the Water Body Records Review Report (Hatch Ltd., 2012) and the determinations made as a result of conducting the site investigation.
2. Information relating to each water body identified in the Water Body Records Review Report (Hatch Ltd., 2012) and in the site investigation, including the type of water body, plant and animal composition and the ecosystem of the land and water investigated.
3. A map showing,
 - i. the boundaries mentioned in clause 31 (1) (c),
 - ii. the location and type of each water body identified in relation to the Project Location, and
 - iii. all distances mentioned in clause 31 (1) (d).
4. A summary of methods used to make observations for the purposes of the site investigation.
5. The name and qualifications of any person conducting the site investigation.



Legend

- Building
- Proposed Transmission Line
- Road
- Topographic Contour (5m interval)
- Watercourse
- ▭ 30 m from Average Annual High Water Mark
- ▭ Parcel
- ▭ Project Location
- ▭ 120 m from Project Location
- Waterbody
- Wetland Area

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 2004.
 4. Air photo obtained ... NOTE!

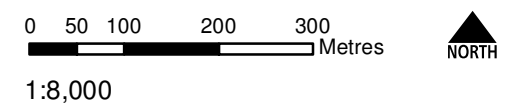


Figure 1.1
 Northland Power Inc.
Long Lake Solar Project
Water Body
Site Investigation Results



Blank back

6. If an investigation was conducted by visiting the site:
 - i. the dates and times of the beginning and completion of the site investigation
 - ii. the duration of the site investigation
 - iii. the weather conditions during the site investigation
 - iv. field notes kept by the person conducting the site investigation.
7. If an alternative investigation of the site was conducted:
 - i. the dates of the generation of the data used in the site investigation
 - ii. an explanation of why the person who conducted the alternative investigation determined that it was not reasonable to conduct the site investigation by visiting the site.

This Water Body Site Investigation Report has been prepared to meet these requirements.

2. Summary of Records Review Results

Table 2.1 provides a summary of the determinations made in the Water Body Records Review Report (Hatch Ltd., 2012) with respect to water body features on and within 120 m of Project Location.

Table 2.1 Summary of Records Review Determinations

Determination to be Made	Yes/No	Description
Is the Project Location in a water body?	No	The Project location is not located within a water body.
Is the Project Location within 120 m of the average annual high water mark of a lake, other than a lake trout lake that is at or above development capacity?	No	The Project location is not within 120 m of the average annual high water mark of any lake.
Is the Project Location within 300 m of the average annual high water mark of a lake trout lake that is at or above development capacity?	No	The Project location is not within 300 m of the average annual high water mark of any lake.
Is the Project Location within 120 m of the average annual high water mark of a permanent or intermittent stream?	Yes	The Project location is between 30 and 120 m from three watercourses (Smith Creek, Unnamed Watercourse 1 and Unnamed Watercourse 2)
Is the Project Location within 120 m of a seepage area?	No	No seepage areas were identified on or within 120 m of the Project Location.

As outlined in Table 2.1, the Water Body Records Review Report (Hatch Ltd., 2012) identified three permanent and/or intermittent streams with the average annual high water mark occurring within 120 m of the Project Location. The presence/absence of these and any additional water body features not identified in the Water Body Records Review Report (Hatch Ltd., 2012) is discussed in the

following sections. Any corrections required to the Water Body Records Review Report (Hatch Ltd., 2012), particularly with respect to Table 2.1, are discussed in Section 5.

3. Site Investigation Details and Methodology

3.1 Site Investigation Details

Two separate site investigations were conducted on the Project Location and surrounding area, in accordance with subsection 31 (3), clauses (5) and (6) of the REA Regulation. During these two site investigations, physical site investigations were completed for all land and/or water bodies on the Project Location and on the property on which the Project is located; while at the same time, alternative site investigations were completed for the lands and/or water bodies within the 120 m of the Project location, but on private property where access had not been obtained from the private landowner(s). These site investigations were undertaken to:

- verify information obtained in the Water Body Records Review Report (Hatch Ltd., 2012)
- document existing conditions, including the type of water body, plant and animal composition and the ecosystem of the land and water investigated
- identify any corrections required to the Water Body Records Review Report (Hatch Ltd., 2012) and determinations made as a result of conducting the site investigation.

3.1.1 *Weather Conditions During the Site Investigations*

- **Site Investigation 1** – The first site investigation was completed on August 24th, 2010 from 0900 to 1330 hours for a total duration of 4.5 hours. The weather conditions during the site investigation were 100% cloud cover and a temperature of approximately 16°C. Wind strength was determined using the Beaufort Wind Scale and ranged from 4 to 6 during the time of the site investigation.
- **Site Investigation 2** – The second physical/alternative site investigation was completed on May 18, 2011 from 0830 to 1330 hours for a total duration of 5 hours. The weather conditions during the site investigation included 50 to 70 % cloud cover and a temperature range of 13°C to 20 °C. The wind strength was approximately 3 on the Beaufort Wind Scale.

3.1.2 *Qualifications of Investigators*

3.1.2.1 *Site Investigation 1*

Site Investigation 1 was completed by Martine Esraelian and Trevor Ford, both of Hatch Ltd.

Martine Esraelian, B.Sc. is an Environmental Scientist specializing in species at risk and terrestrial ecosystems. She has a B.Sc. from Trent University where she specialized in Conservation Biology and Ecological Management and an Ecosystem Management Technician diploma from Sir Sandford Fleming College. During her time at Trent University, she completed a 1-yr internship with the Ministry of Natural Resources (MNR) which involved developing a genetic-based protocol for the extraction of DNA from unknown turtle eggshells to assist with species identification. The project entailed extensive molecular genetics research and intensive lab work to develop a protocol able to supplement existing conservation management practices.

She offers expertise across the full breadth of the field from environmental assessments and technical analysis of environmental data to conservation management, corporate and government consulting, and community outreach. Martine has liaised with all levels of government, the community, and a portfolio of clients that includes consulting firms, planners, and high-profile developers. She has both technical and hands-on experience conducting site investigations (terrestrial and aquatic), evaluations of significance, environmental and agricultural impact studies, constraint analyses, water quality and soil assessments, species at risk, wildlife management and fisheries studies to meet regulatory requirements.

Martine has a wide range of field experience related to terrestrial and aquatic ecosystems and species at risk. She has conducted reptile and amphibian surveys, small-mammal trapping, benthic invertebrate monitoring and fisheries inventories (seine netting and electrofishing). She has conducted detailed natural areas inventories which involve species identification of flora and fauna, vegetation community mapping, identifying rare vegetation communities and significant wildlife habitats.

Martine has project management and fieldwork experience for a number of species at risk monitoring projects. Some of the species she has been involved with include: fowler's toad, eastern massasauga rattlesnake, eastern ratsnake, queensnake, eastern ribbonsnake, milksnake, blanding's turtle, map turtle, spotted turtle, snapping turtle, Jefferson salamander, northern dusky and mountain alleghany dusky salamander, butternut, flowering dogwood, swamp rose mallow and spoon-leaved moss.

Martine is a certified Butternut Health Assessor and also holds a certificate in the Ecological Land Classification (ELC) system.

3.1.2.2 *Site Investigation 2*

The second site investigation was conducted by Caleb Coughlin and Shelley Potter, both of Hatch Ltd.

Caleb is an environmental technologist with extensive knowledge of GIS systems with more than 5 years experience specializing in fisheries and fish habitat assessments. Projects have included spawning and/or spawning habitat surveys on 14 river systems pertaining to 29 proposed/existing hydroelectric facilities. Caleb has coordinated and completed dozens of index netting procedures on the above noted rivers as well as several lake systems, these netting protocols are as follows Riverine Index Netting, Ontario Broad-scale Monitoring, Fall Walleye Index Netting, Nearshore Index Netting, Summer Profundal Index Netting many variations of each netting protocol have been applied depending on individual circumstances. Caleb has extensive knowledge in aquatic and terrestrial habitat assessments and has experience with the Ontario Wetland Evaluation System.

In recent years Caleb has become a GIS Specialist and contains the ability to prepare detailed mapping, from various sources of data as well as uploading, editing and projecting field data. This unique ability to collect the information recorded electronically (e.g. GPS) then displays it through GIS allows him to transcribe field data into usable information for the client. A sample of GIS capabilities include Satellite Imagery or LIDAR overlay, Digital Elevation Models and Area Calculations.

Shelley Potter is an environmental professional with a marine and freshwater biology honours graduate from the University of Guelph. Previous work and internships have provided experience in the fields of environmental science, sustainable development, water conservation and analysis, fresh water biology, marine mammal biology, Ichthyology and Oceanography. Shelley recently completed an internship with the University of Queensland working with Dr. Mike Noad at the Humpback Whale Acoustic Research Collaboration. Marine Mammal Observing experience, acoustic recording experience and ability to geographically track migration patterns of humpback whales using a theodolite and Cyclops computer program was acquired. Shelley has also recently participated in terrestrial and aquatic field surveys for various renewable energy projects in Ontario.

3.2 Site Investigation Methodology

Prior to conducting the site investigations, background information and mapping prepared for the Water Body Records Review Report (Hatch Ltd., 2012) was reviewed to determine water body features on and within 120 m of the Project Location. Satellite imagery produced by Google Earth Pro was also accessed to identify potential water body features not captured by the information sources reviewed in the Water Body Records Review Report (Hatch Ltd., 2012).

Following the desktop exercise, those features identified in the Water Body Records Review Report (Hatch Ltd., 2012) or through an interpretation of satellite imagery were ground-truthed during the site investigations. The physical site investigations involved walking the entire Project Location and property on which on the Project is located to document existing environmental conditions and to verify the presence of water body features on and within 120 m of the Project location, to the extent possible given private property boundaries. The alternative site investigations (for all lands and/or water bodies within 120 m of the Project location, where access was not obtained from private property owners) involved making observations and determinations visually, from afar, using binoculars where necessary. A field book was used to keep records of all observations made during the site investigations and photographs were taken to show the existing conditions on the Project Location. A copy of the field notes from the site investigations are provided in Appendix A.

The location of each water body observed during the site investigations was recorded using a handheld GPS device. Waypoint accuracy during the site investigation was ± 3 m. The handheld GPS device was also used to record the average annual high water mark for each water body. Biophysical characteristics of topography and vegetation communities were used as the primary indicators of the average annual high water mark. The type of water body (i.e., lake, permanent or intermittent stream, seepage area), and the associated plant and animal communities were investigated and documented. This included information such as the rate of water flow, direction of flow, physical characteristics of the water, in-stream habitat types (e.g., channel morphology, substrate, water depth), riparian habitat conditions (e.g., bank height, bank vegetation and substrate, presence of overhanging vegetation or undercut banks) and evidence of wildlife use. Features such as temporarily ponded areas, channel-like features and dug-out ponds were also investigated to assess if they meet the definition of a water body according to subsection 1 (1) of the REA Regulation.

4. Results of the Site Investigation

This section documents the results of the site investigations and discusses specific water body features observed on and within 120 m of the Project Location. Water body features that meet the definition of a water body, according to the REA Regulation, are shown on Figure 1.1. The boundaries and distances of each water body feature (this excludes water features that do not meet the definition of a water body) confirmed during the site investigations are shown on Figure 1.1, including a line identifying the 120 m distance from the Project Location, as per the requirements of subsection 31 (3) of the REA Regulation.

4.1 Site Description

Active agricultural lands dominate the northern half of the Project location. Lands not used for agricultural production include woodlands or wooded wetlands, with a meadow marsh associated with Smith Creek located on the property, west of the Project location. Boreal forest exists to the east, west and south of the Project Location with Kennedy and Syndicate lakes located to the south east and south west respectively.

The Project Location drainage is split through the approximate mid-point of the property, with the western half draining to Smith creek and the eastern half draining to the southeast corner of the Project location, where there are two tributaries of Kennedy Lake.

4.2 Water Body Features

4.2.1 Permanent Streams

A permanent stream is considered a water body, and is defined in subsection 1 (1) of the REA Regulation as a “*stream that continually flows in an average year*” (O. Reg. 359/09). The water bodies discussed in the following sections are characterized as permanent streams.

4.2.1.1 Smith Creek (Tributary of Syndicate Lake)

The Water Body Records Review Report (Hatch Ltd., 2012) identified a portion of Smith Creek on the western portion of the property on which the project is located. A site investigation, completed on May 18, 2011 (i.e. Site Investigation 2), confirmed the presence of this water body feature. The site investigator assessed the portion of creek which resided on the project property. The creek contains several existing and previous beaver dams and lodges within the property, which significantly alters the water’s surface area. Agricultural fields exist on all sides of the creek on the project property, with tilled land extending down to a meadow marsh type wetland which borders both shores. It is evident that meadow marsh area periodically floods through beaver activity or freshet flows, therefore the border between tilled land and the meadow marsh habitat was considered the average annual high water mark of Smith Creek. Small forage fish were observed within the creek’s channels and ponds.

A photograph of Smith Creek approximately half way through the property in northern orientation is provided in Figure 4.1.



Figure 4.1 View of Smith Creek Adjacent to Project Location

Smith Creek is a permanent stream that provides continual flows in an average year and, therefore, meets the definition of a water body, according to the REA Regulation. The Project will encroach to within 30 m of the average annual high water mark of an approximately 250-m long portion of Smith Creek in the northwest corner of the property. Given that Smith Creek is located within 120 m of the Project Location, a Water Body Environmental Impact Study Report is required to address the potential environmental effects on this water body feature as a result of the Project.

4.2.1.2 *Unnamed Watercourse 1 (Tributary of Kennedy Lake)*

The site investigation completed on May 18th, 2011 (i.e. site investigation 2) confirmed the presence of this unnamed tributary of Kennedy Lake (noted as Unnamed Watercourse 1 on Figure 1.1), which was previously identified in the Water Body Records Review Report (Hatch Ltd., 2012). An assessment of this water body feature determined that Unnamed Watercourse 1 meets the definition of a water body according to the REA Regulation.

Unnamed Watercourse 1 originates in the southeastern corner of the property and flows north easterly off the property at which time it makes a relatively abrupt 180° turn to flow south towards Kennedy Lake. The channel is segmented on the property as it meanders through the wetland head waters. The owner of the property on which the Project is located indicated the area in which the tributary originates remains wet throughout the year and thus it is anticipated that the watercourse is permanent. Further downstream towards Kennedy Lake, off the project property, the watercourse gains more distinct watercourse features. A photograph of the tributary is provided in Figure 4.2.



Figure 4.2 View of Unnamed Watercourse 1 within Alder Wetland

Unnamed Watercourse 1 meets the definition of a permanent stream according to the REA Regulation. As the Project Location is within 120 m of the average annual high water mark of this permanent stream, a Water Body Environmental Impact Study will be completed to assess the potential environmental impacts associated with the Project.

4.2.1.3 *Unnamed Watercourse 2 (Tributary of Kennedy Lake)*

The site investigation completed on May 18, 2011 (i.e. Site Investigation 2) confirmed the presence of this unnamed tributary of Kennedy Lake (Figure 1.1), which was previously identified in the Water Body Records Review Report (Hatch Ltd., 2012). An assessment of this water body feature determined that the tributary meets the definition of a water body according to the REA Regulation.

Unnamed Watercourse 2 is located off the project property but is within 120 m of the south east corner of the Project location. Similar to Unnamed Watercourse 1, the watercourse originates within the wetlands adjacent to the property, with a defined channel becoming apparent moving downstream towards Kennedy Lake.

As this water body is located within 120 m of the Project Location, a Water Body Environmental Impact Study will be completed to assess the potential environmental impacts associated with the Project.

4.2.2 **Intermittent Streams**

The Water Body Records Review Report (Hatch Ltd., 2012) did not identify any intermittent streams on or within 120 m of the Project Location. This was confirmed during site investigations completed on August 24, 2010 and May 18, 2011.

4.2.3 Lakes

The Water Body Records Review Report (Hatch Ltd., 2012) did not identify any lakes on or within 300 m of the Project Location. This was confirmed during site investigations completed on August 24, 2010 and May 18, 2011.

4.2.4 Seepage Areas

A seepage area is defined as “a site of emergence of ground water where the water table is present at the ground surface, including a spring” (O. Reg. 359/09). The information sources reviewed in the Water Body Records Review Report (Hatch Ltd., 2012) did not identify any seepage areas on or within 120 m of the Project Location. This was confirmed during the site investigations completed on August 24, 2010 and May 18, 2011.

4.3 Other Water Features

No other water features were observed during the site investigation that could meet the definition of a water body (as outlined in the REA Regulation).

5. Conclusions

Subsection 31 (1) of the REA Regulation requires that the Water Body Site Investigation Report include a summary of any corrections to the Water Body Records Review Report (Hatch Ltd., 2012), as well as the determinations made as a result of conducting the site investigations. The following table (Table 5.1) identifies the corrections required (if any) to the water body features identified in the Water Body Records Review Report (Hatch Ltd., 2012), and any new determinations made as a result of the site investigations.

Table 5.1 Corrections required to the Long Lake Solar Project Water Body Records Review Report

Determination to be Made	Yes/No	Corrections Required?
Is the Project Location in a water body?	No	There are no corrections required to the Water Body Records Review Report (Hatch Ltd., 2012)
Is the Project Location within 120 m of the average annual high water mark of a lake, other than a lake trout lake that is at or above development capacity?	No	There are no corrections required to the Water Body Records Review Report (Hatch Ltd., 2012) with respect to lakes. The site investigation confirmed that there are no lakes within 120 m of the Project Location.
Is the Project Location within 300 m of the average annual high water mark of a lake trout lake that is at or above development capacity?	No	There are no corrections required to the Water Body Records Review Report (Hatch Ltd., 2012) with respect to lake trout lakes.
Is the Project Location within 120 m of the average annual high water mark of a permanent or intermittent stream?	Yes	There are no corrections required to the Water Body Records Review Report (Hatch Ltd., 2012) with respect to Smith Creek or either Unnamed Watercourses 1 and 2 (i.e., permanent streams). All three of these watercourses are located within 120 m of the Project Location. They were identified in the Water Body Records Review

Determination to be Made	Yes/No	Corrections Required?
		Report (Hatch Ltd., 2012), and further confirmed during site investigations. In addition, Smith Creek was confirmed to be fish habitat.
Is the Project Location within 120 m of a seepage area?	No	There are no corrections required to the Water Body Records Review Report (Hatch Ltd., 2012) with respect to seepage areas. The site investigation confirmed that there are no seepage areas on or within 120 m of the Project Location.

As shown in Figure 1.1 and summarized in Table 5.1, the Project Location is located within 120 m of the average annual high water mark of three watercourses (Smith Creek, Unnamed Watercourse 1 and Unnamed Watercourse 2). As a result, a Water Body Environmental Impact Study will be prepared to address potential negative environmental effects to the identified water body features associated with the proposed development. Recommendations on mitigation measures will be provided to ensure the long term ecological health and integrity of these water body features.

6. References

Government of Ontario. 2009. Ontario Regulation 359/09 made under the Environmental Protection Act, Renewable Energy Approvals under Part V.0.1 of the Act. September 8, 2009 version. Printed in *The Ontario Gazette*: October 10, 2009. Available on-line at: http://www.e-laws.gov.on.ca/html/source/regs/english/2009/elaws_src_regs_r09359_e.htm. Accessed September 15, 2010.

Government of Ontario. 2010. Ontario Regulation 521/10 made under the Environmental Protection Act, Renewable Energy Approvals under Part V.0.1 of the Act. December 15, 2010 version. Printed in *The Ontario Gazette*: January 8, 2011. Available on-line at: http://www.e-laws.gov.on.ca/html/source/regs/english/2010/elaws_src_regs_r10521_e.htm. Accessed January, 2011.

Hatch Ltd. 2012. Long Lake Solar Project - Water Body Records Review Report. Prepared for Northland Power.

Appendix A
Site Investigation
Field Notes

No.....

Date.....

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Project: Long Lake

Date: Aug. 24, 2010

Time: 0900-1330

% C.C.: 100%

Temp: 16°C

Wind: 4-6

strong winds

black bear scat

(black bear bait area north of Project site)

No.....

Date.....

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North Woodland

Trembling aspen (D)

Alder

Balsam Poplar

Willow sp.

Tamarack (R.O) > Spruce (R.O)

White Birch (R)

small wooded area dominated by
mistle and small-fruited hawthorn
Standing water present

huckleberry

fern sp.

strawberry

balsam fir (R)

No.

Date. Page 56

No.

Date. Page.

red-rose dogwood

Balsam Poplar may be along
along south edge of property

- open area north boundary is used for
the production of grain (oats)

NE of Project (P)

Balsam Poplar / Tamarack dominant
along NW of property with ~~various~~
trembling aspen
balsam fir saplings
spruce saplings

mature balsam poplar (Northern portion of
Project site)

vegetation was small area

red barberry

mountain maple saplings

rose sp.

trembling aspen (?)

raspberry sp.

spruce sp.

strawberry

balsam poplar

sweet sp.

blueberry

Canada raspberry

oats sp.

beans

agrimony

Calvin + Shelley.

May 18th

8:30 am

Temp: 13°C

Bob's Farm Long Lake

Birds

VTS - White Throated Sparrows

Robins

Boreal Chickadee

Loons - Distance -

Red eyed Vireo

Crow

Raven

Mallards (6) Stream

Northern Flickers

Stick Nest - GPS - Nest STC.

Animal - Possible - Hair in nest

Woodcock -

Sticknest Rechecked Animal hair
gone - Nest Active

Mammals

- Deer
- Fox scat
- Red Squirrel
- Moose Tracks - Little Browse
- Landowner - Wolf, Bear, Coyote.

Beaver, lodges + Dams in creek.

- Crossed Waterway Hedgerow
- Backside - Photo's made

Forest + included old Clear Cut
Poplar Regeneration approx age 15 years

Confirmed with Landowner
Cut 15-20 years ago

Amphibian Point Count Data Form

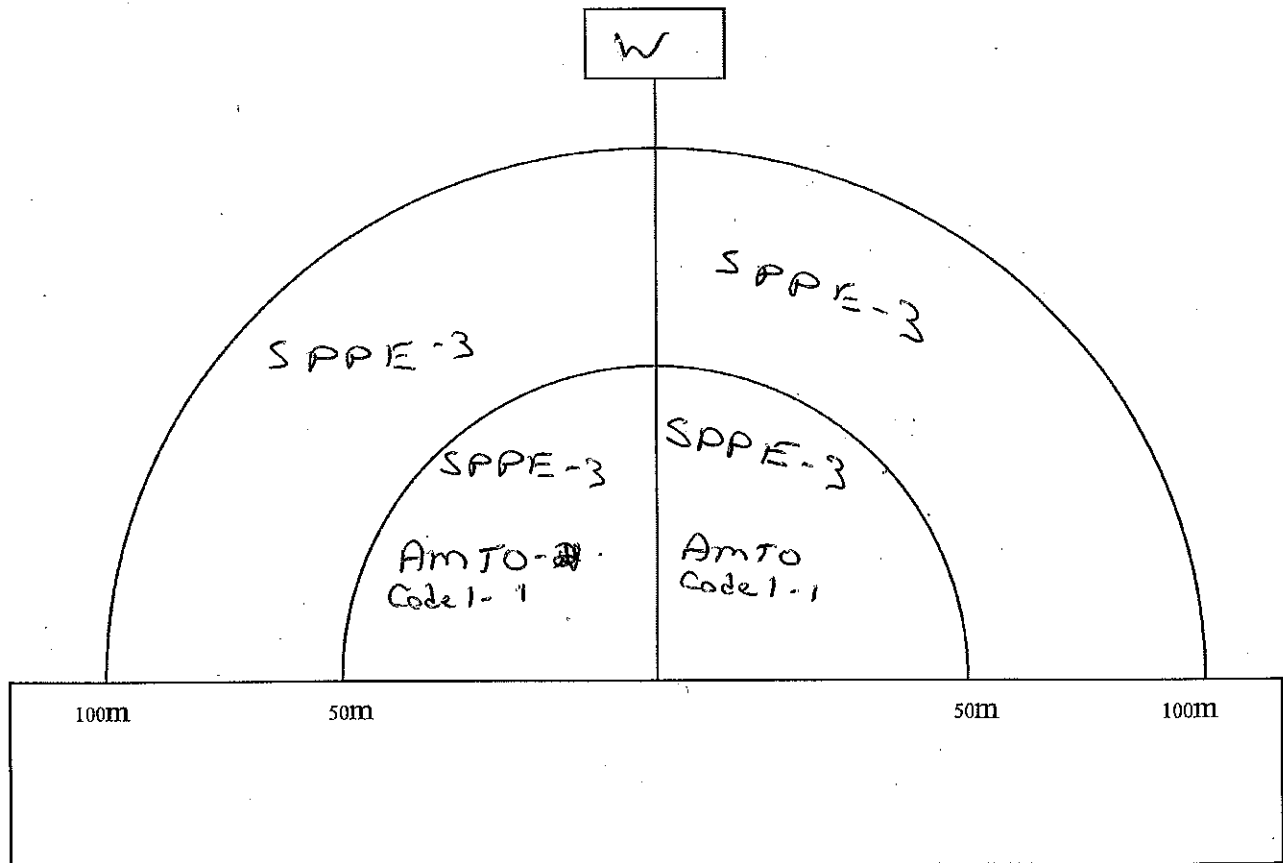
Observer: <u>Caleb + Norm</u>	Site: <u>Long Lake</u>	Date: <u>May 18th</u>
Station ID: <u>1</u>	Visit #: <u>1</u>	Start Time (HH:MM): <u>8:14</u>
Beaufort Wind Scale: <u>0</u>	Cloud Cover (%): <u>0</u>	Finish Time (HH:MM): <u>8:18</u>
Precipitation: <u>0</u>	Visibility: <u>EX</u>	Temperature (°C): <u>19</u>
Remarks:		

Aerial Foragers		
Species	IN*	OUT**
AMTO	✓	
BCFR		
BULL		
CHFR		
FOTO		
GRTR		
GRFR		
MIFR		
NLFR		
PIFR		
SPPE	✓	✓
WOFR		

Call Level Codes	
CODE 1	Calls not simultaneous, number of individuals can be accurately counted.
CODE 2	Some calls simultaneous, number of individuals can be reliably estimated.
CODE 3	Full chorus, calls continuous and overlapping, number of individuals cannot be reliably estimated

*Check if species is calling from inside 100-meter station area.

**Check if species is calling from outside 100-meter station area.



Amphibian Point Count Data Form

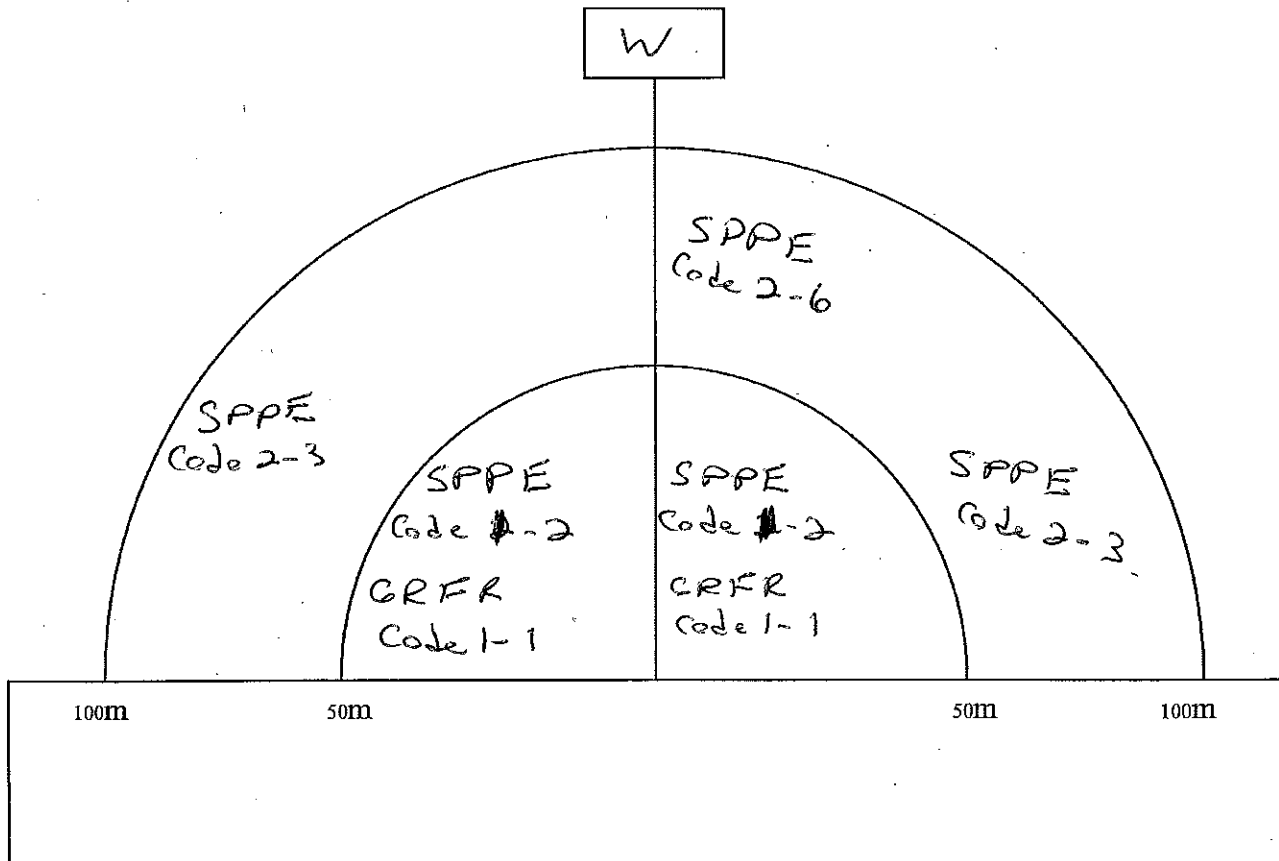
Observer: <i>Calb + Norm</i>	Site: <i>Long Lake</i>	Date: <i>May 18th 2011</i>
Station ID: <i>2</i>	Visit #: <i>1</i>	Start Time (HH:MM): <i>8:25</i>
Beaufort Wind Scale: <i>0</i>	Cloud Cover (%): <i>0</i>	Finish Time (HH:MM): <i>8:28</i>
Precipitation: <i>0</i>	Visibility: <i>Ex</i>	Temperature (°C): <i>19</i>
Remarks:		

Aerial Foragers		
Species	IN*	OUT**
AMTO		
BCFR		
BULL		
CHFR		
FOTO		
GRTR		
GRFR	✓	✓
MIFR		
NLFR		
PIFR		
SPPE	✓	✓
WOFR		

Call Level Codes	
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Amphibian Point Count Data Form

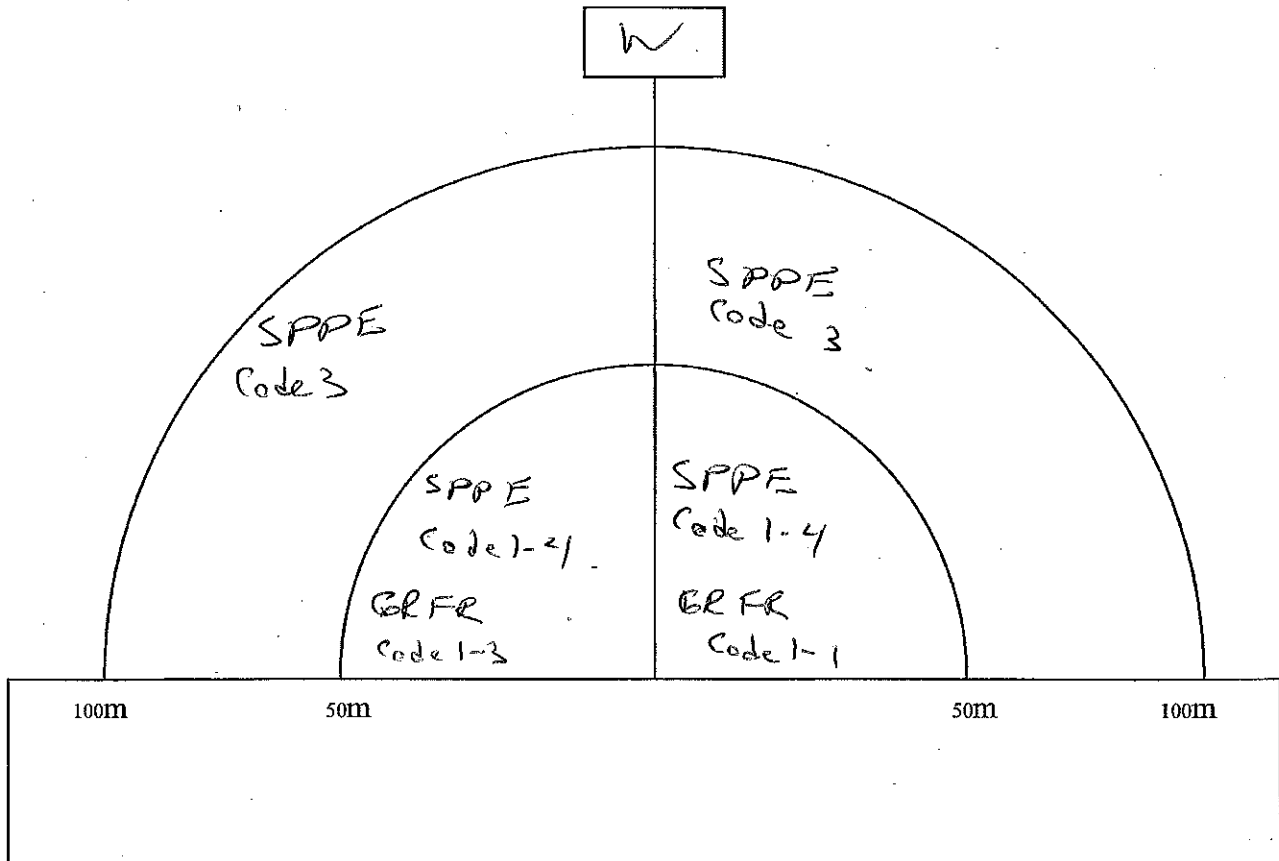
Observer: <i>Blb + Norm</i>	Site: <i>Long Lake</i>	Date: <i>May 18 2011</i>
Station ID: <i>3</i>	Visit #: <i>1</i>	Start Time (HH:MM): <i>8:37</i>
Beaufort Wind Scale: <i>0</i>	Cloud Cover (%): <i>0</i>	Finish Time (HH:MM): <i>8:34</i>
Precipitation: <i>0</i>	Visibility: <i>Ex</i>	Temperature (°C): <i>18</i>
Remarks:		

Aerial Foragers		
Species	IN*	OUT**
AMTO		
BCFR		
BULL		
CHFR		
FOTO		
GRTR		
GRFR	✓	✓
MIFR		
NLFR		
PIFR		
SPPE	✓	✓
WOFR		

Call Level Codes	
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Amphibian Point Count Data Form

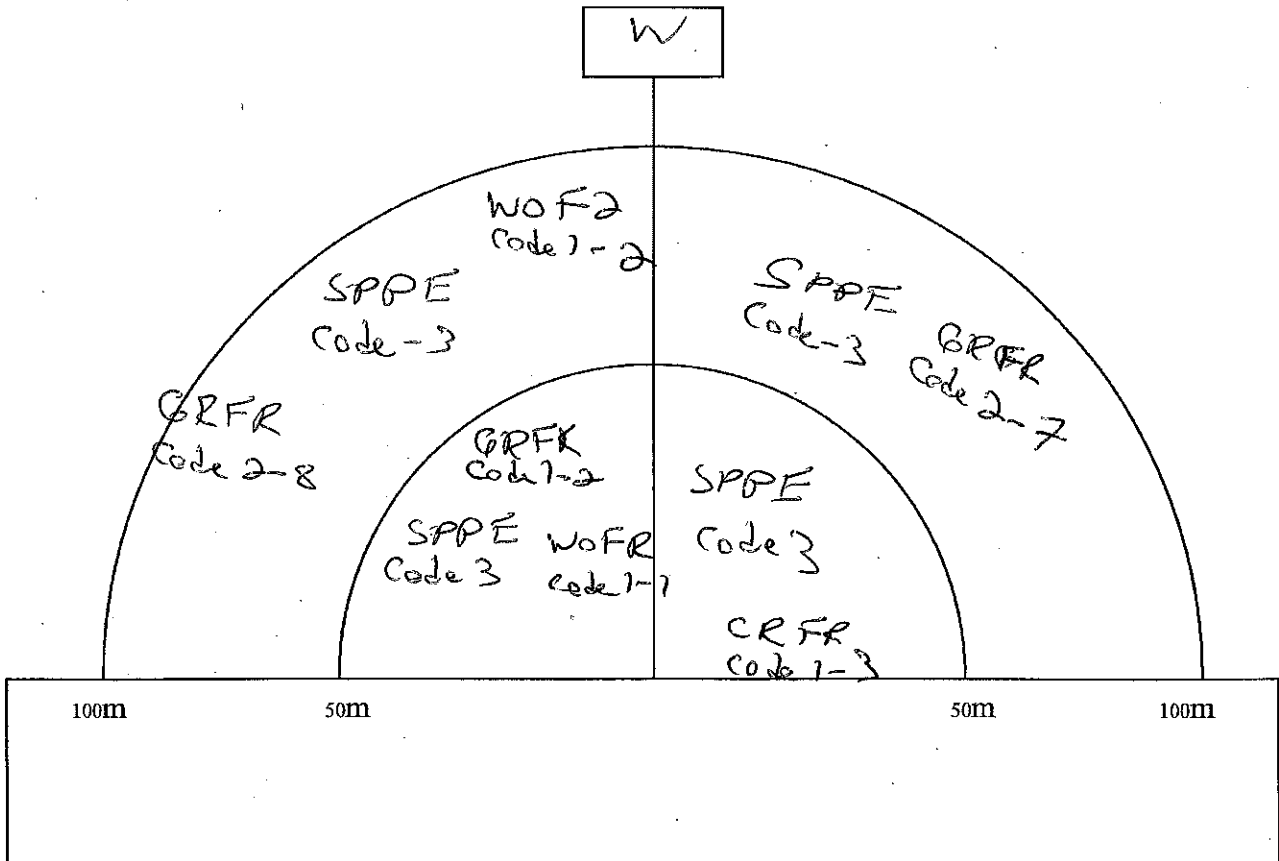
Observer: <u>Bob + Norm</u>	Site: <u>Long Lake</u>	Date: <u>May 18 2011</u>
Station ID: <u>4</u>	Visit #: <u>1</u>	Start Time (HH:MM): <u>8:40</u>
Beaufort Wind Scale: <u>0</u>	Cloud Cover (%): <u>0</u>	Finish Time (HH:MM): <u>8:43</u>
Precipitation: <u>0</u>	Visibility: <u>Ex</u>	Temperature (°C): <u>16</u>
Remarks:		

Aerial Foragers		
Species	IN*	OUT**
AMTO		
BCFR		
BULL		
CHFR		
FOTO		
GRTR		
GRFR	✓	✓
MIFR		
NLFR		
PIFR		
SPPE	✓	✓
WOFR	✓	✓

Call Level Codes	
CODE 1	Calls not simultaneous, number of individuals can be accurately counted.
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① Toad & Spring peeper

Spring peeper Code 3
Toad Code 1 - 2 individual
within 50 m
Spring Peepers Code 3 with
100 m

② Spring Peepers Code 2
~~4~~ individual within 50m
2 Green Frogs
12 Spring Peepers
within 100m

3 American Toads with
100 m
2 Green Frogs

③ Spring Peepers Code 2-8
Green Frog Code 1-3
Spring Peepers Code 3
Green Frog Code 1-4

Scale: 1 square =

④ Within 50

Spring Peepers Code 3
Green Frog Code 1-5
Wood Frog Code 1-1
within 1000

Spring Peepers Code 3
Green Frog Code 2-15
Wood Frog Code 1-2

Scale: 1 square =