Nalcor Energy – Lower Churchill Project

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LOWER CHURCHILL PROJECT

2015 Annual Caribou Report — Mealy Mountain Herd

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ILK-PT-MD-0000-EV-RP-0004-01	B1	2

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TABLE OF CONTENTS

PAGE

LIST OF FIGURES AND TABLES **PAGE**

1 PURPOSE

The purpose of this annual report is to provide a summary of the mitigation and monitoring efforts associated with the Labrador-Island Transmission Link (LITL) Endangered Species Act - Listed Plants Impacts Mitigation and Monitoring Plan (IMMP), specifically the Mealy Mountain Herd (MMH) Caribou during 2015.

2 SCOPE

This annual report applies to the 2015 monitoring and mitigation efforts for the MMH undertaken for the Labrador Island Transmission Link (LITL) as described in Section 6.0.

3 DEFINITIONS

Environmental Assessment: The evaluation of the Project's potential environmental risks and effects before it is carried out and identification of ways to improve project design and implementation to prevent, minimize, mitigate, or compensate for adverse environmental effects and to enhance positive effects.

Environmental Management: The management of human interactions with the environment (e.g., air, water and land and all species that occupy these habitats including humans).

Environmental Management System: Part of LCP's management system used to develop and implement its environmental policy and manage its environmental aspects.

Environmental Protection Plan: Document outlining the specific mitigation measures, contingency plans and emergency response procedures to be implemented during the construction or operations of the Project.

Environmental Effects Monitoring: Monitoring of overall Project effects to confirm the predictions of the EIS (Nalcor 2011) and to fulfill commitments.

Environmental Compliance Monitoring: Monitoring of Project activities to confirm compliance with regulatory requirements and commitments.

4 ABBREVIATIONS & ACRONYMS

EA	Environmental Assessment
EIS	Environmental Impact Statement
ELC	Ecological Land Classification
EMP	Environmental Management Plan
EPP	Environmental Protection Plan
EMS	Environmental Management System
ERC	Environment and Regulatory Compliance
JRH	Joir River Herd
KI	Key Indicator

LTA	Labrador Transmission Asset
LCP	Lower Churchill Project
LWCRT	Labrador Woodland Caribou Recovery Team
MMH	Mealy Mountain Herd
NE	Nalcor Energy
NLESA	Newfoundland and Labrador Endangered Species Act
NLENCC-WD	Newfoundland and Labrador Department of Environment and Climate Change – Wildlife Division
OSEM	On-Site Environmental Monitor
PEEMP	Protection and Environmental Effects Monitoring Plan
SARA	federal Species at Risk Act
SAR IMMP	Species at Risk Impacts Mitigation and Monitoring Plan
SSAC	Species Status Advisory Committee

5 REFERENCE DOCUMENTS

LCP-PT-ED-0000-EA-SY-0002-01	Labrador-Island Transmission Link Environmental Impact Statement
ILK-PT-MD-0000-EV-PL-0002-01	Labrador-Island Transmission Link Endangered Species Act - Listed Plants Impacts Mitigation and Monitoring Plan

6 PROJECT DESCRIPTION

6.1 LABRADOR-ISLAND TRANSMISSION LINK (L-ITL)

The Labrador –Island Transmission Link consists of the Construction and Operations of a ± 350 kilovolt (kV) High Voltage direct current (HVdc) electricity transmission system from Central Labrador to the Avalon Peninsula on the Island of Newfoundland (the Island) (Figure 6-1).

The transmission system will include the following key components:

- An alternating current (ac) to direct current (dc) converter station at Muskrat Falls;
- Approximately 400 km overhead HVdc transmission line from Muskrat Falls to Forteau Point;
- A 60 m wide Right Of Way (ROW);
- Three, approximately 35 km long, submarine cables across the Strait of Belle Isle (SOBI) (i.e., between Forteau Point and Shoal Cove), with associated onshore infrastructure (transition compounds and land cables at both cable landings);
- Approximately 700 km of overhead HVdc transmission line from Shoal Cove to the Avalon Peninsula;
- A dc to ac converter station at Soldiers Pond;
- Shoreline electrodes at L'Anse au Diable and Dowden's Point,
- An overhead, wood pole electrode line
    - Near Forteau Point and L'Anse au Diable; and
    - Between Soldiers Pond and Dowden's Point.

Figure 6-1 Labrador-Island Transmission Link

7 CARIBOU

7.1 EXISTING INFORMATION

As described in Nalcor (2011), woodland caribou (*Rangifer caribou*) are an important cultural, economic, and ecosystem component in Labrador, supplying a hunting resource for residents and prey for wildlife. Caribou within Labrador are classified as one of three ecotypes: (i) sedentary, (ii) migratory, or (iii) montane (Bergerud et al. 2008; Boulet et al. 2005; Thomas and Gray 2002). Sedentary caribou are the forest dwelling ecotype that undergoes a seasonal dispersion (rather than migration) during calving (Bergerud et al. 2008).

Sedentary populations of woodland caribou in the province are considered Threatened under the NLESA, and occur in the lower Churchill River watershed. Sedentary herds that occur in the vicinity of the Project include the Red Wine Mountains (RWM) Herd and the MMH, which includes the Joir River Herd (JRH) subpopulation (Bergerud et al. 2008). The status of the MMH is stable. Although hunting is prohibited (protected by NLESA), hunting has been identified as the major threat to the MMH as illegal hunting of the herd, including the Joir River group, has occurred recently.

The Red Wine Mountains Herd Annual Report for 2015 is found under a separate cover (LCP-PT-MD-0000-EV-RP-0015-01).

7.2 MITIGATION AND MONITORING

As described in the Labrador-Island Transmission (LITL) Link Endangered Species Act - Listed Plants Impacts Mitigation and Monitoring Plan (IMMP), the effects management measures (i.e., mitigation measures outlined in the EIS [Nalcor 2011]) the LCP Integrated Project Wide Environmental Protection Plan (Nalcor 2014), and the commitments made by the Project to ensure regulatory compliance of the above discussed Acts and regulations included:

- All site personnel shall receive training to recognize any Endangered, Threatened or Vulnerable species of plant or animal and its habitat prior to the start of clearing and any other site activities;
- Personal pets are not permitted on the construction site;
- Buffer zones (of various distances) shall be implemented to protect wildlife at the site;
- Hunting is prohibited at the construction site. All Project participants shall be prohibited from hunting at the construction site while working on the Project;
- Under no circumstances are wildlife to be fed and all measures shall be taken to avoid inadvertent feeding;
- Wildlife shall not be chased, caught, diverted, followed or otherwise harassed by Project participants;
- All wildlife sightings and nuisance wildlife shall be reported to the On-Site Environmental Monitor (OSEM) who will oversee various mitigation measures and collect observation and other monitoring data related to wildlife;
- The Forestry Branch shall be contacted and updated with regards to nuisance wildlife and wildlife encounters;
- Equipment and vehicles shall yield the right-of-way to wildlife and adhere to construction site speed limits. Speed limits associated with Project access roads vary from 10 – 60 km/hr, and are set as per the

regulatory requirements set by the Department of Transportation and Works. LCP enforces speed limits on all Project roads;

- LCP will create breaks every 500 m in snow berms alongside roads to enable caribou crossings;
- Where possible, the design of ROW will provide clear sightlines for caribou across the width of the ROW;
- Environmental awareness training, with regular briefings, shall be implemented for all personnel;
- Firearms shall not be permitted on site, with exception of approved bear monitors;
- Where possible, scheduling of activities will be limited and adaptable during calving and post-calving periods as well as during sensitive periods in the winter for caribou (LCP will consult with the NLENCC-WD in such instances);
- Maintain higher flight altitudes (300 agl or higher) during the 'critical' periods (as defined below as sensitive periods) during flights and monitoring programs. If caribou are startled ascend to a higher flight path or veer away.
- When caribou (based on collar or observational data) occupy an area under construction/development, LCP will contact the NLENCC-WD to determine if appropriate mitigation can be put into place or if activities must be suspended at that location (see below);
- When roads not essential to long-term maintenance are not needed, they will be decommissioned, habitat stabilized, and access shall be restricted;
- Temporary decommissioning of access roads may be considered if Project construction is considerably delayed;
- If access roads are deemed to be necessary during the operations and maintenance phase of the Project, LCP will consult with NLENCC-WD regarding the implementation of access control measures;
- The LCP will continue its participation as an observer on the Labrador Woodland Caribou Recovery Team and support of related research such as the telemetry monitoring program; and
- If necessary, access control measures will be applied in certain areas associated with facilities and/or ongoing activities to prevent disturbance of individual caribou:
    - the reservoir preparation approach will be mostly river based, thereby reducing the need for access from the TLH
    - existing access points will be used;
    - signage in the Project area will be used to deter access; and
    - site security will be in place during construction at the South Side Access Road and other Project locations to restrict public access.

Weekly telemetry of MMH individuals within 20 km of the Project are provided to LCP who map the locations and issue advisories on the approximate location of caribou with respect to Project activities. Depending on the proximity of caribou observations from the Project, different mitigation scenarios were then applied.

The following describes specific potential interaction scenarios and the associated mitigation:

- **Scenario 1** – Caribou within 20 km of Project activities (based on satellite telemetry or other reports)
    - OSEM will conduct weekly visual surveys of 10 km radius around each activity from road-accessible vantage points for caribou or signs of caribou (i.e., winter craters, tracks or scat)
        - If present, wildlife observations will be included in the weekly environmental report to be sent to NLENCC-WD in Corner Brook (whenever Project activities are ongoing),

and such information will be presented during environmental awareness training and regular briefings for all personnel

- **Scenario 2** – Caribou within 5 km of Project activities (based on satellite telemetry or other reports)
    - OSEM to issue advisory to all Project personnel that all sightings of caribou to be reported immediately to the OSEM. The OSEM will then immediately notify all vehicle operators.
    - OSEM will conduct daily visual surveys of 10 km radius around each activity from road-accessible vantage points for caribou or signs of caribou (i.e., winter craters, tracks or scat).
        - If present, wildlife observations will be included in the weekly environmental report to be sent to NLENCC-WD in Corner Brook
- **Scenario 3** – Caribou present during sensitive time periods
    - To reduce disturbance to caribou during the late winter and late pregnancy periods, NLENCC-WD has identified two sensitive time periods during which Project activities may be restricted, delayed or minimized:
        1) A cautionary period (late winter) – February 3 to April 15
            - If Project activities are to occur within 4 km of the known presence of caribou based on satellite telemetry or other reports, work activities are to be rescheduled.
        2) A critical period (calving/immediately post-calving) – May 30 to July 15
            - No Project activities are permitted within important and highly used core calving areas.
            - No blasting is to occur within a 2.5 km buffer of the core calving areas.
- **Scenario 4** – Blasting at the Main Site at Muskrat Falls
    - Prior to blasting, the OSEM will conduct a visual survey
    - If caribou are within 3 km of the site, blasting will be delayed until caribou have left the area
    - Methods to encourage caribou to leave the area may be implemented in consultation with NLENCC-WD
    - Note, if LCP can demonstrate the planned blasting activity will not likely result in a behavioural response by caribou, the 3 km radius may be reduced.
- **Scenario 5** – Other Project activities (e.g., grubbing, grading and leveling, laydown and storage of equipment and material in existing areas, generators to support the activity, vehicle and heavy equipment use, handling and transfer of fuel and other hazardous material, waste disposal, sewage disposal and hazardous waste disposal, localized and low intensity blasting, tower erection and conductor stringing)
    - As these activities would not be audible beyond a short distance, if caribou are observed within 500 m of such an activity, the OSEM will determine if the activity will be delayed or curtailed
    - Wildlife interactions will be included in the weekly environmental report to be sent to NLENCC-WD

Aerial Winter Survey

Between February 27 and February 28, 2015, an aerial survey was conducted of wintering areas for the MMH (see Figure 7-1). The survey was conducted by three observers and a helicopter pilot. The survey followed pre-selected transects spaced at 2 km intervals, with additional transects added in areas deemed to be of high importance by NLENCC-WD. A Bell 206L Long Ranger was used throughout the survey, and was flown at 100 km/hr at an altitude of approximately 150 m above ground level. On February 27, one male was observed, and on February 28, one adult and one calf was observed – a total of three caribou were observed during the survey.

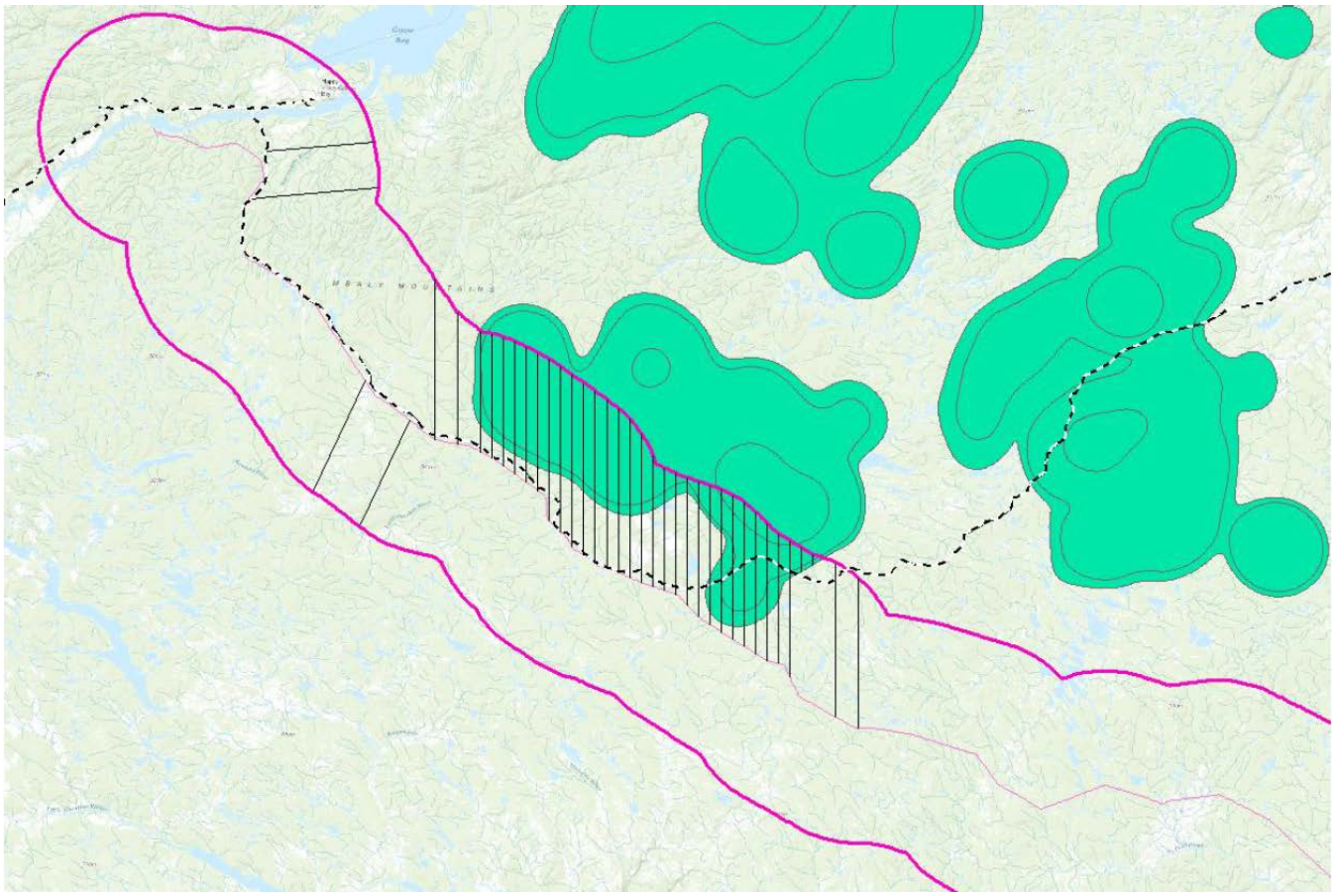

Figure 7-1 Mealy Mountain Herd Herd Survey Transect Locations

7.3 REPORTING

A compilation of daily environmental reports were submitted to NLENCC-WD on a weekly basis. These reports provide a synopsis of completed activities, and a weekly look-ahead.

Throughout the 2015 construction year, LCP maintained frequent communications with the provincial NLENCC-WD regarding the movements of MMH individuals within or near the Project area.

In addition to the high-level weekly report, LCP also submitted a detailed Threatened Caribou Report weekly. This report presented the results of the telemetry observations, the mitigation scenario that applied, and the results of the surveys completed by the on-site environmental monitors, and any other surveys and observations recorded by project personnel. As the telemetry results are confidential, Table 7-1 provides a summary of the contents of the reports submitted to NLENCC-WD in 2015.

Table 7-1 Summary of the 2015 Threatened Caribou Reports

Week Ending	Caribou within 20 km (Y/N)	Number of Caribou within 20 km	Daily or Weekly Surveys	Caribou observations from surveys (Y/N)	Number of Observations
16-Jan-15	Y	1	Weekly	N	None
23-Jan-15	Y	1	Weekly	N	None
30-Jan-15	Y	1	Weekly	N	None
6-Feb-15	Y	1	Weekly	N	None
20-Feb-15	N	0	None	N	None
27-Feb-15	Y	1	Weekly	N	None
13-Mar-15	N	0	None	N	None
20-Mar-15	Y	2	Weekly	N	None
27-Mar-15	Y	2	Daily	N	None
3-Apr-15	N	0	None	N	None
10-Apr-15	Y	2	Weekly	N	None
17-Apr-15	Y	2	Weekly	N	None
24-Apr-15	Y	2	Weekly	N	None
1-May-15	Y	4	Weekly	N	None
8-May-15	Y	4	Weekly	N	None
15-May-15	Y	17	Weekly	N	None
22-May-15	Y	7	Weekly	N	None
29-May-15	Y	18	Daily	N	None
5-Jun-15	Y	12	Daily	N	None
12-Jun-15	Y	6	Daily	N	None
19-Jun-15	Y	5	Daily	N	None
26-Jun-15	Y	6	Weekly	N	None
3-Jul-15	No data	No data	Daily	Y	2
9-Jul-15	Y	5	Daily	N	None
17-Jul-15	Y	4	Daily	N	None
24-Jul-15	Y	4	Daily	N	None
31-Jul-15	Y	1	Weekly	N	None
7-Aug-15	Y	3	Daily	N	None

Week Ending	Caribou within 20 km (Y/N)	Number of Caribou within 20 km	Daily or Weekly Surveys	Caribou observations from surveys (Y/N)	Number of Observations
14-Aug-15	Y	3	Daily	N	None
21-Aug-15	Y	4	Daily	Y	1
21-Sep-15	Y	2	Daily	Y	1
28-Sep-15	Y	2	Daily	N	None
17-Oct-15	Y	4	Weekly	N	None
26-Oct-15	Y	4	Weekly	N	None
9-Nov-15	Y	2	Weekly	N	None
16-Nov-15	Y	2	Weekly	N	None
23-Nov-15	Y	2	Weekly	Y	1
30-Nov-15	Y	2	Weekly	Y	1
7-Dec-15	Y	4	Weekly	N	None
14-Dec-15	Y	2	Daily	N	None

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