RESPONSE TO WORKING GROUP AND PUBLIC COMMENTS ON THE SITE C CLEAN ENERGY PROJECT ENVIRONMENTAL IMPACT STATEMENT

Technical Memo

CARIBOU

MAY 8, 2013

REVISION 1 – JULY 19, 2013

Subject: Caribou

Purpose

A number of comments received during the Comment Period raise the question of whether the Project has the potential to affect caribou. The EIS for the Site C Project demonstrates that the Project will not have direct or indirect interactions with caribou. The purpose of this Technical Memo is to explain how caribou were considered in the EIS and provide a list of the data used to support this consideration.

Caribou and the Site C Clean Energy Project

Caribou in northern BC are considered to belong to the northern ecotype based on their ecology and seasonal movement patterns. Members of this ecotype generally migrate twice each year. Depending on snowfall patterns in fall or early winter, they use low elevations where limited snowfall allows them to feed on terrestrial and some arboreal lichens. However, sometimes they winter on higher elevation windswept ridges feeding on exposed terrestrial lichens, before descending again in spring to low elevations to feed on early-growing plants. In late spring and summer, they return to higher elevations. Most females move to high elevations for the calving period, while males may remain at low elevations longer.[1]

Caribou populations in northeast British Columbia are listed as "Threatened" (a species that is likely to become an endangered species if nothing is done to reverse the factors leading to its extirpation or extinction) nationally and are on the Schedule 1 of the *Species at Risk Act.* Provincially, these caribou populations are blue listed. Blue-listed species are an indigenous species and subspecies considered to be of special concern (formerly referred to as vulnerable) in British Columbia because of characteristics that make them particularly sensitive to human activities or natural events. Blue-listed species are at risk, but are not extirpated, endangered or threatened.

As a result of this concern, considerable monitoring of caribou and their patterns of movements have been undertaken over the last decade by the BC Ministry of Environment. This monitoring provides useful information for understanding the distribution of caribou in northeastern BC, in particular, the potential for interactions with the Project activity zone for the Project (Attachment 1). Long term studies conducted by the B.C. Ministry of Environment have found:

1) caribou do not use habitats along the Peace River between the Peace Canyon Dam and Alberta border, including tributaries and upland areas

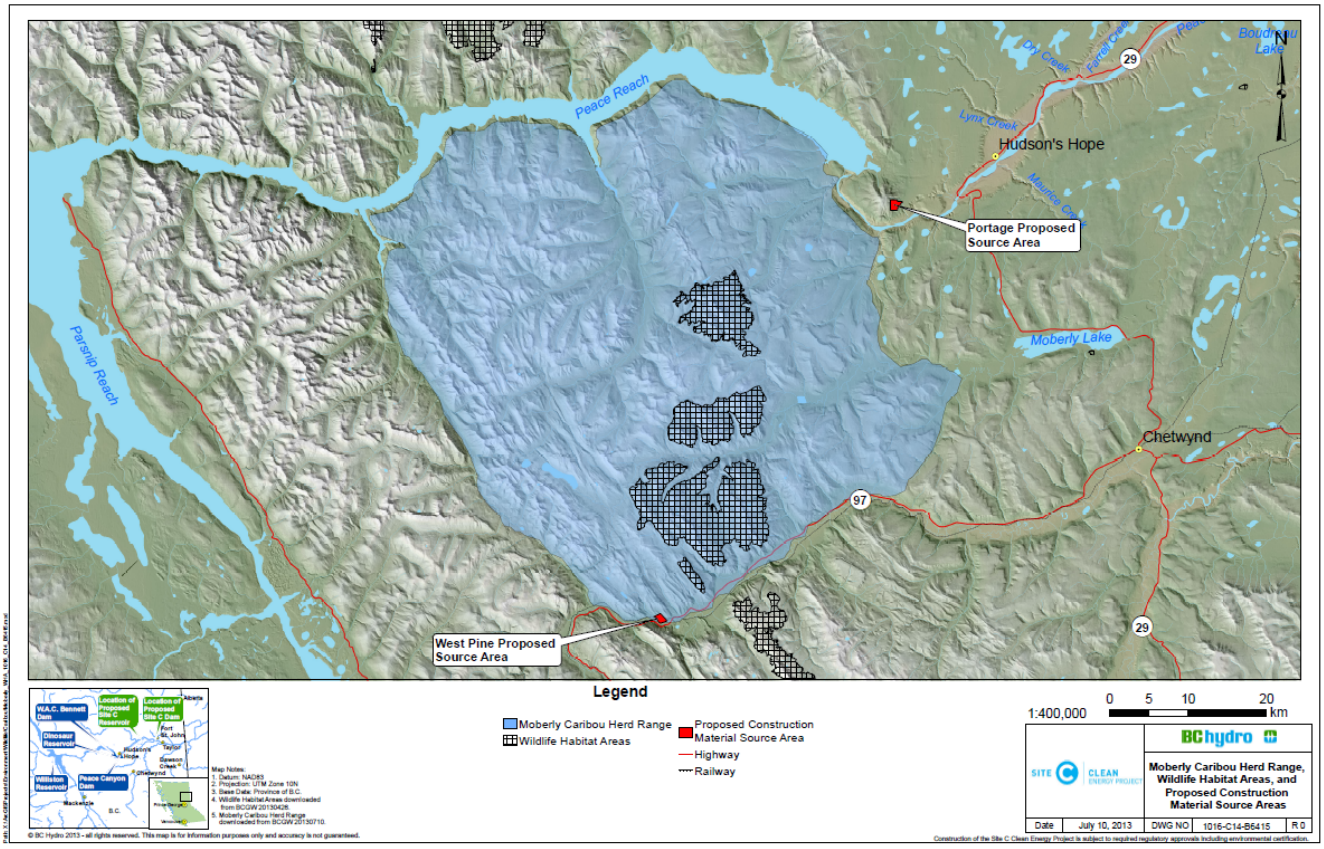
2) the Project activity zone potentially intersects caribou herd ranges at only one location: the West Pine Quarry

The West Pine Quarry is an existing quarry that has been operating since 2001 by the BC Ministry of Transportation and Infrastructure (MOTI). That operating period spans the time when monitoring of patterns of movement of caribou has taken place. The monitoring data infer the existing West Pine Quarry is within current caribou ranges but it is not within designated caribou winter ranges, which are critical winter habitat identified and protected by the B.C. Ministry of Environment.

[1] Goddard, A. 2009. Boreal Caribou in Northeastern British Columbia: Biological Rationale, Data Summary, and Literature Review. British Columbia Ministry of Environment, Ecosystems Section, Fort St. John, B.C. Peace Region Technical Report, 21 p.

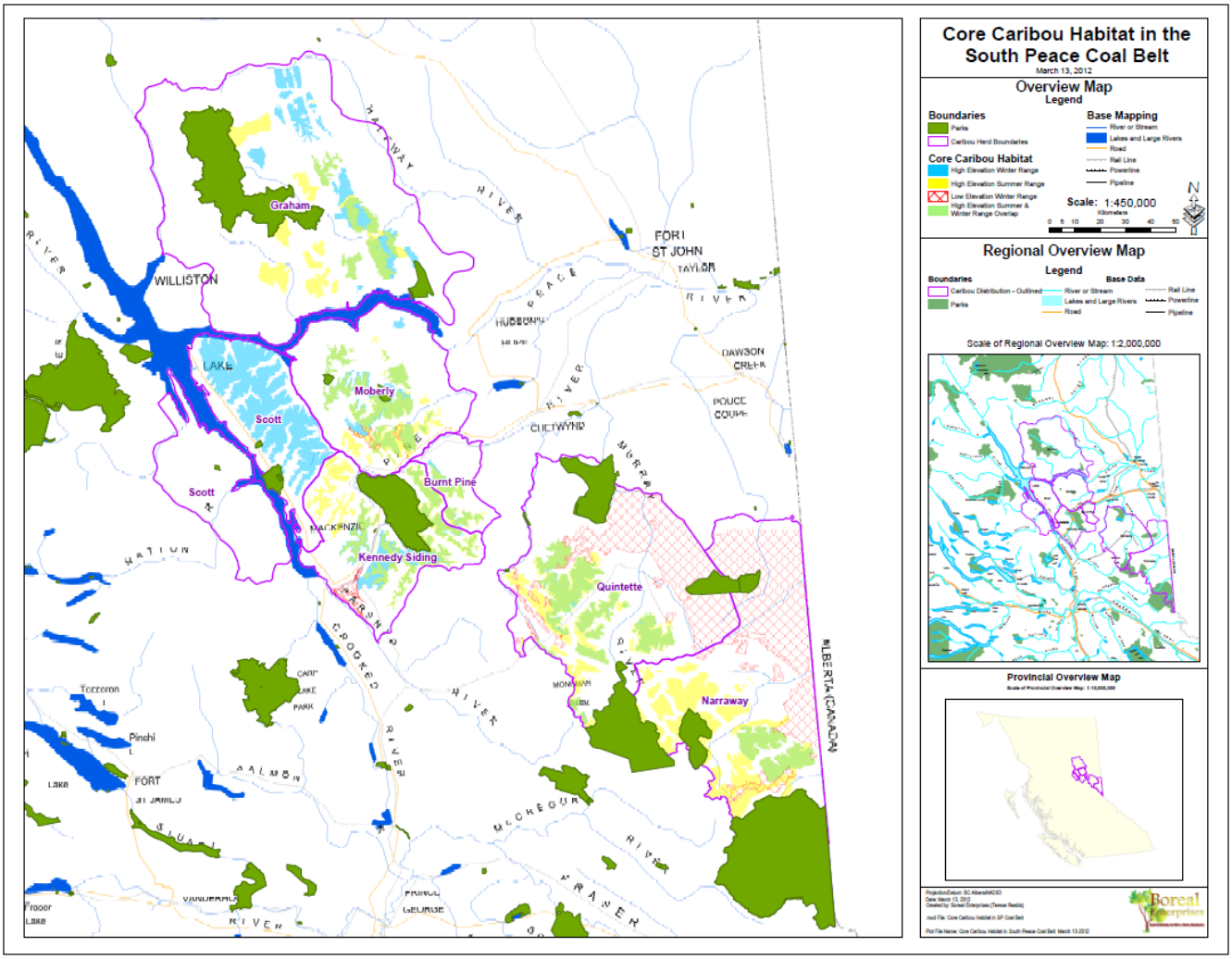
Map 1 illustrates the location of Wildlife Habitat Areas. Map 2 illustrates the location of core caribou habitat in the South Peace. A definition of core caribou habitats can be found at: http://www.env.gov.bc.ca/wld/speciesconservation/nc. A comparision of the two maps indicates that the Wildlife Habitat Areas have been included in the identified core caribou habitats. Management of caribou by the province is being developed based on the mapping and definition of core caribou habitats.

Map 1. Wildlife Habitat Areas in the vicinity of the proposed Pine Pass Quarry.



Map 2. Core Caribou Habitat in the South Peace.

(Source: http://www.env.gov.bc.ca/wld/speciesconservation/nc/)



A review and analysis of the B.C. Ministry of Environment data on seasonal movement patterns of caribou conducted for BC Hydro at these locations has inferred that there will be no direct interaction with caribou, and that the existing West Pine Quarry can be operated in such a way as to have no indirect interactions with caribou.

This conclusion was reached for two reasons: 1) due to the nature of operations and activities that will be undertaken at the quarry for the Project-, and, 2) limitations on the the timing of the operation quarrying activities.

The West Pine Quarry is currently operated by MOTI to produce aggregates which are used to produce concrete or are used as base rock for roads. Production of base rock road aggregate involves blasting

the rock into small sized aggregate using frequent high intensity blasts. The Project plans to use the quarry to produce rip rap. Production of rip rap involves blasting the rock to release large sized boulders which requires less intense and less frequent blasts. Blasting for rip rap production will require less explosive material (approximately 1/3) for each blast than is currently used to produce aggregate. Blasts used by the Project to produce rip rap will not exceed the current levels of blasting being carried out by the MOTI. The Project will not operate in the quarry during January through March, thereby avoiding any potential for interaction with caribou during the critical ~~ore~~ winter months.

The following paragraph extracted from the EIS outlines the considerations for caribou:

> "Caribou are not found in the Peace River valley, so they will not be directly affected by the proposed reservoir or dam. Where Project components do occur in recognized caribou herd ranges (e.g., West Pine Quarry), a review of existing data has determined that there will be no direct Project interactions on caribou, and that sites can be operated in such a way as to have no indirect interactions on caribou. The West Pine Quarry has been in operation by the B.C. Ministry of Transportation and Infrastructure since 2001. Operations will expand the existing quarry, but will not encroach upon important habitats noted in recovery planning and activities will continue to follow practices currently used by the B.C. Ministry of Transportation and Infrastructure."[2]

Conclusion

1) Caribou do not occur along or adjacent to the Peace River between the Peace Canyon Dam and the Alberta border. Construction of the dam, reservoir, transmission line and upgrades to Highway 29 will not directly affect the existing caribou population, nor will these project components affect connectivity (the ability of individuals to move between populations and or move between habitats in their ranges) between or within existing populations.

2) There is a potential for the Project to interact with caribou using habitats near the existing West Pine quarry currently operated by MOTI. BC Hydro has committed to operate the quarry in a manner that does not exceed current operations (i.e. blast intensity and frequency) and in doing so will avoid incremental direct and indirect interactions with caribou.

Based on this information BC Hydro concluded that the Project will not have direct or indirect interactions with caribou.

[2] EIS Volume 2, Section 14: Wildlife Resources, page 14-8, line 5, Table 14.2.

Related Comments / Information Requests:
This technical memo provides information related to the following Information Requests:

gov_0010-577	gov_0018_033	gov_0018_034	gov_0018_035	pub_0056-001
pub_0246-001	pub_0293-001	pub_0474-001	pub_0597-001	pub_0603-001
pub_0641-001	pub_0709-001	pub_0739-001	pub_0742-001	pub_0783-001
pub_0795-001	pub_0796-001	pub_0863-001	pub_0897-001	pub_0910-001
pub_0952-001	pub_0980-001	ab_0001-328	ab_0001-332	ab_0009-017

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Attachment 1

Data Used to ~~Informed~~Inform the Assessment of Interactions Between Caribou and the Project.

Designated Caribou Wildlife Habitat Areas

- The dataset contains approved legal boundaries for wildlife habitat areas and specified areas for species at risk and regionally important wildlife.
- BC Government – Environment – Ecosystems Branch (obtained through DataBC)
- https://apps.gov.bc.ca/pub/geometadata/metadataDetail.do?recordUID=36172&recordSet=ISO19115

Caribou Herd Locations for BC

- This data identifies northern, boreal and mountain herds as well as herd status and risk
- BC Government – Environment – Ecosystems Branch (obtained through DataBC)
- https://apps.gov.bc.ca/pub/geometadata/metadataDetail.do?recordUID=42953&recordSet=ISO19115

Specific Caribou Locations

Data (Data supplied by BC Government – Ministry of Environment):
- Quinette Caribou May 2002 – March 2008
- Burnt Pine Caribou March 2003 – March 2008
- Kennedy Siding Caribou May 2002 – March 2008
- Moberly Caribou May 2002 – June 2008
- Graham Caribou February 1988 – May 1994

Maps provided by BC Government:

- Caribou Locations 2002-2011 Burnt Pine, Graham, Kennedy Siding, Moberly Herds. BC Ministry of Forests, Lands and Natural Resource Operations. 12 June 2012.
- Burnt Pine Caribou Telemetry Locations, 2003-2010. BC Ministry of Forests, Lands and Natural Resource Operations. 12 June 2012.
- Graham Caribou Telemetry Locations, 2008-2010. BC Ministry of Forests, Lands and Natural Resource Operations. 12 June 2012.
- Kennedy Siding Caribou Telemetry Locations, 2002-2011. BC Ministry of Forests, Lands and Natural Resource Operations. 12 June 2012.
- Moberly Caribou Telemetry Locations, 2002-2011. BC Ministry of Forests, Lands and Natural Resource Operations. 12 June 2012.

Quarry Areas
- Quarry areas as outlined in BC Hydro Site C Clean Energy Project EISG & EIS