Northwest Territories Environment and Natural Resources

September 27, 2012 VIA EMAIL

Eli Nasogaluak
Environmental Impact Review Coordinator
Environmental Impact Review Board
PO Box 2120 Inuvik, NWT, Canada X0E 0T0
eirb@jointsec.nt.ca

Dear Mr. Nasogaluak,

Re: UNDERTAKING NO. 3: ENR to review the evidence put forward by the Developer about the zones of influence for caribou and grizzly bear for the road and to indicate whether or not, and why, ENR agrees or disagrees with those zones of influence.

This letter is in response to Undertaking #3 for Environment and Natural Resources (ENR) to provide advice about the Zones of Influence (ZOI) for barren ground caribou and barren ground grizzly bear provided by the Developer in its evidence for the Inuvik to Tuktoyaktuk Highway Project.

The Developer provided initial discussion about ZOI for barren ground caribou and grizzly bear in the Environmental Impact Statement (EIS). The Developer provided additional ZOI discussion in its responses to Information Requests (IR) 33.1, 35.1, 35.2, 36.1 and 36.2. The Developer also provided comments on ZOI in the Supplemental Cumulative Effects Assessment Documentation [271-1] and in the Developer's response to the WMAC (NWT) technical submission [283-1].

This response briefly compares the Developer's evidence with the independent evidence provided by GNWT (ENR) in its responses to previous Information Requests (IR). Considerable additional information on ZOI and the behavioural responses of both grizzly bear and caribou to the Dempster Highway, in particular, were provided in GNWT (ENR) responses to IR 73, 74, and 75.

Barren-ground Caribou

There is no explicit number given for the ZOI used for barren ground caribou in the EIS. A number of references are made to studies that have been conducted for linear and non-linear sources at different times of the year. On pg 522 of the EIS, the Developer discusses possible barren ground caribou behaviour changes in response to activities and the factors that influence those changes.

In IR Response 33.1, the Developer cited two possible zones of influence (2,000 m or 4,000 m) for potential behavioural changes. These are partially based on studies in areas with substantially more infrastructure than this project and in different times of the year than the road (calving and summer range).

In IR Response 73.2, the GNWT (ENR) discussed a variety of studies conducted on the Dempster Highway which indicated a 4,000 m to 5,000 m ZOI. The ZOI provided in IR Response 73.2 also cites a 5,000 m ZOI during a one day survey in mid-November of the Porcupine Caribou herd conducted by the Yukon Department of Environment. The herd was being actively harvested and disturbed by off road vehicles at the time. Of the variety of available highways or industrial roads affecting barren-ground caribou, the Dempster Highway has the greatest similarity in road structure and volume of vehicle use. It has also been subject to harvesting over an extended period of time.

Based on this independent review of relevant publications, ENR agrees the construction activities and operation of the proposed ITH highway could cause behavioural changes in barren ground caribou. It is possible the ZOI for the herds in the ISR will be similar to the Dempster Highway if the animals are subject to the same level of harvest activity along or near the ITH highway. In the Yukon, 70 per cent of the harvest occurs near the right-of-way. If not subject to harvest, the ZOI on the ITH could be somewhat less.. Based on the studies of the Porcupine herd, animals will continue to cross the ITH to gain access to important parts of their range, for example, during spring migration to calving grounds.

It is important to be clear that the ZOI for barren ground caribou is predominantly related to reduced habitat effectiveness rather than direct habitat loss. Although barren ground caribou will cross roads during all hours of the day, it is possible animals might delay crossing until times of lower traffic. Similarly, times of day of feeding near the highway may decrease during the day. The sex/age composition of groups is also important as cows with calves are the most likely to modify their behaviour. The speed of traffic may also influence the distance at which barren ground caribou react to vehicles. IR Response 74.1 discusses this issue in more detail.

As stated in IR Response 33.3, ENR agrees it does not currently have the barren ground caribou data to quantitatively predict a ZOI for a single road with low traffic volume. In IR Response 73, GNWT (ENR) described actions currently being undertaken to study behavioural responses to the road based on animals from the Cape Bathurst and Tuktoyaktuk Peninsula caribou herds as part of the Inuvik to Tuktoyaktuk Highway Wildlife Effects Monitoring Program or WEMP. The

analysis will focus on animals using the fall and winter ranges within 15 km of each side of the highway alignment. As a point of clarification and as stated in GNWT (ENR) IR Response 73.2, radio-collared animals from the Bluenose-West herd have ranged well to the east and south of the Project area but do not currently use the potential winter range in the immediate vicinity of the Project.

In the response to the WMAC (NWT) Technical Submission [283-1], pg 45, the Developer states a 1 km ZOI within which potential residual effects may occur is considered to be reasonable and appropriate for caribou. This differs from the response provided in the Developer's response to IR 33.1.

Overall, ENR feels there is not enough data for a quantitative analysis to provide a ZOI for barren ground caribou on a single linear development with low traffic volumes that is not subject to harvesting but, based on available literature, the 2 km to 4 km ZOI for behavioural changes suggested in IR Response 33.1 is a reasonable and conservative predicted effect..

It is ENR's opinion that winter access roads to material sources and the associated ZOI should be included in the calculations of functional loss of habitat for caribou as these will be in effect in the winter when caribou are in the area. Estimates of the length and location of these roads should be considered in the final estimates of the amount of hectares of habitat affected.

Grizzly Bears

There is no explicit number given for the ZOI for grizzly bears in the EIS. On pg 531, the Developer, based on a literature review by Linnell et al. (2000), indicates grizzly bears might abandon dens in response to activities within 1 km, and especially within 200 m. For the summer period, an avoidance area of 0 m to 500 m is mentioned based on Aune et al. (1986).

In response to IR 35.1, the Developer refers to two studies about ZOI for grizzly bears: 500 m for linear disturbance based on a number of references and 12 km to 23 km for exploration sites and outfitter camps (Johnson et al. 1995). The Developer then states:

> Based on these studies, a zone of influence (ZOI) of 500 m or 1 km on either side of the 137 km ITH road could be suggested, which would amount to 13,700 ha or 27,400 km^2 – this is 100% or 200% of the LSA. A behavioural response at 1.5 km (3 km corridor), would increase the potential ZOI to 41,100 hectares. Although this is likely a ZOI within which grizzly bear behaviour might be affected, the expectation is grizzly bears would learn to cross the road and would likely do so regularly, except if road traffic was very heavy.

ENR agrees Alaska studies indicate a potential to disturb grizzly bears in dens. This may result in higher heart rates, movement in dens, etc. Studies of seismic drilling in Alaska indicate no abandonment of dens resulting from vehicles within 100 m or shot hole drilling within 1.4 km in mid-March. Although abandonment of dens (temporary or permanent) is more likely within

200 m to 300 m, records of abandonment of dens are limited. The type of disturbance, the timing of the disturbance, and the sex/age of the bears is likely very important.

ENR agrees grizzly bears will likely avoid establishing winter dens within 500 m of the ITH alignment during operations. Studies in the Mackenzie Delta during periods of major oil and gas activities (well drilling, camps, airstrips, and granular resource extraction activities) showed most bears avoided these areas by a minimum of 1,000 m.

ENR agrees grizzly bears will likely modify their feeding and movement behaviour near summer construction activities and during highway operation. Due to low site fidelity and low bear densities, the bears will likely move to other areas. The amount of time spent feeding near the highway during operations would likely be affected within 0 m to 250 m depending on availability of food resources and vehicle movement. The ZOI will vary by sex/age of the bears, time of day and presence/absence of vehicles. Additional information is provided in GNWT (ENR) IR Response 75.1.

In the Supplemental Cumulative Effects Documentation [271-1] provided to the panel, the Developer provides a series of figures "depicting potential disturbance zones (conservatively set at 1 km around all past and proposed projects assessed), and a complementary series of tables that summarize the estimated hectares and types of vegetation cover." The buffer shown in the accompanying maps, and used in the cumulative effects assessment, is assumed to be 1 km on either side of the highway. For the EIA, based on the literature, ENR agrees a ZOI of 1 km is likely a conservative number that should be adequate to include areas of reduced habitat effectiveness.

In IR Response 76.1, GNWT (ENR) mentions the WEMP and the grizzly bear project designed to look at monitoring the impacts of the road on grizzly bear movements and habitat selection. These plans need to be discussed with our co-management partners to ensure there is support for the project.

As mentioned in other documents, the DRAFT WEMP, being developed by ENR and DOT, will provide quantitative data to determine: if there is an area of reduce use near the highway; if rate of travel changes near the road; and if grizzly bear and barren ground caribou are less likely to cross the highway during construction and then operation of the highway.

Please contact me at gavin_more@gov.nt.ca or 867-873-7107 if you have any questions regarding the attached submission.

Sincerely

Gavin More

Gavin More
Manager
Environmental Assessment and Monitoring
Environment and Natural Resources