



DENINU KUE FIRST NATION
P.O. BOX 1899
FORT RESOLUTION, NT
X0E 0M0
(867) 394-4335 FAX (867) 394-5122
ADMIN_DKFN@NORTHWESTEL.NET

Chuck Hubert
Senior Environmental Assessment Officer
Mackenzie Valley Review Board
PO Box 938
#200 Scotia Centre
5102-50th Avenue
Yellowknife, NT X1A 2N7
Email: chubert@reviewboard.ca

July 31, 2015

Re: EA1314-01: Jay Project – Deninu Kue First Nation Intervention

Dear Mr. Hubert,

The Deninu Kue First Nation (DKFN) is pleased to provide the following intervention regarding the environmental assessment for the Jay Project. The Jay Project is within the current and traditional socio-economic use areas as identified in the Deninu K'ue Ethno-history Report prepared by Vanden Berg and Associates (Vanden Berg 2012). The area north of Great Slave Lake is home to an abundant amount of wildlife, fish and plants that are of meaningful use to the Akaitcho Dene and the project area has been used by the Akaitcho Dene since time immemorial for hunting, fishing, trapping and gathering. The DKFN is supportive of this and other projects in its traditional territory as we recognize the potential benefits to our community and the Northwest Territories, but we continue to be optimistic that our rights, treaty, traditions and way of life continue to be paramount in any recommendations and final decisions of the Mackenzie Valley Review Board.

While there are several aspects of the Jay Project that we are concerns about, our intervention is focused on the Bathurst caribou herd. We discuss the application of the assessment endpoint used for barren-ground caribou and the assessment of air quality as it pertains to effects to habitat quality for caribou. We are also concerned about water quality, fish and fish habitat, but will defer to other interveners that are experts in these areas. We remain; however, committed to working with the Review Board and Dominion Diamond Ekati Corporation (Dominion Diamond) on the successful resolution of issues and concerns.

Bathurst Caribou Herd

In Section 12.1.3 of its Developers Assessment Report (DAR), Dominion Diamond has identified the following assessment endpoint for the barren-ground caribou:

- Self-sustaining and ecologically effective caribou populations.

As assessment endpoint is an explicit expression of an environmental value that is to be protected (Treweek 1999). Section 12.1.3 goes on to describe self-sustaining populations as healthy, robust populations capable of withstanding environmental change and accommodating random demographic processes (Reed et al. 2003); and an ecologically effective population being from a highly interactive species that is large enough to maintain ecosystem function (Soule et al. 2003).

Self-sustaining populations should be resilient and stable to changes in environmental conditions. A self-sustaining population can be defined as one that on average demonstrates stable or positive growth over the short-term (≤ 20 years), and is large enough to withstand random events and persist over the long term (≥ 50 years), without the need for ongoing active management intervention (Environment Canada 2014). In Section 12.2.2 of the DAR, Dominion Diamond provides evidence that the Bathurst caribou herd is in fact not self-sustaining, including a 93.2% decline in the population between 1986 and 2010. Between 2009 and 2012, population levels appeared to be stable; however, population levels between 2010 and 2014 have appeared to fluctuate. A slight increase in the Bathurst caribou herd was documented in 2013; but this was followed by a large reported decline in 2014. These recent results are considered to be imprecise because of the differences in sampling area covered among previous and recent reconnaissance surveys. Regardless, in the short-term the Bathurst caribou herd has not shown stable or positive population growth. Further, since 2010 several management interventions have occurred including closure of commercial, resident and non-resident harvesting in the North and South Slave regions, harvest restrictions between 2010 and 2014 imposed by the Wek'èezhii Renewable Resources Board, and most recently the implementation of the mobile core conservation zone in 2014 where no harvesting of the Bathurst caribou herd was permitted.

For a caribou population to be ecologically effective, it must be highly interactive and maintain ecological function. Barren-ground caribou are a keystone species that not only supports predator populations, but also affects vegetation structure and nutrient cycling. This species is also fundamental for the culture, spirituality and food security of northern Aboriginal peoples (Festa-Blanchet et al. 2011). Dominion Diamond acknowledges the decline in the Bathurst caribou herd and also reported that this decline may have negatively influenced wolf productivity (Section 13.2.2.4.1, page 13-44), and a similar statement in the DAR was made in regard to the decline of wolverine populations (Section 13.2.2.5.1, page 13-48). It can be argued that the Bathurst caribou herd is not maintaining ecological function given these declines of

predator species. Declines of these major species will ultimately affect the species richness and diversity in the northern ecosystems. Based on this evidence, which is supported by other researchers that Dominion Diamond has cited, it is challenging to determine that the Bathurst caribou herd is currently self-sustaining and ecologically effective.

We are concerned in the way that Dominion Diamond has used the assessment endpoint and has carried it forward into the determination of significance. Dominion Diamond considered an effect to be Not significant when impacts were measurable at the individual level, and strong enough to be detectable at the population level, but were not likely to decrease resilience and increase the risk to a self-sustaining and ecologically effective caribou population. An effect was considered Significant when impacts were measurable at the population level, and were likely to decrease resilience and increase the risk to the maintenance of a self-sustaining and ecologically effective caribou population. A significant effect may also result from habitat loss and fragmentation that reduces migratory or seasonal range movements to the point that it disrupts (breaks) population connectivity. Also, a significant effect would be considered when the loss of habitat resulting from a project causes permanent adverse changes to survival or reproduction at the population level.

Dominion Diamond has determined that the Jay Project should not have a significant influence on the ability of the Bathurst caribou herd to be self-sustaining and ecologically effective, as per the definition of an effect that is Not significant, and the Jay Project is not likely to decrease the resilience of the Bathurst caribou herd. Further, in consideration of the definitions used for a Not significant and Significant effect, it can be argued that the resilience of the Bathurst caribou herd is already at a compromised state. When herds are declining or at low numbers they are less resilient to environmental change and hunter harvest than when herds are increasing or at high numbers (Environment and Natural Resources 2015). For caribou, ecological resilience is measured by the amount of disturbance that is absorbed before an individual or herd changes behavior. Considering human-caribou interactions, the concept of resilience also applies to the ability of social and cultural systems to build and increase the capacity for learning and adaptation by people. Resilience in social and cultural systems, and ultimately well-being, is closely tied to the concept of sustainability and the challenge of meeting current demands without degrading the potential to meet future requirements, to sustain and enhance the capacity of social and cultural systems to adapt to change (Gunn et al. 2010). The relationship between Aboriginal peoples well-being and barren-ground caribou is paramount in this concept of resilience.

As mentioned above, it can be argued that the Bathurst caribou herd is currently not self-sustaining or ecologically effective; although, it is unclear if recent populations declines are within the range of natural variability and more information is required. Regardless, the current state of the Bathurst caribou herd has caused heightened sensitivities by Aboriginal people around the species and any impact whether identified as significant or not in the environmental

assessment review process is not an acceptable level of change. Until more information known about the current state of the Bathurst caribou herd development should only proceed at a precautionary level.

Air Quality

For the Air Quality VC, Dominion Diamond has selected an assessment endpoint that is quantitative and easy to understand:

- Compliance with applicable regulatory ambient air quality standards (AAQS) and objectives.

However, in its determination of significance, Dominion Diamond assigns qualitative spatial and temporal criteria that leaves the assessment ambiguous. It considers an effect to be Not significant when predicted concentrations may either be above or below the AAQS for the NWT, but where exceedances are consistently confined to the area immediately adjacent to the Project activities, and/or where the changes to air quality that results in the exceedances of the AAQS are reversible upon cessation of the Project activities. Conversely, an effect was considered to be Significant when predicted concentrations were above the AAQS for the NWT and exceedances of the relevant criteria are widespread, continuous and occur well-beyond the Project area. In both cases, the area immediately adjacent to the Project activities and the area well-beyond the Project area are not clearly defined in the DAR. So, despite showing that the predicted maximum concentrations of three of the five substances (NO₂, PM_{2.5} and TSP) exceed the regulatory ambient air quality guidelines the predicted effects have been rated as Not significant.

Based on the results of the air quality modelling, maximum concentrations of NO₂, PM_{2.5} and TSP exceed the AAQS, but the currently proposed monitoring regime is not designed to test these predictions. The proposed monitoring station on the east side of the Jay Pit will allow for monitoring of air quality criteria immediately adjacent to the Project activities, as in the definition of a Not significant effect. However, air quality monitoring stations that may be defined as well-beyond the Project area are located 5-10 km from the Jay Pit, but only include lichen sampling and snow chemistry sampling locations (one location east of the narrows and one location at Lake D3 [Counts Lake]). Other sampling locations for these parameters and for dustfall monitoring are located closer to the Ekati Mine. Because of this proximity to the Ekati Mine it will be difficult to surmise if the Jay Project is having a significant effect on air quality using monitoring data from these locations and whether corrective (management) actions should occur.

Dust deposition on vegetation is identified as a Project-environment interaction (or linkage) that can effect barren-ground caribou and air quality is linked to habitat quality in Figure 12.3-1. Table 12.3-1 identifies an effects pathway for air and dust emissions deposition that can change

the quantity and quality of plant forage and alter caribou distribution and behavior. Ingestion of this forage may also affect wildlife health. However, Section 12.3.2.2.1 states that no residual effects on caribou are expected because the pathway is removed by mitigation or environmental design features, so the ingestion of water, soil and vegetation or the inhalation of air that has been chemically altered by air emissions or dust deposition was not carried forward in the assessment.

Air and dust emissions and subsequent deposition can change the quantity or quality of plant forage and alter caribou distribution and behavior. The DAR uses the results of the air quality modelling and despite showing that NO₂, PM_{2.5} and TSP will exceed AAQS guidelines, Dominion Diamond concludes that these exceedances will only extend for approximately 1 km from the Project. As mentioned above, Dominion Diamond has applied qualitative criteria in the determination of significance so it remains unclear if this 1 km distance would be considered as an area immediately adjacent to Project activities (Not significant) or as an area well-beyond the Project area (Significant). Regardless, caribou are expected to occur within this area, based on the trend of historical occurrences within the mine site.

In the conceptual Air Quality and Emission Monitoring and Management Plan (AQEMMP) for the Jay Project, the fifth objective is to provide data including dust deposition to evaluate effects to aquatic and terrestrial ecological receptors. To address this objective an adequate amount of monitoring stations located in appropriate locations around the Jay Project area must be employed. The current plan is to have one monitoring station east of the Jay Pit – conceptual designs place this monitoring location on one of the small islands in Lac de Sauvage. Additionally, a transect for dustfall, lichen and snow chemistry is proposed for the Jay Road. To improve the integrity of the monitoring program, we recommend that the monitoring transect along the Jay Road be placed so that the monitoring stations correspond with potential caribou crossing locations. We also recommend that TSP monitoring also be conducted along the esker that lies adjacent to the waste rock storage pile and on the east side of Lac de Sauvage.

Conclusion

In conclusion, we want to acknowledge that Dominion Diamond has taken an overly conservative approach in its assessment of potential effects related to both the Bathurst caribou herd and air quality. However, we want to caution Dominion Diamond in taking this approach as a high degree of conservatism can lead to a Type 1 error or reporting an effect that is not present. This in turn can lead to a Type 2 error or failing to detect an effect that is present. Understanding these types of error are particularly critical especially when dealing with a keystone species like the Bathurst caribou herd that is currently experiencing population declines. As such, the confidence of the effects assessment is called into question. If it is the intent of Dominion Diamonds to protect the Bathurst caribou herd, as is stated in its use of the assessment endpoints, then explicit actions are required to monitor the potential effects.

In closing we recommend to the Mackenzie Valley Review Board that should the environmental assessment of the Jay Project be approved, explicit measures be attached to this approval to ensure effective mitigation, monitoring and follow up is applied for the protection of the Bathurst caribou herd. In closing, we look forward to further engagement in the review process of this project. Should you require any clarification on our information request please contact our technical advisor, Marc d'Entremont, at mdentremont@lgl.com or 250-656-0127.

Sincerely,



Chief Louis Balsillie

cc. Rosy Bjornson, DKFN Resource Management Coordinator
Marc d'Entremont, LGL Limited (DKFN Technical Advisor)

References

- Environment and Natural Resources. 2015. NWT State of the Environment Report. GNWT Environment and Natural Resources, Yellowknife, NT. Online report available at: www.enr.gov.nt.ca/state-environment. Accessed July 27, 2015.
- Environment Canada. 2014. Recovery Strategy for the Woodland Caribou, Southern Mountain population (*Rangifer tarandus caribou*) in Canada. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa, ON. Viii + 103 pp.
- Festa-Blanchet, M., J.C. Ray, S. Boutin, S.D. Cote, and A. Gunn. 2011. Conservation of caribou (*Rangifer tarandus*) in Canada: an uncertain future. *Canadian Journal of Zoology* 89: 419-434.
- Gunn, A., C.J. Johnson, J.S. Nishi, C.J. Daniel, D.E. Russell, M. Carlson and J.Z. Adamczewski. 2010. Understanding the cumulative effects of human activities on barren-ground caribou (page 113-134, Chapter 8), in *Cumulative Effects in Wildlife Management, Impact Mitigation*. Edited by Paul R. Krausman and Lisa K. Harris. CRC Press, Taylor & Francis Group, Boca Raton, FL.
- Reed, D.H., J.J. O'Grady, J.D. Ballou and R. Frankham. 2003. The frequency and severity of catastrophic die-offs in vertebrates. *Animal Conservation* 6: 109-114.
- Soule, M.E., J.A. Estes, J. Berger and C.M. Del Rio. 2003. Ecological effectiveness: conservation goals for interactive species. *Conservation Biology* 17: 1238-1250.
- Treweek, J. 1999. *Ecological Impact Assessment*. Blackwell Science Ltd., Oxford, United Kingdom.
- Vanden Berg, L. 2012. Deninu K'ue Ethno-history Report. Vanden Berg and Associates, Sidney BC. 435 pp.