Mackenzie Valley Review Board

SUMMARY NOTES FROM TECHNICAL MEETING

PROTEIN-ENERGY MODELING FOR CARIBOU

Jay Project EA1314-01

Review Board Boardroom, Yellowknife
Monday, January 19, 2015
9 am – noon

Participants:

Eric Denholm – Dominion Diamonds
Harry O'Keefe – Dominion Diamonds
Jim Rettie – Golder Associates
Dan Coulton – Golder Associates
Don Russell – Shadow Lake Environmental, independent consultant
Jan Adamczewski – GNWT, ENR
Andrea Patenaude – GNWT, ENR
Karin Clarke – GNWT, ENR (via WebEx)
Sarah Robertson – Northern Projects Management Office
Maureen Flagler – Aboriginal Affairs and Northern Development Canada (via WebEx)
Kim Poole – Independent Environmental Monitoring Agency (via WebEx)
Anne Gunn – Review Board technical advisor (via WebEx)
Alan Ehrlich – Review Board staff
Sachi De Souza – Review Board staff
Simon Toogood – Review Board staff
Mark Cliffe-Phillips – Review Board staff
Chuck Hubert – Review Board staff

Purpose and objectives of the meeting:

1. Confirm the requirements of item 8.3 in the Review Board's November 28, 2014 Adequacy Review document
2. Dominion and its consultants Golder to present their approach to fulfilling the caribou energy and protein modeling requirements from the Terms of Reference in its Developer's Assessment Report
3. Don Russell to present his linked energy-protein model
4. Confirm whether there are enough inputs to run the Russell model
5. Discuss whether the Russell model would add value to the EA of the Jay Project
6. Follow-up and next steps

1. Requirements of item 8.3 in the Adequacy Review

Review Board staff confirmed that the requirement in Section 8.3 of the Review Board's Adequacy Review document was for Dominion to revise its cumulative effects approach to caribou using the Russell linked Energy-Protein Model (Russell Model). Section 8.3 of the Adequacy Review gave examples of the Kiggavik Project and Mary River Project in Nunavut where the Russell model has been used in recent environmental assessments.

2. Dominion/Golder model

Golder Associates, on behalf of Dominion, showed participants a version of the caribou presentation, shown at the DAR Information Sessions in December. This presentation focused on how caribou energetics modeling was incorporated into the Developer's Assessment Report to meet the Terms of Reference. A copy of the presentation accompanies this Report.

The model included an analysis of incremental and cumulative energetic costs to caribou when encountering development zones of influence and changes to migration and incorporates natural seasonal condition variations and other inputs such as insect harassment. Energetic costs were expressed in the DAR as a decrease in body mass through loss of protein and fat in cows and subsequent potential decreases in calf production.

Participants discussed the attributes as well as pros and cons of the energetics model used by Dominion. Golder noted that the magnitude of energetics costs came out of Bradshaw's earlier work and stated that the model approach was appropriate because it used conservative assumptions.

GNWT stated that in its view Dominion's caribou energetics model is adequate for the purposes of the Developer's Assessment Report and is consistent with the requirements of the Terms of Reference. GNWT noted that its original recommendations during the development of the Terms of Reference were meant to ensure that a certain standard for the cumulative effects assessment is met while leaving room for the developer to innovate or collaborate, given that the Russell model is not readily available for general useage.

3. Russell Model

Don Russell presented his model to participants. The model considers metabolizable energy and nitrogen intake. The protein component is related to caribou cow's energy requirements necessary to provide for itself and its calf. The model's advantages are that it accounts for protein dynamics, models a non-linear response of body weight to the probability of pregnancy, incorporates age structure, is flexible in scenario development at any scale and can model up to 1,000 caribou at once through a given scenario. Don Russell observed that model was well received in the recent environmental assessment of the Kiggavik Project in Nunavut. Don Russell is currently the only person who can run this model. Running the model for the Bathurst herd in the Jay DAR context would take about 3-4 weeks.

GNWT stated that when considering energetics, nutrition and population trends, the Russell model is a powerful tool that is well-grounded in caribou biology and can support better decision making regarding the incremental and cumulative impacts of development on caribou. GNWT is using the Russell model as part of a longer term CIMP project to assess cumulative impacts of development on the Bathurst caribou herd and to support the development of the Bathurst Range Plan. This project is due to be completed in the spring of 2016 and its findings will not be available in the course of this EA.

The Review Board's technical advisor, Anne Gunn, stated that the Russell model decreases uncertainty and increases the accuracy of predictions of the impacts of development on caribou.

Dominion noted that the model it used had conservative assumptions and that while the Russell model may improve confidence in predictions, it would likely not change the findings in the DAR. It is uncertain whether the model and its predictions would lead to other mitigation measures that have not already been proposed in the DAR. Dominion therefore questioned whether the Russell model is necessary for the Jay Project.

4. Inputs needed for Russell Model

Don Russell stated that there is sufficient information and data about the Bathurst caribou herd, its habitat and environment to build and run the model. Input requirements include climate data, snow depths, nitrogen content of food sources, insect harassment, caribou body weights and other variables.

Participants agreed that there is enough information to run the Russell model to predict impacts of the Jay Project on the Bathurst caribou.

5. Discuss the value of the Russell model for the effects assessment of the Jay Project

Don Russell stated that his model would improve the confidence in predictions but, without running the model, could not say whether the findings would change the outcomes of assessment of impacts of the Jay Project on the Bathurst caribou herd. If used, the Russell model will be able to validate predictions used in the Dominion model and build confidence in the models findings.

The Review Board's technical advisor believes that this model would increase accuracy of the predicted impacts of the Jay Project on caribou. It may also increase the confidence of communities and aboriginal groups if the impact predictions are validated by the Russell model.

GNWT agreed that the Russell model would probably improve the accuracy of the predicted effects if applied to the Jay project, however, GNWT questioned whether the changes to the effect size predictions from running the Russell model would be large enough to warrant changes in the significance determination and the level of mitigation in this process.

Meeting participants were asked if there were any other caribou energetics models that would be helpful in this EA. While there are other models that predict cumulative impacts from development on

caribou available, none of these other models were recommended for the Jay Project EA during this meeting.

6. Follow-up and next steps

The Review Board discussed the findings of this meeting at its January 26 Board meeting. The Review Board will produce its Reasons for Decision on the Developer's Assessment Report Adequacy Review after the meeting.