March 6, 2013
Project Reference: #1310

Jason T. Madden
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Mr. Madden:

Re: Manitoba Hydro February 2013 Moose Enhanced Assessment – Technical Review

Attached please find my report outlining outstanding issues with the information presented for moose in Manitoba Hydro's February 2013 Moose Enhanced Assessment for the Bipole III Transmission Line Project (hereafter Enhanced Moose Assessment).

Outstanding issues and recommendations were previously provided (referenced with quotation marks below) with respect to the Supplemental Report submitted by Manitoba Hydro (MH) in January 2013 for the Bipole II Transmission Line Project (the Project). Some of these outstanding issues and concerns were addressed by the Enhanced Moose Assessment including:

> "More information on moose habitat fragmentation for the re-routed areas is needed, including, a comparison of the AFPR and FPR."
>
> "Additional baseline data for moose for the re-route section in GHA 19A/GHA 14A is required to ensure a solid foundation is available for comparison in follow-up and monitoring programs."

The additional information provided by MH mentions a target threshold for linear disturbance of 0.4 km/km^2 with respect to moose. According to Table 13 (Enhanced Moose Assessment, Section 7.2.1), GHA 19A is expected to have a future linear density of 0.367 km/km^2 (including Adjusted Final Preferred Routes) or 0.366 km/km^2 (including Final Preferred Route). **This comparison is noteworthy because we still do not have information on the location of required access roads or details on how much and what type of habitat may be impacted by these access roads. Subsequently, it appears that a linear disturbance threshold has nearly been or will be reached with the addition of the Project.**

Other issues previously identified were only partially satisfied, including:

> "Scientifically credible evidence for the success of the proposed mitigation measures for moose (This was also previously requested in IRs: CEC/MH-VI-208, 212, and 213)."

> "The data should be plotted and analyzed. As well, it should be demonstrated that other factors have been considered that could also be influencing moose populations (e.g., predator density, fire history, rate of disturbance on landscape, etc.)."

A more substantial literature review and compilation of available data was provided. However, MH has only indirectly provided support for harvest control as a potentially successful mitigation measure via process of elimination. They have not definitively demonstrated that harvest management resulted in changes to moose density; rather, their analyses suggest that linear feature density, predation, and parasites do not contribute greatly to changes in moose populations. They concluded that "*the most plausible explanation for moose population declines is hunting*." (See Enhanced Moose Assessment, Section 8.0, p. 48). A concern with the information provided is that there was not sufficient statistical power to reveal any significant relationships as it appears that the confounding variables affecting moose density have not been accounted for. **We recommend a power analysis be completed to determine the minimum sample size required to be reasonably likely to detect an effect.** Once the baseline data quality and power is understood, **mitigation success will require testing with follow-up and monitoring programs**.

After review of the enhanced moose assessment, the following outstanding issues still remain:

> "**Concerns remain regarding approach to determining impact significance. See IR CEC/MH-VI-210 and CEC/MH-VI-211 concerns regarding Natural Range of Variability and Determining Residual Environmental Effect**."
>
> "**Concerns remain regarding approach to determining impact significance. See IR CEC/MH-VI-212 concerns regarding Potential Cumulative Effects."**
>
> "**Additional information on the status of the proposed moose collaring program is required**."

While MH has provided additional information, the impact assessment approach and conclusion has not changed. The approach used by MH for impact significance determination is still a concern. It is not clear if any given effect is not measurable or below established thresholds of acceptable change (as per MH's definition of magnitude) or if insufficient data are available to evaluate any given effect. The proposed moose collaring program in western Manitoba would provide valuable data for testing various predictions relating to moose and would improve our understanding of the various factors contributing to moose population decline. Furthermore, the CEA in the enhanced moose assessment is based on available GIS data and includes forestry, roads, and mineral exploration (drill holes). According to figures provided in response CEC/MH-VI-212, there are additional types of disturbance in the project study area for which GIS data is perhaps unavailable. **As such, the final CEA impact rating should be interpreted with caution, particularly given that it does not include required access roads for the Project.**

The following recommendations were previously provided after review of the January 2013 Supplemental Report and are repeated here after review of the February 2013 Enhanced Moose Assessment:

- **It is recommended that a monitoring plan, through a negotiated agreement, be developed in collaboration with the MMF prior to licensing or as a condition to be met prior to construction being initiated. The plan should be based upon contractual obligations that can be relied upon by the MMF to receive timely**

notification of any activities relating to the development of a monitoring plan, along with sufficient funding and capacity to the MMF to participate in any of these activities. This should include MMF participation in the determination of targets and definitions of mitigation success for moose.

- **It is recommended that the above-described negotiated agreement include a commitment for MMF participation in the implementation of wildlife monitoring programs, along with sufficient funding and capacity to the MMF to participate in the implementation of wildlife monitoring programs.**
- **It is recommended that the above-described negotiated agreement include a plan for the dissemination of monitoring data and annual monitoring reports to the MMF. The MMF should be informed when monitoring data and annual monitoring reports are available for review and the MMF should be provided with sufficient funding and capacity to review these reports and disseminate information to MMF members.**
- **It is recommended that the above-described negotiated agreement include a commitment that the Environmental Protection Plan (EnvPP) and Access Management Plans be available for review and suggestions by the MMF prior to their finalization and that the MMF be provided with sufficient funding and capacity to review these reports and disseminate information to MMF members.**
- **Given the continued lack of detail on follow-up and monitoring programs, an independent monitoring board should be established to carry out or oversee the implementation of monitoring programs that address both direct and cumulative effects from Project construction and operations on wildlife distribution and abundance within the regional cumulative effects study area. An example of this type of model is the environmental agreement creating the independent monitoring body for the Snap Lake Diamond Mine in the Northwest Territories, which has been provided as evidence in the hearings by MMF.**

Best Regards,

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