

Summary of Ungulate Information Gaps: The Bipole III Transmission Line Project

Prepared for

Manitoba Metis Federation

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Prepared by



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Acronyms

ATK	Aboriginal Traditional Knowledge
CEAA	Canadian Environmental Assessment Agency
EIS	Environmental Impact Statement
EnvPP	Environmental Protection Plan
FPR	Final Preferred Route
GHA	Game Hunting Area
IR	Information Request
MMF	Manitoba Metis Federation
MSES	Management and Solutions in Environmental Science
MTR	Mammals Technical Report
ROW	Right-of-Way
SSEA	Site Selection and Environmental Assessment
VEC	Valued Environmental Component
MCWS	Manitoba Conservation and Water Stewardship

1.0 Introduction

The Manitoba Metis Federation (MMF) requested that Management and Solutions in Environmental Science Inc. (MSES) review and assess the analyses and results of the Environmental Impact Statement (EIS) of the Bipole III Transmission Line Project (the Project) proposed by Manitoba Hydro (MH). We have identified issues or concerns with the information presented in the EIS with respect to moose (*Alces alces*) and elk (*Cervus elaphus*) and have provided these to the MMF to be submitted as information requests (IRs) in the regulatory process (July 2012). This report takes MH's responses to those information requests into consideration and highlights key information gaps that remain.

2.0 Overview of Bipole III Project

MH is proposing the development of a transmission line extending north to south across western Manitoba. The Project includes the following new structures: two converter stations, two ground electrodes, northern alternating current (ac) collector lines, and a +/- 500 kV HV dc transmission line. The proposed transmission line is approximately 1,384 km in length and centred on a 66m wide right-of-way (ROW). The transmission line is proposed to be routed west of lakes Winnipegosis and Manitoba. This Final Preferred Route (FPR) for the transmission line and locations for other Project components were selected using a Site Selection and Environmental Assessment (SSEA) Process.

3.0 Foundation of Review

The foundation of our review centred on how the proponents determined significance of an impact. Significance was determined based on the assumption that mitigation will be successfully and effectively implemented. Therefore, it is critical to measure whether or not mitigation actually works as predicted. For that reason, follow-up and monitoring programs must be credible and objective.

Impact predictions, no matter how solid or robust, need to be tested during monitoring and follow-up programs (Morrison-Saunders and Arts 2004). To help improve our confidence in the predictions made, we highlight potential gaps in the baseline data and requirements for additional information to enable a better understanding of the effectiveness of mitigation measures. Our gap analysis is aligned with the EIS Scoping Document on p.21: "*Monitoring and follow-up involves verifying the accuracy of the environmental assessment and determining the effectiveness of measures implemented to mitigate adverse environmental effects.*" (Manitoba Hydro 2010). However, we understand that sometimes baseline information cannot be collected and a qualitative prediction must be made. Moreover, we understand that most predictions are made with some degree of uncertainty, no matter how good the baseline information may be, and decisions must be made in light of that uncertainty (Burgman et al. 2005). For the ongoing comparison with baseline data and for the detection of effects that were not predicted, the most fundamental necessity is that both the baseline and the monitoring information must be quantifiable. For a useful follow-up and monitoring program, testable questions must be developed (Burns & Wiersma 2004, CEAA 2009). Because of this fundamental necessity to provide certainty in the future environmental management of the proposed Project, we build the majority of our identified gaps on the need to develop testable questions for future monitoring programs. We also note that in order to measure the effectiveness of mitigation, the expectations of what effective mitigation would be must be clearly

defined. We think that discussions which aim at gaining clarity on follow-up and monitoring programs are of utmost importance for the effective management of Project impacts.

3.1 High Level Gap Analysis

This section contains a list of overarching issues that remain outstanding after review of MH's written responses to our IRs submitted in July 2012. IRs that were written and reviewed by MSES specifically include IRs# CEC/MH-VI-200 through CEC/MH-VI-217. The following are the most salient outstanding issues related to MH's ability to assess and mitigate impacts of their project on moose and elk:

- MH's impact assessment is based on incomplete and inadequate environmental information resulting in poorly informed decisions regarding impact significance.
 - There are insufficient multispecies- and high quality moose habitat- aerial survey data to inform the impact assessment for moose and elk.
 - Aerial transect mammal surveys completed along the entire length of the FPR are not quantitative (do not provide statistically valid estimates of moose density) and cannot be used as a baseline for future monitoring programs.
 - There is a reliance on outdated (2000) Manitoba Conservation and Water Stewardship (MCWS) data for moose for some portions of the Project Study Area.
 - There are insufficient data for a quantitative comparison of alternative route options with respect to moose and elk.
 - The importance of the area south of Red Deer Lake for Manitoba Metis moose and elk harvest may not be adequately addressed with the limited baseline data collected.
 - There are insufficient data to outline the natural range of variability and sustainability thresholds for moose and elk populations which are used to determine the magnitude of an effect. Consequently, the significance of an effect cannot be determined using the impact criteria as defined by MH.
- MH asserts that a quantitative cumulative effects assessment is not required and that they have adequately assessed cumulative effects for moose.
 - In cases where management action is implemented to keep a population viable (Game Hunting Area (GHA) closures by MCWS), the completion of a quantitative cumulative effects assessment should be a high priority since the viability of the population is already a concern before any project activity has commenced.
 - By their own assertion, MH does not understand the cumulative effects of the Project on wildlife because of claims of "*unknown response of wildlife*" and "*unknown degree of spatial/temporal scales of activities*" (EIS, Mammal Technical Report (MTR), p. 123) in the Project Study Area.
- MH has not provided scientifically credible evidence for the success of proposed mitigation measures.
- Lack of scientifically credible monitoring programs that would measure the effectiveness of proposed mitigation strategies on moose and elk resources.
 - With respect to moose, uncertainty remains regarding whether or not mitigation success will be measured, who is responsible for measuring it (unclear whether MCWS is responsible for regional monitoring and/or Project-specific monitoring), and how it will be measured (No definitions or targets for mitigation success have been provided).

3.2 Specific Concerns

1) Issue: Access Roads and Fragmentation Effects

Reference: CEC/MH-VI-200

Concern: The Mammals Technical Report (MTR) explains that some new access roads will need to be created for the Project; however, the location of new access roads or details on how much and what type of habitat may be impacted by these access roads is not provided, as required by EIS Scoping Document Reference 3.1. The assessment of the impacts of new access roads is incomplete without this information.

Remaining Gaps:

MH has not yet provided the location of new access roads or details on how much and what type of habitat may be impacted by these access roads. Without this information, the impact of access roads on moose and elk cannot be accurately assessed. Given the nature of this project, it is reasonable to expect MH to describe the percent increase in access density in moose and elk habitat, how many existing accesses there are, and how many and how accesses will be controlled.

Given that “*the surveys conducted for moose are qualitative*” (CEC/MH-VI-200), **it is unclear how MH plans to measure and monitor mitigation success if some baseline data are not quantifiable.** Collecting quantifiable baseline data is the foundation for future monitoring programs.

2) Issue: High-quality Moose Habitat Aerial Surveys

Reference: CEC/MH-VI-201

Concern: The EIS Scoping Document Reference 7.4.2.9 requires that information on known moose habitat and critical areas for moose be provided, but we find that MH has not presented sufficient information to support their conclusions regarding the location of moose habitat.

The EIS Scoping Document References 3.2 and 7.2 require that the use of lands and resources for traditional purposes be considered in the environmental assessment and that Aboriginal Traditional Knowledge (ATK) be integrated throughout the document, respectively. Based on the location of the 2010 high-quality moose habitat aerial survey blocks, the importance of the area south of Red Deer Lake for Manitoba Metis moose harvest may not be adequately addressed with the limited moose baseline data collected by MH.

Remaining Gaps:

MH’s response does not explain how it was determined that habitat models “successfully identified areas of known high quality moose habitat” (CEC/MH-VI-201).

MH has provided contradictory information with respect to moose habitat model validation. The baseline data may be a questionable foundation for future monitoring programs.

The area around Red Deer Lake is a “bottleneck area” with none of the alternative routes in this area avoiding all areas of high intensity Manitoba Metis moose harvesting. Moose will be

impacted to some degree regardless of route selection. **A quantitative comparison of the impacts of the alternative routes has not been provided.**

3) Issue: Multispecies Aerial Surveys and Manitoba Metis Large Mammal Harvest

Reference: CEC/MH-VI-202

Concern: The EIS Scoping Document References 3.2 and 7.2 require that the use of lands and resources for traditional purposes be considered in the environmental assessment and that ATK be integrated throughout the document, respectively. Given that the region south of Red Deer Lake is an important area for Manitoba Metis moose harvest and areas west and south of Swan Lake are important for Manitoba Metis elk harvest, it is not clear why multispecies aerial survey blocks were not completed for these regions.

The EIS Scoping Document Reference 7.4.2.9 requires that information on mammals and mammal habitat be provided, but it appears that MH has not collected sufficient information to make conclusions about the favourability of the FPR.

Remaining Gaps:

It is useful that historical moose survey data (1991-2000) were considered in the assessment; however, updated information was not gathered for the area south of Red Deer Lake. Accurate, up-to-date information should be used to inform the assessment, particularly in light of the current state of moose populations.

Four areas were sampled in the high-quality moose habitat block surveys, however, the concern remains that a very small portion of the FPR actually fell within those aerial survey blocks. **As such, it is not clear how these data (i.e., high quality moose habitat aerial survey data) influenced the assessment for moose and elk. Likewise, it is not clear how multi-species survey blocks influenced the assessment for moose and elk.**

The foundation for MH's conclusions about the favourability of the FPR with respect to moose is unclear.

4) Issue: Potential Effect of ROW on Moose

Reference: CEC/MH-VI-203

Concern: The EIS Scoping Document Reference 7.5 requires that environmental effects of the proposed Project be identified and described, but it appears that MH does not discuss the potential landscape level effects of moose habitat fragmentation. Mitigation measures need to be identified to minimize any adverse effects of habitat fragmentation due to the Project, as per EIS Scoping Document Reference 7.6.

Remaining Gaps:

In cases where it was not "feasible" to be in proximity to existing disturbance and linear development, it is unclear how fragmentation effects were factored into the impact assessment for moose.

MH is of the position that “*The Bipole III ROW is not expected to have an effect on moose movement or habitat utilization on or near the ROW*”. **This position statement will have to be verified with monitoring.**

5) Issue: Potential Effect of ROW on Elk

Reference: CEC/MH-VI-204

Concern: The EIS Scoping Document Reference 7.5 requires that environmental effects of the proposed Project be identified and described, but it appears that MH does not discuss the potential for long-term restricted use of ROW foraging habitat by elk.

Remaining Gaps:

Adequate response to first two bulleted IRs.

MH’s response states that a range of forage quality will be available after construction (CEC/MH-VI-204), but does not link this information to the impact assessment. **MH has not described how forage quality influenced the impact assessment for elk.**

6) Issue: Potential Effects of all Project Facilities on Moose and Elk

Reference: CEC/MH-VI-205

Concern: EIS Scoping Document Reference 7.5 does not indicate that the effects assessment is to be broken down by Project component. However, within the EIS, “*Biophysical effects are examined separately for linear project components (HVdc line and ac collector lines), the Keewatinow Station and Area (and related construction camp, borrow pits, and other elements), the Riel Station and Area, and the Ground Electrodes and Lines.*” (Volume 8, Section 8.1, p. 8-3).

Remaining Gaps:

Adequate response. **Please refer to Issue #12 for a discussion regarding the effects assessment on moose.**

7) Issue: Functional Habitat Loss

Reference: CEC/MH-VI-206

Concern: The EIS Scoping Document Reference 7.5 requires that environmental effects of the proposed Project be identified and described, quantitatively to the extent possible, but it does not appear that MH has quantitatively evaluated functional habitat loss for moose and elk.

Remaining Gaps:

Various studies indicate that habitat effectiveness can be reduced adjacent to human caused landscape changes and that avoidance of these areas may not be solely due to sensory disturbance. Moose and elk may utilize habitat in the ROW after construction, but the EIS has not provided specific information on the quality of forage expected along the ROW other than “*The habitat along the ROW is expected to produce a range of low to high quality forage opportunities*” (IR Response CEC/MH-VI-204). Reduced moose or elk habitat effectiveness adjacent to the ROW could occur in areas with low quality forage on the ROW after construction. **It does not appear that the potential for a prolonged impact (during operations) to moose and elk habitat was taken into consideration in the impact assessment (i.e., functional habitat loss during operations was not quantitatively evaluated).**

8) Issue: Mitigation of ROW Impacts - Hunting

Reference: CEC/MH-VI-207

Concern: Mitigation measures need to be identified to minimize any adverse effects of the Project (EIS Scoping Document Reference 7.6) and the effectiveness of mitigation measures needs to be verified (EIS Scoping Document Reference 10.0).

Remaining Gaps:

MH has indicated that Harvest Management Strategies are the responsibility of MCWS and MH is currently discussing mitigation and monitoring strategies with MCWS. **The outcome of discussions between MH and MCWS are currently unknown. The final Environmental Protection Plan (EnvPP) is not yet available.** Given that a final EnvPP, which includes various management plans, will not be developed until a license is granted, a complete list of mitigation measures intended to minimize potential environmental impacts will not be available until after a license is granted. A fundamental component of the license or final EnvPP is the inclusion of a mechanism to ensure that predicted residual impacts (success of mitigation) are verified through monitoring. One potential mechanism could be a license or EnvPP condition for the establishment of an independent monitoring board to carry out monitoring programs through the life of the Project (e.g. Environmental Monitoring Advisory Board (EMAB) for De Beers Diavik Diamond Mine, NWT).

It is unclear if MCWS will be conducting regional monitoring and Project-specific effects monitoring with respect to moose and elk.

Details of how mitigation success will be measured, including targets or definitions of success, are not provided. A follow-up program for the Project is not yet available.

9) Issue: Mitigation of ROW Impacts – ROW Access and Maintenance

Reference: CEC/MH-VI-208

Concern: Mitigation measures need to be identified to minimize any adverse effects of the Project (EIS Scoping Document Reference 7.6) and the effectiveness of mitigation measures needs to be verified (EIS Scoping Document Reference 10.0).

Remaining Gaps:

MH should provide examples from other projects/locations where proposed mitigation measures were successful.

An Access Management Plan has not yet been prepared for the Project, nor has a sample plan been provided, where success of mitigation is defined and measured.

Disclosure of the density of public access to the ROW during the operational phase of this project is a critical information gap required to understand the extent of project impacts on ‘specific values’ ; i.e., the Valued Environmental Component (VEC) identified by MMF. Without defined goals for access management, it is unclear if and how MH will limit disturbance along the ROW. MH does not provide information on

how access ‘issues’ will be identified (e.g., how human use will be monitored; what the thresholds of acceptable human use are along the ROW; how the type of human activity may change the response by MH).

MH has not provided definitions of success for vegetation management.

MH has not provided peer-reviewed literature confirming the expectation that herbicide application will not impact wildlife health. MH does not describe what would constitute “normal circumstances” (or, conversely, abnormal circumstances) as referred to in their response.

The outcome of discussions [regarding mitigation measures] between MH and MCWS are currently unknown.

MH currently plans to have construction activities occur during the winter period, a critical period for ungulates. It is not clear if MCWS will be making recommendations on appropriate timing for clearing and construction.

A Vegetation Management Plan has not yet been prepared for the Project.

MH has not provided peer-reviewed literature confirming the expectation that pesticide application will not impact wildlife health. MH does not describe what would constitute “normal circumstances” (or, conversely, abnormal circumstances) as referred to in their response.

Details of how mitigation success will be measured, including targets or definitions of success, are not provided. A follow-up program for the Project is not yet available.

I 0) Issue: Decommissioning

Reference: CEC/MH-VI-209

Concern: EIS Scoping Document References 3.1 and 7.3.5 require that the EIS describe concepts for decommissioning Project components, but additional detail is required to understand MH’s vision for decommissioning.

Remaining Gaps:

MH’s goal “is to rehabilitate the landscape to its natural state”, but MH has not provided any description of how this will be achieved or any references of peer-reviewed literature indicating that this goal is indeed achievable.

I 1) Issue: Moose and Elk Populations – Natural Range of Variability

Reference: CEC/MH-VI-210

Concern: EIS Scoping Document References 7.2 and 7.4.2.9 require that sufficient information about the existing environment be provided so that environmental effects can be identified and mitigated; However, MH has not provided the information that, according to their definitions [of

magnitude], would be used to determine significance of residual effects (as required by EIS Scoping Document Reference 3.2).

Remaining Gaps:

MH has stated that it does not have sufficient data to outline the natural range of variability and sustainability thresholds for moose and elk populations which are used to determine the magnitude of an effect. Consequently, the significance of an effect cannot be determined using the impact criteria as defined by MH. MH needs to provide data or other evidence to support their conclusion of no significant effect of the Project on moose populations.

I2) Issue: Determining Residual Environmental Effect - Moose

Reference: CEC/MH-VI-211

Concern: EIS Scoping Document References 7.2 and 7.4.2.9 require that sufficient information about the existing environment be provided so that environmental effects can be identified and mitigated. However, MH has not provided the information that, according to their definitions [of magnitude], would be used to determine significance of residual effects (as required by EIS Scoping Document Reference 3.2).

Remaining Gaps:

Please see Remaining Gaps outlined in Issue I1 above. Confidence in the impact assessment is reliant on whether or not baseline data adequately support impact predictions.

Furthermore, MH states that “*Manitoba Conservation and Water Stewardship is the agency responsible for establishing thresholds for area closures to moose, elk and deer.*” (IR CEC/MH-VI-210 Response). It appears that a threshold of acceptable change has already been reached because MCWS has implemented area closures with respect to moose. **Given this information, MH does not have adequate support for their conclusion that the Bipole III Project is “below established thresholds of acceptable change”.**

I3) Issue: Potential Cumulative Effects - Moose

Reference: CEC/MH-VI-212

Concern: As per EIS Scoping Document Reference 8.0 and CEEA (2008), MH must complete a cumulative effects assessment for the Project study area. However, the information provided does not allow for an understanding of the potential cumulative effects, particularly spatially as little information is provided regarding the location of various projects and activities, but also with respect to insufficiency of baseline data on moose populations.

Remaining Gaps:

Maps showing the location of all development listed in Volume 9, Tables 9.2-1 to 9.2-3 were provided on August 30th, 2012 (See Appendix A). Although it is helpful to see the distribution and number of development activities occurring in the Project Area, **it is still not clear how much disturbance is or will be occurring as the maps only provide point location information and not project footprints.**

MH asserts that “As the cumulative effects in relation to moose are anticipated to be minimal, a quantitative assessment is not required” (CEC/MH-VI-212). Contrary to this assertion, evidence shows that moose may be significantly impacted by this project (please see Responses to CEC/MH-VI-210 and 211 regarding predicted magnitude of effects and existing closures to moose hunting).

It is not clear what method MH adopted to arrive at the conclusion that cumulative effects on “moose are anticipated to be minimal” and therefore “a quantitative assessment is not required”. According to the Cumulative Effects Practitioners Guide by Hegmann (1999): “Significance may decrease as the significance of local effects decrease: It has been argued that if the conclusions of an EIA indicate that none of the residual direct effects are significant, then there will be no cumulative effects (as therefore there are no effects remaining to act cumulatively with other actions). While this may be true for some types of effects, this may not always be the case: an insignificant local effect may still contribute to a significant cumulative effect.” In cases where management action is implemented to keep a population viable, the completion of a quantitative cumulative effects assessment should be a high priority since the viability of the population is already a concern before any project activity has commenced. **MH has not completed a quantitative cumulative effects assessment.**

MH has not provided evidence that the proposed mitigation measures with respect to moose have been successful elsewhere for similar projects. Additionally, MH has not provided clear and detailed information on how mitigation measure success will be determined.

I4) Issue: Mitigation Measures for Moose and Elk

Reference: CEC/MH-VI-213

Concern: Although an elaborate route selection process was undertaken on the west side on Lake Winnipegosis, as per EIS Scoping Document References 3.2 and 4.0, some route sections may not be ideal for minimizing Project impacts to moose and elk. In an attempt to improve our confidence in the predictions made and meet the requirements of EIS Scoping Document Reference 7.1, we need a better understanding of the mitigation measures proposed and the effectiveness of those mitigation measures.

Remaining Gaps:

MH did not answer the original information request regarding adverse impacts to moose in Section 5 of the FPR. The question was: “What assurance can MH provide that moose populations will not be adversely affected in Section 5 of the FPR?”

Examples of the success of the mitigation proposed in the Access Management Plan should be provided by MH.

The outcome of discussions between MH and MCWS regarding Section 7 of the FPR are currently unknown. Baseline data should be provided for any proposed alternative routes.

I5) Issue: Monitoring and Follow-up

Reference: CEC/MH-VI-214

Concern: The EIS Scoping Document Reference 10.0 (MH 2010) requires that monitoring programs describe the parameters to be monitored and the methods to be followed. However, with respect to moose, it appears that there is no discussion as to the effectiveness of the proposed mitigation or how the monitoring program would be designed to test mitigation effectiveness.

Remaining Gaps:

With respect to moose, uncertainty remains regarding if mitigation success will be measured (i.e., effects monitoring), who is responsible for measuring it (unclear whether MCWS is responsible for regional monitoring and/or Project-specific monitoring), and how it will be measured. **No demonstration of the effectiveness of the proposed mitigation measures for moose for similar projects has been provided. A follow-up program for the Project is not yet available.**

I6) Issue: Wolf Population Estimates

Reference: CEC/MH-VI-215

Concern: EIS Scoping Document References 7.2 and 7.4.2.9 require that sufficient information about the existing environment be provided so that environmental effects can be identified and mitigated. However, MH has not provided consistent information with respect to wolf population estimates in the Project Study Area.

Remaining Gaps:

As noted in the original IR, MH did provide two population density estimates. **It is unclear which wolf population density value is being used to determine how the project will affect predator-prey relationships and how was that value calculated.**

I7) Issue: Heterogeneity of Biophysical Environment

Reference: CEC/MH-VI-216

Concern: Mitigation measures need to be identified to minimize any adverse effects of the Project (EIS Scoping Document Reference 7.6). MH has identified measures to mitigate habitat loss and ungulate mortality but additional details are required to understand if and how mitigation measures will be tailored to address variability in plant and wildlife communities across the FPR.

Remaining Gaps:

No new information has been provided by MH. **MH has not provided clear and detailed information on how biophysical variables will be taken into account in the application and monitoring of mitigation measures along the FPR.** Detailed information should be available prior to Project construction.

I8) Issue: Ungulate Sign Reliability and Independence

Reference: CEC/MH-VI-217

Concern: The EIS Scoping Document Reference 7.4.2.9 requires that information on mammals and mammal habitat as it relates to the Project be provided, but we find that MH has not provided consistent information with respect to aerial survey methods used to estimate moose densities.

Remaining Gaps:

MH states that “*Deriving statistically valid estimates of moose density would not have changed the identification of areas where moose utilization was observed.*” (CEC/MH-VI-217). However, collecting quantifiable baseline data is the foundation for future monitoring programs. **Please see Remaining Gap outlined in Issue I above.**

4.0 Closure

The review of the Bipole III Project EIS and MH’s responses to submitted information requests reported herein presents the conclusions arrived at by MSES. Given our comments herein, we hope to gain further clarification on several details of the EIS to facilitate future deliberations by the MMF about the rigor of predictions and the ability of validating the predictions in the course of the life time of the Project.

5.0 References

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**Appendix A:
All Development Located in the Project Study Area (Bipole
III)**





