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Mr. Byron Williams
Director
Public Interest Law Centre of Legal Aid Manitoba
3rd floor – 287 Broadway
Winnipeg, MB R3C 0R9

Dear Mr. Williams:

RE: REVIEW OF THE MANITOBA HYDRO BIPOLE III ENVIRONMENTAL IMPACT STATEMENT - WILDLIFE

1. INTRODUCTION

Manitoba Hydro is proposing to develop a new high voltage direct current (HVdc) transmission line that would be routed from the Keewatinoow Converter Station in northeastern Manitoba to the Riel converter station, just east of the City of Winnipeg, a distance of about 1,400 km. The line and associated facilities are collectively known as the Bipole III Project.

The Public Interest Law Centre of Legal Aid Manitoba on behalf of the Consumers Association of Canada (Manitoba Branch) is currently undertaking a critical review of information related to the proposed Bipole III Project. The following report provides information arising from a review of wildlife sections of the Environmental Impact Statement (EIS) and associated documents.

2. ENVIRONMENTAL IMPACT STATEMENT AND RELATED INFORMATION

2.1 Generalized Environmental Assessment Process

Although the specific processes used to develop an EIS may differ depending on the nature of the impacts being assessed, the following procedure is often used to evaluate impacts to wildlife from a new development:

- drawings and plans describing the infrastructure to be developed, and maps showing how it will be distributed across the landscape are created. The wildlife study team uses this information to familiarize themselves with the details of the project and the areas that will be affected;
- impact criteria are defined to facilitate an assessment of impact significance. Typical criteria include impact direction (positive, neutral, negative), magnitude (small, medium, large), geographic extent (footprint, local study area, regional study area), duration (short-term, medium-term, and long-term), frequency (infrequent, occasional, frequent), and reversibility (reversible, irreversible);

- the study team selects a number of representative wildlife species or groups for the purposes of evaluation. Among others, these may include keystone species (species that have a disproportionate effect on the environment), umbrella species (species that represent several other species), indicator species (species that represent a characteristic of the environment), and species-at-risk. This step is usually necessary because many areas of Canada support over 200 vertebrate wildlife species and it is therefore impractical to consider them all;
- information about wildlife is collected and reviewed. This information usually includes the results of field studies conducted in the area of the proposed project, literature reviews, and discussions with knowledgeable individuals, such as government biologists, and members of First Nations Groups;
- an effects assessment, which describes the nature of potential interactions between the Project and various wildlife species and groups, is undertaken;
- mitigation measures to minimize the adverse effects of the Project to wildlife are developed;
- residual impacts (impacts that remain following the application of mitigation measures) are identified and assessed;
- impact criteria are applied to the residual impacts to identify potentially significant interactions between the Project and wildlife; and
- additional mitigation and/or monitoring programs are developed where significant impacts are identified.

The probability that an impact will be classified as *significant* and the potential for development of mitigation measures can depend largely on the impact criteria used for a project because in many cases, an EIS will assume that little or no additional mitigation is required for impacts that are not considered significant. Consequently, definitions for impact criteria can play a major role in determining scope of the mitigation program and the mitigation strategies that will be developed.

2.2 Bipole III Environmental Impact Statement and Related Information

2.2.1 Potential Effects of Linear Features

Linear features, such as roads, pipelines, and transmission lines can affect wildlife in a number of ways. The development of linear rights-of-way often results in direct habitat loss, which is an important concern if critical habitats, such as natal or wintering habitat, are involved. Linear developments can also cause habitat alienation (avoidance of suitable habitat), which often results from human activities, although it can also occur when animals avoid rights-of-way, for example because they prefer overhead forest cover. Habitat fragmentation, where areas of continuous habitat are divided into smaller and sometimes unusable habitat blocks, can also occur as a result of linear developments.

Linear features can also affect animal movements. For example, some animals, such as wolves (*Canis lupus*), often use rights-of-way as travel corridors, whereas smaller animals, such as mice, voles, and

American marten (*Martes americana*), may avoid crossing them. The use of linear corridors by hunters, trappers, and recreational ATV operators can also affect wildlife movements and distribution.

2.2.2 Bipole III Environmental Impact Statement

As part of their application for the Bipole III Project, Manitoba Hydro prepared an EIS that assessed the potential effects of the Project on a number of socio-economic and biophysical parameters. Wildlife sections of the EIS discuss a variety of species, which comprise representative mammals, birds, amphibians, reptiles, and terrestrial invertebrates; however, terrestrial invertebrates are not discussed in this submission.

The EIS briefly describes the ecology of various wildlife species that inhabit areas near the proposed Project, and provides information about factors that influence their abundance and distribution. This information was obtained from a variety of sources, including public consultation and reviews of published and unpublished reports. In addition, field studies were conducted in areas that could be affected by the Project. Supporting documents describe field studies that were undertaken to collect information about wildlife specific to the Project area. These reports are well written, and the methods used appear to be appropriate for the species under consideration.

Information about key wildlife habitats, wildlife distribution, and relative abundance was considered in the selection of the Final Preferred Route (FPR) for the proposed transmission line and the development of additional mitigation measures; however, although several mitigation measures are described in the EIS, the avoidance of areas designated as key wildlife habitat by the proposed transmission line and other Project facilities is probably the single most important strategy used to mitigate the impacts of the Project.

In response to the EIS, a number of information requests to Manitoba Hydro were developed. Most of these requests ask for clarification about various aspects of the EIS and supporting documents.

3. CONCERNS

3.1 Evaluation of Impact Significance

In an EIS, the accuracy of significance ratings is largely a function of how the criteria used to evaluate the significance of impacts are defined. An important concern with respect to the Bipole III Project is that some of the criteria used to evaluate the significance of Project impacts appear to be inappropriate for wildlife; the result is that the apparent significance of the Project is minimized. As indicated on page 4-36 of the EIS, impact ratings are based primarily on various combinations of magnitude, duration, and geographic extent. Of the 27 possible combinations shown in Figure 4.2-2, 17 (63%) result in a "Not Significant" impact rating, 9 (33%) result in a "Potentially Significant" rating, and only 1 (4%) in a "Significant" rating. An impact is rated as significant only if it exceeds thresholds of acceptable change (i.e. is of "Large" magnitude) for more than 50 years (i.e. "Long term"), and extends into the Project Study Area. The potential to classify impacts to wildlife as significant is therefore very low. To illustrate, the woodland caribou (*Rangifer tarandus*) is classified as a species at risk in Canada. Nevertheless,

according to the criteria used for the Bipole III EIS, a severe decline in woodland caribou populations that included most of the Project Study Area and persisted for four decades would not be considered "Significant".

With respect to impact duration, *Short term* impacts are defined as those lasting from 0–5 years, *Medium* impacts last up to 50 years, and *Long term* impacts last for more than 50 years. Moose (*Alces alces*) and wolves, two of the longest-lived mammals in the study area, seldom live for more 13 years (Carbyn 1987, Alberta Fish and Wildlife Division 1990), whereas the maximum lifespan for small carnivores, such as mink (*Mustela vison*), may be about six years (Bones et al. 2006). Thus, an impact classified as having *Medium* duration could affect many generations of even the longest-lived species in the Project area. An impact designated as *Medium* duration could therefore result in the disruption of traditional movement patterns and the alienation of important wildlife habitat long after the Project is decommissioned.

"Reversibility" is also a consideration in developing impact ratings. In the context of the Bipole III Project, an impact is considered "reversible" if it "*is reversible during the life of the Project or upon Project decommissioning*". Although most Project impacts are likely reversible at some point, many will not be fully reversed until far into the future. An overhead transmission line can have a life of up to 100 years (Concepts Review Panel 2011, Page 17), and it is likely that it will take many decades for disturbed areas to become fully functional following Project decommissioning. Edmonds (1986) reported that woodland caribou in Alberta are most common in mature and over-mature coniferous forests more than 80 years old. Thus, mature habitats that were cleared for Project facilities may not recover their former ecological function for 150–200 years after the Project is constructed. Nevertheless, the EIS assumes that because no impacts to wildlife were classified as significant, there is little need to consider reversibility in the assessment of impacts. This criterion is therefore discussed only briefly in relation to impact significance ratings for different wildlife species and groups. Based on the criteria presented in the EIS, however, many impacts to wildlife could reasonably be identified as "Irreversible" or "permanent", because they could persist for well over a century.

Concerns with the impact evaluation for wildlife arise partly because the EIS attempts to use a common set of impact criteria for all of the components being evaluated. This can result in inaccurate impact ratings for components for which the standard set of criteria are unrealistic. In contrast, some Environmental Assessments use different criteria for different components, which may result in a more realistic assessment of impacts.

Many Environmental Assessments use shorter intervals to differentiate among levels of duration for wildlife than the Bipole III EIS (Table A). For example, some assessments classify impacts lasting as little as ten years as *Long term*. The assessment for the Northern Gateway Pipeline classifies impacts lasting from 10 years to up to 30 years after decommissioning as *Long term*, and those lasting more than 30 years after decommissioning as *Permanent*. In comparison, the Bipole III EIS requires that an impact persist for more than 50 years before it can be classified as *Long term*. This greatly reduces the probability of classifying an impact as significant, because only *Long term* impacts can be rated as significant in the Bipole III EIS.

Table A Comparison of Criteria for Assessing Impact Duration for Wildlife in Various Environmental Assessments

Duration	Project				
	Bipole III[a]	Northern Gateway Pipeline[b]	Long Lake South[cf]	Suncor Voyageur[df]	Muskeg River Expansion[ef]
Immediate			<2 days		
Short term	0 to 5 yr	<3 yr	≥2 days to <1 yr	<5 yr	<3 yr
Medium term	≤50 yr	3 to 10 yr	1 to <10 yr	5 to 20 yr	3 to 20 yr
Long term	>50 yr	>10 to ≤30 yrs after decommissioning	≥10 yr	>20 yr	>20 yr
Permanent		>30 yrs after decommissioning			

[a] Manitoba Hydro (2011); Section 4, Page 4-33.
[b] Enbridge Northern Gateway Pipelines (2010); Volume 6A, Section 9, Page 9-37 .
[c] Nexen Inc. & OPTI Canada Inc. (2006); Volume 4, Section 11, Page 11-16.
[d] Suncor Energy (2005); Volume 5, Page 45.
[e] Shell Canada Limited (2005); Volume 2, Page 1-31.
[f] Heavy oil extraction project.

3.2 Effects Assessment

An important concern related to the effects assessment is that, as discussed in Section 3.1 of this report, the criteria for rating impacts do not appear to be suitable for wildlife; thus, their application may minimize the apparent impacts of the Project. Perhaps as a result, impacts resulting from all Project components and activities were rated as "Not Significant" for over 30 wildlife species and groups considered in the assessment; no impact ratings of "Potentially Significant" or "Significant" for wildlife appear in the Bipole III EIS.

In addition, no impacts for wildlife have been rated as having *Long term* duration. *Long term* effects are defined as "*High level effects that extend greater than 50 years*", which appears to be the anticipated life of the Project. As discussed in Section 3.1, however, many impacts of the Project will persist well beyond 50 years, because the transmission line could remain in operation for up to 100 years, and many areas affected by the Project are unlikely to recover their full ecological function for many years following decommissioning. Thus, impacts related to altered habitat suitability; increased access by predators, hunters and trappers; and altered wildlife movements, appear to be *Long term* or *Permanent* rather than *Medium* term. A reconsideration of the duration of impacts to various types of wildlife may alter impact ratings and help to identify further opportunities for mitigation.

Although numerous field studies and surveys were conducted to obtain data about the distribution, abundance, and ecology of wildlife in the Project area, it is difficult to determine if information from these studies was used effectively to assess Project impacts. Thus, although the EIS is well written, Section 8.0 (Effects Assessment and Mitigation) is vague and provides insufficient information to allow an understanding of the rationale used to develop impact ratings for wildlife. Moreover, very little quantitative data, which could facilitate a more rigorous assessment, is presented. Manitoba Hydro notes, however, that the Canadian Environmental Assessment Agency can accept professional judgment in lieu of a quantitative assessment. Nevertheless, the lack of detail in the Bipole III EIS makes it difficult to ascertain if: (1) impact ratings are reasonable, (2) sufficient mitigation has been proposed, and (3) proposed mitigation measures are likely to be effective.

Quantitative and numerical data have been used in other Environmental Assessments. For example, where possible, the Environmental Assessment for the Northern Gateway Pipeline presents impact magnitude as a quantity, such as an area (in hectares) or as a change in percentage (Page 9-37). Environmental Assessments for both the Suncor Voyageur and Muskeg River Expansion projects use a scoring system, which is intended to stimulate discussions about the severity of impacts and act as an aid in assigning impact ratings (Table B). In these assessments, total scores were used to rate the "environmental consequences" of residual impacts as indicated below:

- Negligible, 0 to 5;
- Low, 6 to 10;
- Moderate, 11 to 15; and
- High, more than 15.

In addition, some information used to develop impact ratings for the Bipole III Project appears to be unsubstantiated. For example, the EIS indicates that no areas with high numbers of wolverine (*Gulo gulo*) tracks were found within the Local Study Area; however, because wolverines occur at low densities, track frequencies for this species are usually low. Nevertheless, the EIS concludes that increased access and trapping pressure will have a negligible effect on wolverine populations. Based partly on this conclusion, impacts of the Project to wolverines are considered "Not Significant". The EIS, however, does not compare the frequency of wolverine tracks in the Local Study Area with frequencies recorded in other parts of boreal Canada. As a result, the relative abundance of wolverines in the Project area is unknown. Moreover, because wolverines are typically sparsely distributed (van Zyll de Jong 1975, Hornocker and Hash 1981, Inman et al. 2012) and have a low reproductive rate (Banci and Harestad 1988), an impact that adversely affects even a small number of animals could reduce the viability of a wolverine population.

Table B Example of a Numerical Scoring System Assigned to Terrestrial Resources Impact Criteria in the Suncor Voyageur[a] and Muskeg River Expansion[b] Environmental Assessments

Impact Criterion	Rating	Score
Magnitude	Negligible	0
	Low	+5
	Moderate	+10
	High	+15
Geographic Extent	Local	0
	Regional	+1
	Beyond Regional	+2
Duration	Short-term	0
	Medium-term	+1
	Long-term	+2
Reversibility	Reversible	-3
	Irreversible	+3
Frequency	Low	0
	Medium	+1
	High	+2

[a] Suncor Energy (2005); Volume 5, Page 45.
[b] Shell Canada Limited (2005); Volume 2, Page 1-31.

The lack of detail in the EIS has resulted in some contradictory conclusions about the impacts of the Project on wildlife. For example, the Bipole III EIS and supplemental caribou report prepared in 2012 (Joro Consultants 2012) classify impacts to woodland caribou as "Not Significant". The Manitoba Conservation Wildlife Branch (MCWB), however, concluded that impacts to woodland caribou in the Wabowden area would be both "negative and significant". The Branch also indicated that the construction of a transmission line along the currently proposed FPR in this area would contradict "Manitoba's conservation and recovery strategy for boreal woodland caribou – 2005", and could contravene the Endangered Species Act (Question MCWS/MH-TAC-001b).

The EIS similarly rates impacts to moose as "Not Significant"; however, MCWB indicated that the Project would result in negative impacts to low and declining moose populations in Game Hunting Areas (GHAs) 14 and 14a, and that the transmission corridor would traverse critical moose habitat in

GHA 19. They indicated that the avoidance of important areas for moose was "the only way to prevent a significant impact to moose" (Question MCWS/MH-TAC-001b).

Although Manitoba Hydro now proposes to alter the transmission right-of-way to avoid important caribou habitat in the Wabowden area, and moose habitat in GHAs 14, 14a, and 19, the provision of more detailed and quantitative information to justify the assignment of ratings used to evaluate impacts to wildlife may have alleviated some concerns and conflicts by strengthening and perhaps altering some of the conclusions of the EIS and some of the proposed mitigation. Such information could include the percentage of a wildlife species' population likely to be directly and indirectly affected by the Project and the implications of Project development on the abundance and viability of wildlife at different spatial scales, including a local scale that includes areas important to subsistence wildlife users. Such information would help to determine potential impacts and mitigation for the entire project and would also consider smaller areas that contain highly suitable wildlife habitat or that are important to wildlife users.

3.3 Mitigation

The most important measure used to mitigate the impacts of the Bipole III Project to wildlife is related to the selection of the FPR, which involved the evaluation of alternative alignments to determine the route that would result in the least overall impact. Thus, information about wildlife abundance and the location of key wildlife habitats was used proactively to select a FPR that reduced impacts by avoiding wildlife concentrations and much of the key wildlife habitat that could potentially be affected by the Project.

Many of the additional mitigation strategies discussed in the EIS are commonly used to reduce the impacts of development on wildlife; such strategies include eliminating human disturbance during critical seasons, banning hunting by Project personnel, access management, the maintenance of buffers around important wildlife features, searches for listed species prior to Project activities, and the use of deflectors to prevent birds strikes. These measures are generally effective in reducing impacts to wildlife.

Details regarding the application of some mitigation measures, however, are unclear. For example, the EIS indicates that FPR will minimize impacts by paralleling existing linear features. This strategy is likely to be most effective if "paralleling" refers to constructing the transmission line in existing corridors. The effectiveness of paralleling would be reduced, however, if new or expanded rights-of-way (ROWs) are developed near existing linear features, because this would involve additional clearing and habitat loss.

Manitoba Hydro should consider developing a policy of "no net habitat loss" to enhance their mitigation program. Such a policy would provide partial compensation for direct and indirect habitat losses resulting from transmission line development and could involve setting aside conservation areas or enhancing wildlife habitats in areas that are unaffected by the project.

3.4 Omissions and Inconsistencies

Although the EIS deals with several aspects of wildlife ecology, it provides little information about the potential effects of the Project on wildlife movements for species other than wolves. Smaller mammals, such as American marten, often avoid open areas and fragmented landscapes (Snyder and Bissonette 1987, Hargis et al. 1999, Proulx and O'Doherty 2006), and may therefore be reluctant to cross the transmission corridor. The interruption of local movements could result in habitat alienation, reduced dispersal, and reduced gene flow. In contrast, the potential effects of the transmission right-of-way on movements of larger animals like moose are equivocal. Moose are often associated with edges and early successional forest stands, which frequently provide woody forage in the form of regenerating shrubs (Eastman 1974, Wasser et al. 2011). Thus, there is potential for shrub regeneration in the transmission corridor to attract moose; however, there is also potential for moose to avoid the ROW. Wasser et al. (2011) found that linear features with no or unknown levels of human disturbance were avoided by moose. In contrast, woodland caribou are reported to avoid linear features (James and Stuart-Smith 2000, Dyer et al. 2001). Woodland caribou in northeastern Alberta avoid roads and seismic lines, likely because most wolf predation occurs near these linear features (James and Stuart-Smith 2000). Caribou may avoid linear corridors by as much as 250 m, which can result in the alienation of caribou habitat and have potential demographic consequences (Dyer et al. 2001).

The Effects Assessment (Chapter 8.0 of the EIS) concludes that the Project will have a "negligible" impact on woodland caribou; however, the EIS also notes that that there is uncertainty about caribou because the amount of disturbance that they will tolerate is poorly known. Thus, determining impacts and the effectiveness of proposed mitigation measures for this species is difficult. Perhaps in response to this uncertainty, Manitoba Hydro's Draft Environmental Protection Plan indicates that monitoring for woodland caribou will occur throughout the life of the Project. Although such monitoring will likely provide data that can assist in developing and enhancing mitigation strategies, the data that currently exist may be insufficient to allow the detection of statistically significant changes unless such changes are large and extend over a long period of time. Thus, it is unclear what would be required to trigger an adaptive management response by Manitoba Hydro.

4. CONCLUSIONS

The Bipole III Project is a large electrical transmission project that will bisect the Province of Manitoba for a distance of about 1,400 km. As part of Manitoba Hydro's application for the Project, an EIS was prepared, which involved, in part, collecting a substantial amount of information about wildlife in the Project area. This information assisted in the development of the FPR, for which concerns about wildlife were an important consideration. This proactive approach to mitigation is likely to be effective because the alignment of the FPR generally avoids areas that have high wildlife populations or contain critical wildlife habitat. Nevertheless, the FPR, as proposed in the original EIS, would likely have adversely affected important woodland caribou habitat in the Wabowden area, as well as moose habitat in GHAs 14, 14a, and 19; however, the FPR was realigned following an expression of concerns by MCWB.

A remaining concern, however, is that the EIS concludes that impacts to all wildlife, which include over 30 species and groups, will be "Not Significant" following mitigation. This classification, however, may be inaccurate, because the criteria used in the assessment do not appear to be suitable for wildlife, which may reduce the accuracy of impact ratings. This, in turn, could serve to minimize the apparent significance of the project to wildlife and result in reduced levels of mitigation. This concern could be alleviated by developing more realistic discipline-specific impact criteria for wildlife and other components included in the EIS.

In addition, the rationale involved in assigning impact ratings to wildlife is often unclear, because much of the information about potential impacts to wildlife is qualitative, vague, and some of it appears to be unsupported. The conclusions of the EIS would be therefore be strengthened and perhaps altered by using a more quantitative approach that involved using numbers and percentages to assign and justify impact ratings.

5. RECOMMENDATIONS

The following recommendations are proposed to improve the wildlife sections of this and other similar Environmental Impact Statements:

- Develop impact criteria that are specific to and realistic for wildlife; for example, impact magnitude could be defined based on a percent population change, whereas duration could be defined in relation to the life span of the species of greatest concern.
- Provide comparative data to verify statements about parameters like wildlife abundance; for example, wildlife track frequencies could be compared with data collected in other areas of Manitoba or in other parts of Canada.
- Where possible, provide quantitative data, for example the number of animals/km^2 or tracks/km-day to allow the importance of various areas and habitats to be assessed
- To the extent possible, use quantitative data to facilitate an understanding and evaluation of how Project effects were assessed and how impact ratings were assigned.
- Consider developing habitat compensation and enhancement programs as partial mitigation for habitat losses.

6. CLOSURE

We trust that this information satisfies your current requirements and provide suitable documentation for your records. If you have any questions or require further details, please contact the undersigned at any time.

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Douglas Skinner is a Principal Wildlife Biologist for ecological services with WorleyParsons. He received both his Honours B.Sc. (1977) and his M.Sc. (1984) from the University of Alberta, and has over 30 years of experience in wildlife research, management, monitoring, and the preparation of Environmental Impact Assessments. Areas of expertise include the ecology and management of wildlife, wildlife/habitat associations, and wildlife responses to development and disturbance.

Mr. Skinner has extensive experience with a variety of wildlife species, which include ungulates, furbearers, small mammals, water birds, raptors, and amphibians. Some of his work has involved assessing the impacts of various types of development, such as oil sands operations, water storage projects, landfills, military operations, and linear developments, on wildlife and biodiversity. In addition, he has provided critical reviews of Environmental Impact Assessments for both the Alberta Government and First Nations groups. He has also prepared wildlife management plans for areas of Alberta and British Columbia. He is a registered Professional Biologist (P.Biol.) in Alberta.