Manitoba Hydro

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June 22, 2012

Ms. Elise Dagdick
Environmental Assessment and Licensing Branch
Manitoba Conservation and Water Stewardship
Suite 160, 123 Main St., Winnipeg, MB
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Ms. Dagdick

RE: Bipole III Transmission Project – Public EIS review and TAC comments

Please find enclosed responses to the Public EIS review and TAC comments which were submitted to Manitoba Hydro on May 16th 2012.

We trust the enclosed responds appropriately to your request. Should you have any questions or require further clarification of our comments please do not hesitate to contact us.

Regards,

Original Signed by Shannon Johnson

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sj/tk

Manitoba Conservation and Water Stewardship

Bipole III Transmission Project

Public Review and TAC Comments

MCWS/MH-TAC

June 2012

Date	May 16th 2012
Subject	Route Selection/Moose
Reference	Manitoba Conservation Package – TAC Comments
Source	Lands Branch
Question	MCWS/MH-TAC-001a

Question:

The preferred route between Mafeking and Birch River (east of PTH 10 and Swan Lake) bisects critical habitat for moose. The right-of-way should be relocated further west and run parallel to PTH 10 on the east side of the highway right-of-way. Provide an assessment of a new route through this area that does not cross critical moose habitat.

Response:

Based on the comment above, there is some uncertainty as to the specific area of concern. Results of modeling used for the EIS illustrate some relatively small blocks of high quality habitat between Mafeking and Birch River, however the current routing does not bisect them but rather parallels them to the east. The majority of the route in this area follows existing linear development and/or road allowances with agricultural development. In the Mafeking area there is a 15 km stretch of intact forested peat lands complex in what appears to be a relatively inaccessible area intersected by the FPR. However the model used did not quantify this area as high quality habitat for moose.

As this specific issue was not identified during consultation and assessment for the EIS, and there are no available current survey data, it is not known where exactly the FPR bisects critical moose habitat. Further information/clarification is needed from the Wildlife Ecosystem and Protection Branch and/or Western Region respecting this concern. Manitoba Hydro is coordinating a meeting with Manitoba Wildlife Branch biologists shortly, to discuss the moose issue in this area.

Date	May 16th 2012
Subject	Route Selection/Caribou
Reference	Manitoba Conservation Package – TAC Comments
Source	Wildlife Branch
Question	MCWS/MH-TAC-001b

Question:

The proposed transmission line right-of-way through the known wintering area of the Wabowden boreal woodland caribou herd between PTH 373 and Highway 6 should be relocated. Provide an assessment for an alternate route north of the railway tracks at this location.

Response:

1. The proposed route location, in the vicinity of Wabowden, reflects Manitoba Hydro's efforts to balance a number of related concerns in the area and follows from analysis of a number of routing alternatives.
2. Key routing considerations included system security (physical separation from Bipoles I and II), avoidance/minimization of adverse effects on caribou and caribou habitat, and existing environmental disturbance (e.g., existing linear infrastructure).
3. Consultation respecting the proposed route identified concerns on the part of both the community of Wabowden and the Manitoba Association of Mining Inc. To the extent that these concerns involved potential for land use conflicts with development of the transmission line, the issue was considered to be manageable. However, the Mining Association Manitoba Inc. position extended to concern that the EMF effectsof transmission line operations might compromise current and possible future exploration techniques, and could lead to lost resource development opportunities. Manitoba Hydro's review of the mining exploration concern with its EMF experts was not conclusive as to extent of possible interference with geophysical exploration. However mitigation measures were offered to the industry to minimize any possible interference.

Based on previous review of alternative routes in the Wabowden area, the results of "routing the line north of the railway tracks at this location" (Manitoba Conservation, per Elise Dagdick 10 May 2012) would include the following:

a. Increased separation between Bipole III and the existing Bipoles I and II, and a corresponding incremental improvement in system security.
b. Decreased fragmentation of woodland caribou habitat, reduced potential for adverse effects on woodland caribou, and reduced uncertainty respecting the effectiveness of currently proposed mitigation and monitoring programs.
c. Increased risk of interference to future mining exploration surveying activity.

4. The extent of such effects would be subject to the specifics of a more precise assessment requiring further details and research.
5. While moving the line north of the railway tracks may seem like an option to deal with woodland caribou issues, all routing decisions are based on a reasonable balance of multiple criteria and interests. Additional evaluation and consultation may be required for any routing changes.

Date	May 16th 2012
Subject	Route Selection/WMA
Reference	Manitoba Conservation Package – Wildlife Branch
Source	Wildlife Branch
Question	MCWS/MH-TAC-001c

Question:

The route should be relocated at least 800 meters from the boundaries of the Langruth and Whitemud Watershed Wildlife Management Areas. Provide an assessment of the new location.

Response:

Manitoba Hydro recognizes the opportunity for mitigating potential Project effects through avoidance of constraints at the routing stage of project planning. As a result WMAs (Wildlife Management Areas) that could be avoided were avoided during the routing stage of the Project, including the Langruth and Whitemud Watershed WMAs.

The most optimal route was chosen in the area, based on the identified criteria and information available, including consultation. For a more detailed description of the route selection process in the area see EIS Chapter 7 and the associated appendices. A brief route review specific to the WMAs in question is presented below.

Langruth WMA –

- The Final Preferred Route (FPR) is located east of the road allowance that borders the Langruth WMA so it will not be directly affecting the WMA;
- The north/south road allowance has been previously cleared adjacent to the WMA;
- The FPR parallels the road allowance adjacent to the Langruth WMA for 2 miles (~3200 m) of which ~2155 m are already cleared and farmed;
- Approximately 1045 m of right-of-way (ROW) requires clearing of intermittent forest/shrub cover;

- Using/paralleling linear features (as is proposed), where possible, is usually considered a mitigative strategy to minimize fragmentation effects;
- A routing criteria used for agricultural lands is to minimize land management unit fragmentation to minimize interference to agricultural operations. Where possible, the route was therefore placed along property lines; i.e. road allowance versus on the ½ mile line;
- Offsetting the FPR 800 meters will;
    - place it on the ½ mile line;
    - require clearing of approximately 620 m of contiguous forest stands and removal of a 590 m long shelterbelt;
    - directly affect two active yard sites;
    - avoiding the yard sites will require an additional mile of line and two additional angle structures (increased cost); and,
    - upon further review of bird VEC habitat models shifting the FPR alignment east would affect or encroach upon potential habitat for the following bird VEC's: Pileated Woodpecker, Red-headed Woodpecker, Ruffed Grouse, and Sprague's Pipit.

Whitemud Watershed WMA (2 parcels) –

- Routing of the FPR across the Assiniboine River and past the Whitemud Watershed WMA parcels is driven by land use (e.g. irrigation and irrigation potential), housing (active yard sites), land ownership (e.g. First Nation lands) and land use (e.g. WMAs);
- The north/south segment of the FPR north of the Assiniboine River is located just east of the ½ mile line and thereby avoids the western WMA parcel;
- Land ownership, active yard sites and pivot irrigation systems and efforts to protect dry upland sand prairie sites, limit routing through the area generally, and specifically through the Whitemud Watershed WMA parcels;
- there are no realistic options to moving the line 800 m in either direction;
- the existing route is optimal at avoiding nearby local and important bird VEC habitats; whereas
- a shift in the FPR alignment in this area would increase the potential affects or encroach upon potential habitat for the following bird VEC's: Baird's Sparrow, Bald Eagle,

Burrowing Owl, Golden-winged Warbler, Loggerhead Shrike, Pileated Woodpecker, Red-headed Woodpecker, Ruffed Grouse, Short-eared Owl, and Sprague's Pipit.

The siting of the Bipole III Final Preferred Route (FPR) is the result of a comprehensive site Selection and Environmental Assessment process involving consultation with government, municipal leaders, stakeholders, First Nation leadership and members, the Manitoba Metis Federation, Aboriginal Traditional Knowledge studies, available constraints data gathering, multi-disciplinary biophysical and socio-economic studies and technical (including cost) considerations. Twenty-eight evaluation criteria were used in the process (see EIS Chapter 7 and supporting appendix 7a). Manitoba Hydro recognizes the opportunity for mitigating potential Project effects through avoidance of constraints at the routing stage of project planning. As a result the WMAs that could be avoided were avoided during the routing stage of the Project, including the Langruth and Whitemud Watershed WMAs. Of note is that adjusting a segment of a route (section between two angle towers) for a specific location may have significant effects on other biophysical or socio-economic values associated with that segment and potentially portions of adjoining segments, as well as technical and cost implications. Because of infrastructure scale, routing challenges are significantly different between a single pole distribution line that is normally placed within road allowances versus the proposed Bipole III 500 kV Direct Current Transmission line with steel towers requiring a 66 meter wide right-of-way.

Based on comments received by Manitoba Hydro from Manitoba Conservation & Water Stewardship suggesting separation between WMAs and the Bipole III ROW during a review of the Preliminary Preferred Route (PPR), a review was undertaken to examine if improvements to routing could be made. When considering all evaluation criteria for routing purposes, benefits of route adjustments adjacent to the Langruth and Whitemud WMAs were not apparent. On the contrary, challenges arise with respect to housing, land ownership, land use and technical considerations (see below). Manitoba Hydro is also not aware of any policy or guideline directive stipulating buffer requirements between WMA boundaries and transmission line ROWs whereas developments such as grazing, forage crop production, mining, forestry, hunting, trapping, etc. are acceptable practices in some WMAs.

Date	May 16th 2012
Subject	Access/Transmission Line Construction
Reference	Manitoba Conservation Package – TAC Comments
Source	Lands Branch
Question	MCWS/MH-TAC-002a

Question:

More information is required with respect to access detours that will be needed outside the 66 metre right-of-way at locations where terrain is not favourable to facilitate vehicular travel within the right-of-way.

Response:

Access detours (by-passes) are generally required when there are steep rock formations and /or other obstructions on the right-of-way (ROW) that will not safely allow trucks and/or equipment to pass. At these locations, only when the necessary approvals are in place, our clearing contractor will cut an approximate 15 to 20 m wide by-pass outside the ROW. It will be of minimal length that will allow passage past the obstruction. However it must be built so that it will facilitate the access requirements of the entire project and be able to allow safe passage of trucks/trailers carrying transmission tower sections and other transmission line components or construction related material and equipment.

It is generally not possible to determine these locations in advance by a desktop study. However, preliminary analysis of LIDAR data will be used to initially locate areas most likely requiring an excursion outside the ROW. This information will be provided to Manitoba Conservation (MCWS) for initial review prior to commencement of construction. As the clearing operations advance to the point that a by-pass is required, Manitoba Hydro (MH) field personnel will do an “on-foot” site reconnaissance to determine the best location, taking care to avoid any environmentally sensitive sites. MH will obtain GPS coordinates of the proposed route and then review with MCWS and seek approval to proceed.

Date	May 16th 2012
Subject	Transmission Line Construction / Hunting/Harvesting
Reference	Manitoba Conservation Package – TAC Comments
Source	Lands Branch
Question	MCWS/MH-TAC-002b

Question:

Confirm that hunting by project staff will be prohibited.

Response:

Manitoba Hydro confirms that during the construction phase of the project, hunting will be prohibited by project staff. This will be achieved by restrictions against possession of firearms by those workers at construction sites and those residing in associated camps.

Date	May 16th 2012
Subject	Route Selection/Wolverine
Reference	Manitoba Conservation Package – TAC Comments
Source	Lands Branch
Question	MCWS/MH-TAC-002c

Question:

On page, 8-108, the EIS states that clearing in wolverine range will occur during winter when dens are non-active. Female wolverine usually den up in February and have young during the month of March. Discuss potential impacts and mitigation measures in relation to clearing and wolverine denning during the winter months.

Response:

The wolverine denning season is broadly described as ranging between February and April, with reproductive use of the den occurring from late February to early March (Harris and Ogan, 1997). More specifically, denning occurs in areas where snow is one meter in depth or greater, providing insulation for survival during the winter (Magoun and Copeland, 1998). Although requirements for wolverine denning sites are very specific, they are not described as limiting. Snow accumulation is the main attribute as wolverine tunnel in deep snow that from naturally around rock formations or fallen trees. Sites where wolverine dens have been recorded in the literature in a range of locations, include ravines where snow accumulates (Pulliainen 1968, Bjärvall 1982, Serebryakov 1984, Magoun 1985), snow-covered rocky areas (Haglund 1966, Myrberget 1968, Pulliainen 1968, Copeland 1996, Lee and Niptanatiak 1996), snow-covered fallen trees (Pulliainen 1968, Zyryanov 1989, Copeland 1996, Inman etal. 2007,Pulliainen 1968, Landa et al. 1998) and taiga peat bogs or conifer forests with rocky areas and fallen trees (Pulliainen 1968). Wolverine are also known to construct two types of reproductive dens; natal dens(where young are born) and; maternal dens where female wolverine may relocate kits if to a more suitable site (Magoun and Copeland 1998).

Natural den abandonment is coincided with periods when daily temperatures consistently rise above freezing in the spring (Magoun and Copeland, 1998). As described in the Bipole III Mammals Technical Report (2011), local human disturbance (via foot traffic or snowmobile) is not implicated in natal den abandonment, but has been implicated in the movement of kits from maternal dens and rendezvous sites (Magoun and Copeland, 1998). Over-snow vehicles and forms of winter recreation have been cited to potentially displace wolverines from potential denning habitat (Copeland, 1996).

Wolverines are documented to have extremely large home ranges, ranging from 50 to 400 km^2 for females and 230 to 1580 km^2 for males (COSEWIC, 2003). A review of the literature suggests that wolverine avoid areas containing regular disturbance; Dawson et al (2010) found that the average road density within a wolverine home range was between 0.33 to 0.43 km/km^2. As an example, Dawson *et al*. reported one denning site was located 5 km from the nearest lightly used mining road, 7 km from the nearest forestry road and cut block, and 10 km from the nearest active logging operation (Dawson *et al*., 2010). These results are supported by other authors, such as May 2007, which found that the den sites were located at an average distance of 7,461 and 3,058 meters from the nearest public and private road (respectively). These studies highlight that wolverine shift their use within their home range and surrounding area to avoid areas containing human disturbance

Based on the literature described above, it is highly unlikely that wolverine will be present within the FPR construction areas where pre-existing anthropogenic features occur. Additionally, with some construction beginning prior to potential denning dates, disturbance from the construction activities may deter wolverine interest in denning near the FPR. It has been documented that wolverine will leave their dens with their young if they feel threatened or detect human presence with the denning area (Magoun and Copeland, 1998). Magoun and Copeland (1998) suggested that in the case of natal dens, wolverines will not move their kits from the den unless it is disturbed; however females will quickly move their kits from maternal dens within hours of detecting researchers in the general vicinity of dens. Due to their extremely wide home range and the low density of wolverine reported for the Study Area (Bipole III Mammals Technical Report, 2011),it is anticipated that disturbance caused through the construction of the Bipole III transmission line will have minimal to no effect on wolverine populations.

No specific wolverine denning sites have been identified to date within the Bipole III Study Area, thus mitigation measures for this species is dependent on pre-construction site inspection. Physical descriptions of wolverine tracks will be provided to site inspectors for monitoring of construction areas for current wolverine activity that may indicate natal or maternal denning sites. If dens or snow tunnels are found, adaptive management and the appropriate response described through the *Forest Management Guidelines for Terrestrial Buffers* (2010) will be applied The *Forest Management Guidelines for Terrestrial Buffers* outlines that upon discovery, all large mammal dens should be buffered by a width of 50 meters as a measure of protecting the animal from harm or disturbance by development. The *Forest Management Guidelines for Terrestrial Buffers* (2010) also outlines that because wolverine dens are only used during the winter months, potential denning sites are difficult to locate during pre-construction surveys as snow accumulation is the main criteria for denning.

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Date	May 16th 2012
Subject	Caribou
Reference	Manitoba Conservation Package – TAC Comments
Source	Lands Branch
Question	MCWS/MH-TAC-002d

Question:

Page 8-93, the potential residual impacts of access with respect to caribou harvest may have been underestimated in relation to the Cape Churchill coastal herd. Clarification is required regarding what kind of use will be minimized and how use will be minimized.

Response:

Manitoba Hydro will manage access during construction through gating and restriction of travel to Manitoba Hydro and contractor staff. All workcamp residents will be prohibited from having firearms in the workcamp and controlled construction area.

Manitoba Hydro's assessment was based on a review of historical range occupation of both the Cape Churchill and Pen Island caribou populations as well as reports of major caribou harvest events associated with periodic migration. Both the Cape Churchill and Pen Island populations have experienced significant population growth since the mid 1980's. Based on information from Manitoba Conservation and local communities, large harvests of caribou from either or both the Cape Churchill and Pen Island caribou herds (> 100 animals) have occurred in recent years. These periodic high rates of harvest are associated with existing roads and infrastructure in the Gillam-Keewatinow area. It is identified in the EIS that a residual effect of the project includes a potential increased harvest on animals. However, as the migration of animals from these herds to the Project Study Area is periodic, both between years and in terms of time in any one year), it is expected that the residual effect over time will not be significant given current estimated population numbers for both herds.

Manitoba Hydro does not have management authority for caribou but is prepared to continue working with Manitoba Conservation and Water Stewardship (MCWS), and with the local First Nation communities (through their Resource Management Boards) on management and stewardship initiatives to better conserve and manage these caribou herds and reduce the potential for overharvest and wastage of caribou while maintaining rights-based hunting opportunities. Monitoring existing satellite collared animals during construction will be continued for this purpose.If necessary, additional actions in cooperation with MCWS and the local First Nations will be undertaken if it is determined that the harvest levels in the Gillam-Keewatinow area threaten the continued health of either of these caribou herds.

Date	May 16th 2012
Subject	Caribou
Reference	Manitoba Conservation Package – TAC Comments
Source	Lands Branch
Question	MCWS/MH-TAC-002e

Question:

P. 8-87 – Provide more information on Coastal Caribou species as compared to woodland caribou.

Response:

Comparisons of boreal woodland caribou range were conducted with coastal populations to better compare these two ecotypes of *Rangifer tarandus caribou.* Total annual Minimum Convex Polygons (MCP) for the Wabowden, Wimapedi-Wapisu, and Harding Lake boreal woodland caribou ranges, and total summer MCPs for the Gillam-area "summer resident" Pen Island range were calculated and average area for each range was computed. For all ranges, only those animals for which a minimum of one year of telemetry data had been collected were included. Consequently, range average MCPs were based on 21 animals in Wadowden, 32 animals in Wimapedi-Wapisu, 18 animals in Harding Lake, and six Pen Island animals identified as Gillam-area summer residents.

The average MCP areas are illustrated in Figure 1. All boreal caribou ranges were observed to have significantly smaller annual range MCP areas than the summer MCP area exhibited by the Pen Island summer residents. The Pen Island average summer MCP occupied an area of approximately 4,426 km^2. Wimapedi-Wapisu, the largest boreal range, encompassed approximately 2,279 km^2, or 47% of the Pen Island

summer MCP. The smallest boreal range, Harding Lake, occupied only 798 km^2 or 18% of the Pen Island summer MCP.

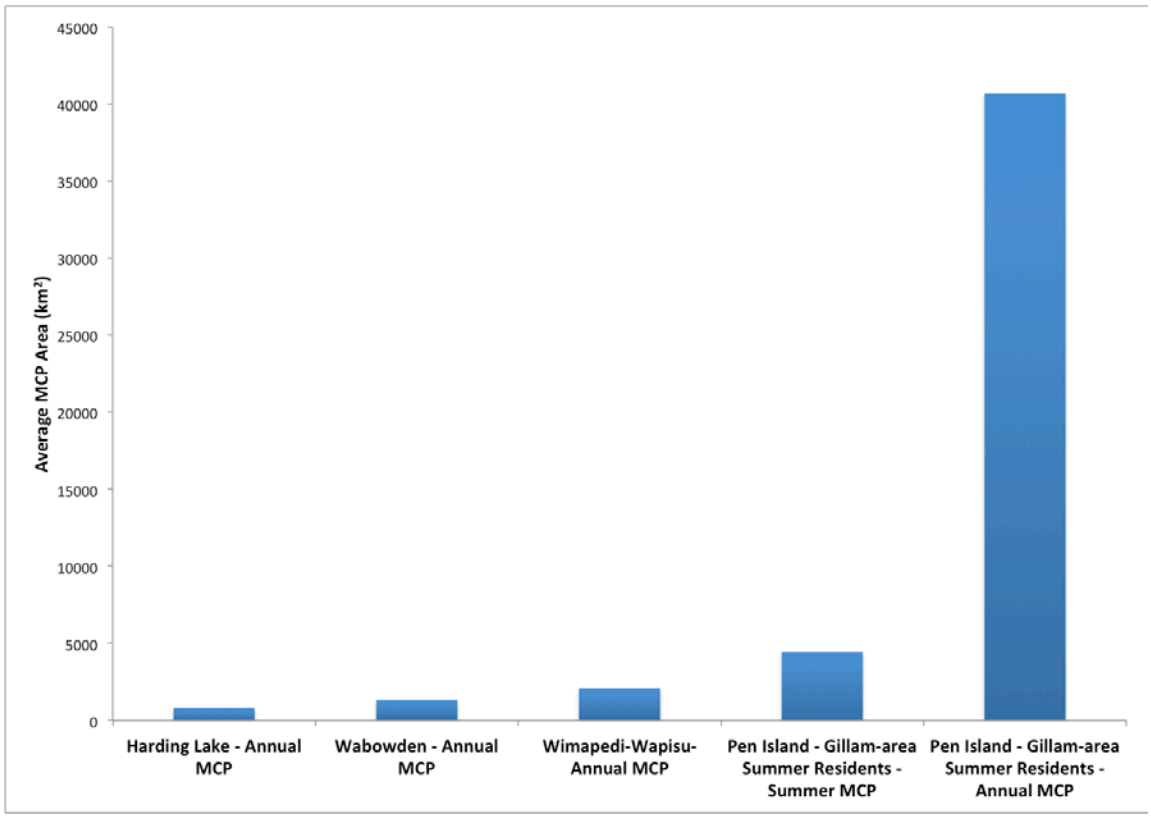

Figure 1. Comparisons of annual range sizes among boreal woodland caribou populations and summer resident PenIsland caribou

Coastal Caribou

Of the two coastal populations, the Cape Churchill herd is known to calve in major concentrations along Hudson Bay between Cape Churchill and the Owl River. In more recent years animals from the Cape Churchill herd are known to make periodic migrations south into the Project Study Area, particularity into the Conawapa and Keeyask areas (pers. com. D. Hedman, 2010.) which has been verified from recent telemetry studies that commenced in 2010. Based on aerial reconnaissance flights conducted by Manitoba Conservation in the mid to late 1970's the population at that time was believed to number in the hundreds, and this was supported by anecdotal

information provided to Manitoba Conservation by long-term Churchill residents who trapped and traveled in the area. At that time the majority of animals appeared to confine their annual movements to areas within what is now the Churchill Wildlife Management Area and Wapusk National Park (which at that time was in fact the Cape Churchill Wildlife Management Area) with groups of animals occasionally venturing further west. The herd's numbers increased quite rapidly through the 1980's and 1990's based on additional data from aerial reconnaissance conducted by Manitoba Conservation. In the mid-1980s, the Cape Churchill population was estimated at 1,700 animals in the area between Cape Churchill and Nelson River (Elliot, 1986). Since the establishment of Wapusk National Park in 1996, Parks Canada conducted an "uncontrolled" photographic survey resulting in a count approximately 3,000 animals in 2007 (Parks Canada 2007). Manitoba Conservation now estimates the Cape Churchill population at approximately 3,500 – 5,000 animals (pers. com. D. Hedman, 2010.).

The results of recent satellite collaring and tracking conducted from 2010 to present illustrate strong fidelity in calving, post calving congregations and southerly migrations to areas near the northern portion of the Project Study Area. During the course of this collaring, the Cape Churchill animals migrated well into the Project Study Area during December of 2010, in areas near the Conawapa access road. A major harvest of animals was documented along and near the access road which coincided with the results of collar data acquired for this period. Aerial survey and satellite telemetry data also demonstrated significant annual variation in winter presence throughout the northern portion of the Project Study Area by Cape Churchill animals. Aerial surveys conducted in 2009 to determine the possible presence of resident winter boreal type caribou yielded little sign of caribou in the area compared to 2010 when a significant migration of Cape Churchill caribou inundated the Gilliam area. During that time, mortality to hunting was estimated at approximately 100 caribou (D. Hedman pers. com. Manitoba Conservation, 2011). Aerial surveys conducted by Manitoba Hydro Major Projects and Licensing (MPAL) to further assess the presence or absence of wintering sedentary caribou and potential boreal ecotypes yielded no sign of caribou in the areas

previously surveyed. Therefore there is little evidence of local year round resident caribou near the Bipole III Project Study Area.

4.9.2 Pen Island Coastal Caribou Herd

The existence of the Pen Island coastal caribou herd was a relatively discrete caribou population. This herd, was relatively unknown until the 1970's and its range outlined in the late 1980's/early 1990's. Random aerial surveys suggest this herd may have been subject to significant, but yet to be understood, changes in terms of numbers and range use.

There is relatively little quantitative information available on the historic number, distribution and behavior of caribou for the area occupied by the Pen Island caribou herd. Historical records from the 1700's record the presence of caribou along the coast of Hudson Bay from the Nelson River in Manitoba to the Niskibi River in northwestern Ontario (and even further east to Cape Henrietta) and that caribou were regularly harvested at varying distances inland from the coast by First Nations people during the winter months. These records further suggest that by the late 1700's the caribou in the area were reduced to a few migratory bands, attributing this to heavy hunting to provide meat for sustenance and for the Hudson Bay Company's Fur Posts (Abraham and Thompson, 1996). Hudson Bay Company records report that that the numbers of caribou along the coast started to increase again in the late 1800's (Magoun et al., 2004) but were still limited to a few migratory bands in the early 1900's (Abraham and Thompson, 1996).

It was not until the 1950's and 1960's that that a series of winter surveys were flown along the Hudson Bay coast and south, the results showing the coastal zone being virtually unoccupied by caribou but were being found 80 to 160 kms inland. It was not until the 1970's that the migration of caribou between the coastal area and inland forested habitats of Manitoba and Ontario was confirmed and it was named the Pen Island caribou herd (due to the proximity of the Pen Islands to what was then the main area of calving activity). It has now been shown that that the caribou used the coastal

area in the summer months (April – July) for pre-calving, calving and post-calving activities and moved to inland areas from late summer to the following spring (August to March) for breeding and wintering activities (Abraham and Thompson, 1996).

Results of photographic counts of caribou from York Factory, Manitoba to Fort Severn, Ontario showed an overall increase in population but with annual fluctuations in population counts as follows: 2,300 in July 1979, 4,666 in July 1986, 7,424 in July 1987, 3,190 in July, 1988, 5,113 in July 1993, and 10,798 in 1994. Between 1987 and 1989 the main calving area was located on the Hudson Bay coast between the Kettle River (Manitoba) and the Niskibi River (Ontario). Winter surveys combined with radio-collared monitoring showed the use of winter range in 1987/88, 1988/89 and 1989/90 varied substantially with the animals showing no preference for forest types (Abraham and Thompson, 1996).

Unfortunately there have been no new caribou studies and few “targeted” caribou surveys done by either Manitoba or Ontario along the Hudson Bay coast between York Factory and Fort Severn since the mid-1990’s and those that have been done raise questions regarding the current status and dynamics of the Pen Island herd. For example surveys done between 1997 and 2000 showed that the large summer coastal calving and post-calving aggregations observed between the Kettle and Niskibi Rivers in the late 1980’s/early 1990’s had largely disappeared but at the same time new aggregations, though smaller, were beginning to appear along the coast from Fort Severn to Peawanuck, Ontario and it appeared winter populations east of the Severn River also appeared to increase. Incidental observations made while conducting other wildlife surveys along the coast in the early 2000’s showed much the same (Magoun et al., 2004).

Since before the 1970’s caribou were routinely seen and harvested by First Nations people from Shamattawa to God’s Lake in the fall and winter months and it is logical to assume these were Pen Island animals. In the winters of 1991/92 and 1993/94 large numbers of caribou also believed to be from the Pen Island herd were observed to

venture more inland than usual to areas west and south of Gillam (Thompson, 1994). And since that time,, the Pen Island caribou have been observed to make periodic movements into the Project Study Area, making them more available to First Nations (and a limited number of recreational hunters) in the Gillam area.

Based on the current satellite tracking data and the results of Aboriginal Traditional Knowledge, there is confirmation of caribou occupying areas near the Project Study Area and in proximity to existing and proposed Manitoba Hydro infrastructure in the Lower Nelson River area including the Bipole III FPR.

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Personal Communication:

Hedman, D. 2010. Regional Wildlife Manager, Manitoba Conservation, Thompson, Manitoba and Vice-Chairman, Beverly and Qamanirjuaq Caribou Management Board.

Date	May 16th 2012
Subject	Caribou/Monitoring
Reference	Manitoba Conservation Package – TAC Comments
Source	Lands Branch
Question	MCWS/MH-TAC-002f

Question:

Page 8-101, Summary of Residual Effects on Boreal Woodland Caribou, paragraph 8 – is Manitoba Hydro planning to develop range management plans for the Wabowden, Bog, and/or Reed Lake ranges? Wildlife is regulated under authority of the Province and Manitoba Conservation and Water Stewardship (MCWS) is responsible for developing range management plans.

Response:

Manitoba Hydro is not planning to develop management plans for the above ranges. The referenced paragraph (below) was provided to indicate that Manitoba Conservation is the management authority and has a large role in sustaining local populations through its on-going management and enforcement activities. Manitoba's Conservation and Recovery Strategy for Boreal Woodland Caribou states "All land-users on caribou ranges in Manitoba, including government departments and crown corporations, share responsibility for support and commitment to the management and recovery of boreal woodland caribou in Manitoba". Manitoba Hydro will continue to review mitigation and monitoring activities related to boreal woodland caribou with Manitoba Conservation in order to assist it in achieving its recovery goals for boreal woodland caribou. The referenced paragraph below identifies that integrated management solutions will be important, for which Manitoba Conservation will be the regulatory authority.

"Integrated management solutions involving Manitoba Conservation will also be important in sustaining these local populations through enforcement of regulations protecting boreal

woodland caribou from hunting, access management and the regulation of other resource use activities that may increase the cumulative effects." (Bipole III EIS p8-101.)

Date	May 16th 2012
Subject	Route Selection/ASI
Reference	Manitoba Conservation Package – TAC Comments
Source	Lands Branch
Question	MCWS/MH-TAC-002g

Question:

Page 6-146, Table 6.3-6, Partridge Crop Hill Area of Special Interest (ASI), south of Nelson House, is within the Project Study area and should be included in this table. Does the omission of this ASI change the assessment of the project's impacts on ASIs?

Response:

The Partridge Crop Hill ASI has been inadvertently omitted from Table 6.3-6. It is; however, included in the corresponding maps "Protected and Designated Lands", series 6-2800, specifically maps 02 and 03. The Final Preferred Route's closest point to Partridge Crop Hill is approximately 44 km to the southeast. As a result there will be no Project effects on the Partridge Crop Hill ASI, and the omission of this ASI from Table 6.3-6 does not change the assessment of the Project's impacts on ASIs as a whole.

Date	May 16th 2012
Subject	Caribou/Monitoring
Reference	Manitoba Conservation Package – TAC Comments
Source	Lands Branch
Question	MCWS/MH-TAC-002h

Question:

The EIS states that existing collars from the Cape Churchill and Pen Island ranges will be monitored during construction. Does this involve supporting the present Conservation and Water Stewardship/Resource Management Board project that is now in progress?

Response:

Manitoba Hydro has indicated that it will monitor the above mentioned herds for tracking their movements in and around the Bipole III study area. As the construction schedule will be 5 years in duration in the Keewatinoow area MH may need to supplement the existing collaring program as it reaches the end of its useful life in several years time. The number and type of collars required to accomplish Bipole III monitoring objectives may not be as extensive as the current deployment supporting caribou research in the area. Manitoba Hydro will review the biophysical monitoring plan with Manitoba Conservation including the NE Region in the near future, at which time caribou monitoring in the area can be discussed.

Date	May 16th 2012
Subject	Habitat/Mammals
Reference	Manitoba Conservation Package – TAC Comments
Source	Lands Branch
Question	MCWS/MH-TAC-002i

Question:

Page 8-111 of the EIS states that mapping of marten habitat in the Bipole III Mammals Technical Report indicates a small amount of marten habitat is anticipated to overlap existing site access roads set to be used for the Project. This is incorrect. There is a strong potential for marten along the entire corridor within the Boreal Forest Region. What are the implications to the EIS? How was habitat for Moose, Caribou, Marten, and Beaver determined?

Response:

The EIS states that American marten habitat occurs regularly along the transmission line right-of-way. For the purpose of evaluating the alternate routes and assessing the Final Preferred Route (FPR), habitat models were developed for VEC species including American marten. The American marten model used a combination of land age and cover-types derived from the project habitat data (LCCEB – see below summary). Specifically, the model was intended to identify high quality habitat based on the known habitat requirements for this species. The model identifies coniferous forests and mixed wood forests equal to or greater than 60 years of age as being high quality habitat. These parameters are reflective of old growth mixed wood and coniferous forests of which marten are known to prefer. It is recognized that marten can and will be found in all habitat types, however evaluating the amount of predicted high quality habitat provided a tool in evaluating the amount of high quality habitat being affected by alternative routes, and assessing the amount of habitat intersected by the FPR based on the model.

There are no implications to the predicted residual effects outlined in the EIS as these relate to marten occurrence in all habitat along the FPR.

High quality habitat for other VEC species was defined as follows:

Beaver Model:

The beaver model used a combination of land age and covertype. A land age of broadleaf and mixed wood forests between 5 and 40 years were chosen to allow for tree sizes large enough to be used for browse and building materials. In addition, treed wetland and shrub covertypes of any age were included. Finally, these covertypes were only included if they were within 100 m from a waterbody 500,000 m^2 or smaller.

Moose Model:

The moose model included all tall shrubs in the Mid-boreal Upland and Aspen Parkland Ecoregions as well as all forest stands and tall shrubs between 10 and 60 years of age for the rest of the Project Study Area to allow for an adequate amount of time for forest regeneration which is considered quality moose browse.

Caribou Model

Models were developed for caribou calving and caribou wintering areas by characterizing land cover category area and habitat patch metrics for data associated with known calving locations based on real time satellite telemetry collars on female caribou. The details of coarse scale modeling are provided in the Caribou Technical Report.

Background to the Land Cover Classification Enhanced for Bipole III (LCCEB)

For the purpose of assessing alternate routes and the Final Preferred Route (FPR) landscape habitat models were developed using the Land Cover Classification Enhanced for Bipole III (LCCEB). It is based upon the Landcover Classification for Canada (LCC) developed by the Canadian Forest Service (Wulder and Nelson, 2003). The LCC layer is a national vector database mapping layer that has been harmonized across the major Federal Departments involved in land management or land change detection (Agriculture and Agri-Foods Canada - AAFC, Canadian Forest Service - CFS, and Canadian Centre for Remote Sensing (CCRS). Existing forest classifications and inventories are based primarily on aerial photography, whereas development of the LCC was done using remotely sensed imagery (Landsat data) as part of the Earth Observation for Sustainable Development of Forests (EOSD) program.

The enhanced version (LCCEB) includes the addition of wetland features, Manitoba forest harvest layers, and forest fire layers. This provides attribute data that defines the landform and soil conditions as well as fire and harvest records for the Project Study Area. The following list describes data layers contained in the LCCEB for habitat mapping purposes

1. A comprehensive fire layer including fire data obtained from Manitoba Land Initiative (MLI) and Manitoba Conservation. Data were collected between 1926 and 2010 and as such have variable spatial resolution and reporting scale.
2. A 1:1 million-scale Manitoba Wetlands layer identifying wetland information for the Province.
3. The Canadian Ecological Land Classification System, a 1:1 Million-scale national layer based on the National Stratification Working Group's Ecological Land Classification for Canada.
4. A combined layer that provides line-work for forest harvest areas in the Project Study Area. This layer combines harvest data provided by Lousiana-Pacific Inc., Tolko Industries Ltd., and Manitoba Conservation. Scale and reporting over time varies with the earliest records dating to the 1960's for softwood harvest. Scale is assumed to be equivalent to digitized line work from aerial photography (1:15,000)
5. A FMU layer providing boundaries for the LCCEB, obtained from the Manitoba FRI database.

Habitat models were developed for beaver, American marten, moose, and elk. Most queries were based on LCCEB covertypes and, in the case of beaver, attributes of a detailed water layer was also queried and incorporated. Each model query was run in ArcGIS (ESRI©, 2011) as part of a Structured Query Language (SQL) statement identifying habitat types of a particular VEC in the LCCEB. Source coding for each Valued Environmental Component (VEC) habitat model is described below. The query-based habitat models were mapped within the extent of the Project Study Area. Predicted **high-quality** habitat was identified along the FPR and the abundance of these habitats relative to the surrounding environment was quantified.

For all models, the habitat variables used to predict high quality habitat were based on literature. The models are habitat based only and it is recognized that the species being modeled for will be found throughout the area in different habitat types at different densities.

The models are not intended to predict occurrence, only habitat for assessment purposes. Aerial track surveys were conducted by the “Alaskan Trackers” using fixed wing Super Cub aircraft to provide additional information along the FPR. Marten track concentrations were found in association with modeled high quality habitat as well as in areas of lower habitat. Marten occurrence based on track surveys illustrated both areas of concentrations and areas of no occurrence.

Date	May 16th 2012
Subject	ATk/Process
Reference	Manitoba Conservation Package – TAC Comments
Source	Lands Branch
Question	MCWS/MH-TAC-002j

Question:

Are the locations of culturally and environmentally sensitive sites identified in the aboriginal traditional knowledge workshops and reports available to the Province for review?

Response:

Participants in the nineteen communities that participated in the Manitoba Hydro ATK workshops completed a consent form that indicated that the purpose of the project is to assist Manitoba Hydro in the Environmental Assessment process for the Bipole III Transmission Project. Since the interviewees only agreed to sharing the information with Manitoba Hydro, permission from the individual workshop participants would have to be obtained to provide the spatial data from the aboriginal traditional knowledge (ATK) workshops. The process of obtaining consent would be difficult as some of the participants asked to remain anonymous. For the communities that conducted their own ATK studies, the community would have to be contacted to request permission to share the information. Some of the communities that conducted their own studies did not provide Manitoba Hydro with the GIS data to accompany their maps.

Date	May 16th 2012
Subject	Route Selection/WMA
Reference	Manitoba Conservation Package – TAC Comments
Source	Sustainable Policy Branch
Question	MCWS/MH-TAC-003a

Question:

The Protected Areas Initiative (PAI) prefers the transmission line not bisect the contiguous blocks of undisturbed Crown land parcels which provide connectivity between the Westlake Wildlife Management Area (WMA) and the Alonsa WMA, and along the west side of Lake Winnipegosis and Lake Manitoba. Discuss the options and provide an assessment of alternative routing in this area.

Response:

While Manitoba Hydro recognizes the preference of PAI in having Bipole III route not bisect Crown land parcels, the siting of the Bipole III Final Preferred Route (FPR) is the result of a comprehensive site Selection and Environmental Assessment process involving consultation with government, municipal leaders, stakeholders, First Nation leadership and members, the Manitoba Metis Federation, Aboriginal Traditional Knowledge studies, all available constraints data gathering, multi-disciplinary biophysical and socio-economic studies and technical (including cost) considerations. The process included looking at alternative routes concerning the region in question. Twenty-eight evaluation criteria were used in the process (see EIS Chapter 7 and supporting appendix 7a). Manitoba Hydro recognizes the fact that the greatest opportunity for mitigating potential Project effects is through constraint avoidance at the routing stage of Project planning. As a result all larger blocks of crown lands (e.g. WMAs, community pastures) that could be avoided were avoided during the routing stage of the Project. Of note is that adjusting a portion of the route for a specific value may have significant effects on other biophysical or socio-economic values associated with that route section and

potentially portions of adjoining sections, as well as technical and cost implications. In areas of private lands Manitoba Hydro is also sensitive to existing land use practices and seeks to minimize Project effects on them while considering all other values. Alternative routing was reviewed extensively in the SSEA process. The SSEA process showed a clear preference from numerous perspectives in this area for the route that was chosen. For more details concerning the route selection process and influences, please see the Bipole III EIS Chapter 7, Appendix 7a, Table 7A-1, Section 8.

Following construction there is very little activity associated with a transmission line. Visual inspections are conducted once or twice annually by air or from the ground. Vegetation management cycles are dependent on the rate of growth of tall growing species on the ROW. These species may be restricted in areas of livestock grazing which is a prominent land use practice in this region.

West Side of Lake Winnipegosis and Lake Manitoba -

Following the same evaluation and review process discussed above, all original alternative route options were assessed in the same fashion. The FPR was identified as the best alternative option based on:

- Least biophysical and socio-economic effects based on specialist evaluations;
- The consultation process clearly indicated a routing preference for route B (the FPR). This perspective was supported by municipal leaders and landowners. They further recommended to not impact private lands but to take full advantage of Crown lands as routing opportunities, including community pastures and WMAs, given compatible land uses;
- Much of the land along the FPR is under compatible land uses; i.e. native and developed pasture, native and tame forage crops;
    - A transmission line does not, or very minimally, interferes with livestock operations;
    - Clearing in areas of native pasture, the ROW may improve grazing conditions;
    - The transmission line is less of an impediment to farmers in this area where farming equipment is much smaller than in areas of cereal and row crops (e.g. more westerly option);

    - There is little to no interference along the FPR with aerial applicators;
    - There is considerably less concern over the spread of weeds from tower sites than in intensively farmed areas (e.g. more westerly option);
- The agricultural lands along the FPR are valued less than the intensively farmed lands further west that have better soils.
- Alternative routes further west were located on high quality soils/farm land.
- The FPR was also selected over alternative route C to avoid terrain features such as the Arden Ridge (PAI identified enduring feature) and the Spruce Woods sand habitat complex which harbour habitat for listed species such as the Loggerhead Shrike, Northern Prairie Skink & Skippers. Recommendations to avoid these areas came from the Manitoba Conservation, Western Region IRMT;
- The most western alternative route A was strongly opposed by Manitoba Conservation, Ducks Unlimited, the public and study specialists based on routing through the "pothole" region, potentially affecting connectivity between the Riding and Duck mountains, routing across the Duck and Porcupine Mountain Provincial Forests, affecting more prime agricultural land along with a myriad of biophysical and socio-economic values.

Connectivity between Westlake and Alonsa WMAs –

- The area including Westlake and Alonsa WMAs, and area in-between, consists of a mixture of hardwood (primarily aspen) woodland low ridges and wet grassland swales. Some of the land has been cleared for agricultural purposes;
- Land ownership is a mixture of private and Crown-owned lands where much of the latter is leased;
- Dominant land uses are ranching (primarily cattle), forage crop production along with some cereal crops. Natural grasslands that are typically wet in spring are also cut for hay;
- The FPR is located, at its' closest, 800 meters north of the Westlake WMA and well east of both the Westlake and Alonsa WMAs as its orientation in this area is northwest-southeast:
    - Approximately 4.3 km east of the south end of the Westlake WMA;
    - Approximately 7.4 km east of the north end of the Alonsa WMA;
- The current route selection does not cross any provincially protected lands in this area

Date	May 16th 2012
Subject	Route Selection/Community Pasture
Reference	Manitoba Conservation Package – TAC Comments
Source	Sustainable Policy Branch
Question	MCWS/MH-TAC-003b

Question:

The PAI (Protected Areas Initiative) prefers that the final preferred route provide a buffer of 1 mile from community pasture boundaries. Discuss the possibility of providing a 1 mile buffer in these locations.

Response:

The siting of the Bipole III Final Preferred Route (FPR) is the result of a comprehensive Site Selection and Environmental Assessment process involving consultation with government, municipal leaders, stakeholders, landowners, First Nation leadership and members, the Manitoba Metis Federation, Aboriginal Traditional Knowledge studies, all available constraints data gathering, multi-disciplinary biophysical and socio-economic studies and technical (including cost) considerations. Twenty-eight evaluation criteria were used in the process (see EIS Chapter 7 and supporting appendix 7a). Manitoba Hydro recognizes the fact that the greatest opportunity for mitigating potential Project effects is through avoidance at the routing stage of Project planning. As a result all larger blocks of crown lands (e.g. WMAs, community pastures) that could be avoided were avoided during the routing stage of the Project. No community pastures are directly affected by the Bipole III FPR alignment. Of note is that adjusting a portion of the route for a specific value may have significant effects on other biophysical or socio-economic values associated with that route section and potentially portions of adjoining sections, as well as technical and cost implications. In areas of private lands Manitoba Hydro is also sensitive to existing land use practices and private land values, and seeks to minimize Project effects on them while considering all other values.

In EA studies transmission lines generally are considered very low impact developments to the environment and compatible with ranching/grazing practices. Following construction there is very little activity associated with a transmission line. Visual inspections are conducted once or twice annually by air or from the ground. Vegetation management cycles are dependant on the rate of growth of tall growing species on the ROW. These species may be restricted in areas of livestock grazing which is a prominent land use practice in this region.

The request by PAI to avoid routing through community pastures was taken into consideration early in the process. Municipal and landowner suggestions during the consultation process strongly urged the study team to take advantage of community pasture lands for routing purposes due to the compatibility of a transmission line ROW and grazing land uses. As a mitigative strategy to address all parties, Manitoba Hydro's study team located the FPR ROW adjacent to the Lenswood, Alonsa and Langruth community pastures where it is located:

- Adjacent to road allowance so as not to fragment farm management units;
- On compatible land use lands (e.g. pasture) as much as possible to minimize obstruction on prime agricultural lands;
- To avoid active yard sites.

The Bipole III Transmission Project FPR is sited within one mile of the Lenswood, Alonsa and Langruth community pastures. Bipole FPR location, rationale and 1 mile buffer options are discussed below.

Lenswood CP -

- The FPR is located within 1 mile of the Lenswood CP for a distance of 3250 meters (approx. 2 miles);
- The FPR is located on the western side of a road allowance that also borders the CP for a distance of approximately 800 meters; it then gradually veers westerly and away from the road allowance and CP over a distance of 2450 meters, being 225 meters west of the CP boundary at its maximum;
- Off-setting the FPR in this area by 1 mile would affect active yard sites, or
- Increase line length by two (2) miles and add two (2) 90^0 angle structures, and
- Force the line onto better agricultural land;

- Routing changes would require new consultation with landowners, municipalities and other stakeholders for a route adjustment Manitoba Hydro does not believe is warranted.

Alonsa CP –

- Although not directly adjacent, the FPR is located within 1 mile of the Alonsa CP for a distance of 5370 meters (approx. 3.3 miles);
- FPR orientation in this area is southeast-northwest;
- FPR distance from the CP ranges from 200 to 1120 meters;
- Off-setting the FPR in this area would involve a major re-route for, at minimum, a section of line 12,250 meters long;
- Additional line length at minimum would be 4700 meters with an additional two (2) 90^0 angel towers;
- A potential re-route would require new consultation with landowners, municipalities and other stakeholders.

Langruth CP –

- the FPR is located within 1 mile of the Langruth CP for a distance of 4820 meters (approx. 3.0 miles);
- The FPR is located on the eastern side of a road allowance that also borders the CP;
- The FPR is located on compatible land use lands (pasture) immediately adjacent to the CP and ROW;
- Off-setting the FPR in this area would push it onto prime agricultural lands, would directly conflict with active yard sites and interfere with PTH 50;
- A 1 mile off-set from the Langruth CP is not possible.

Manitoba Hydro is not contemplating to re-route the FPR in vicinity of the above mentioned community pastures. Currently there are no policies or provincial guidelines requiring land buffers adjacent to community pastures that Manitoba Hydro is aware of.

Date	May 16th 2012
Subject	Transmission Design/Infrastructure
Reference	Manitoba Conservation Package – TAC Comments
Source	MIT
Question	MCWS/MH-TAC-004a

Question:

What is the impact to the other utilities at highway crossings?

Response:

Other utilities may be present at highway crossings (e.g. pipelines). Sufficient horizontal offsets and vertical clearances will be maintained to avoid any conflicts with any existing infrastructure. Manitoba Hydro ensures that clearance to grid meets or exceeds CSA (Canadian Standards Association) standards (*CSA C22.3 No. 1 – 10 Overhead Systems*), and further recognizes that NEB standards (*National Energy Board Pipeline Crossing Regulations, Part I, and National Energy Board Pipeline Crossing Regulations, Part II*) pertaining to clearances between electric transmission lines and pipeline infrastructure apply as well. Where required, crossing approvals will be secured prior to construction.

Date	May 16th 2012
Subject	Transmission Design/Route Selection
Reference	Manitoba Conservation Package – TAC Comments
Source	MIT
Question	MCWS/MH-TAC-004b

Question:

Is there room to span PTH 75 at the Red River? The river is very close to PTH 75 and the river bank is unstable.

Response:

The intent is to cross the Red River and Highway 75 without a need to erect a tower on the west (unstable) bank of Red River. One tower will be located west of Hwy 75 and the other east of Red River.

Date	May 16th 2012
Subject	Transmission Design/Route Selection
Reference	Manitoba Conservation Package – TAC Comments
Source	MIT
Question	MCWS/MH-TAC-004c

Question:

A portion of PTH 10, close to the eroded banks of the Red Deer River just south of the Red Deer River Provincial Park, may have to be relocated in the future due to further river bank erosion. The location of the tower structure near this area may need to be set back to accommodate future highway right-of-way relocation to the west.

Response:

Sufficient tower location setbacks will be provided to accommodate future highway relocation.

Date	May 16th 2012
Subject	Route Selection/Mining Aggregates
Reference	Manitoba Conservation Package – TAC Comments
Source	MIT
Question	MCWS/MH-TAC-004d

Question:

Quarry mineral withdrawal in Townships 22-1IW, 30-17W, 22-12W, 30-18W, 23-12W, 3l-19W, 25-13W, 32-20W, 26-13W, 33-21W, 30-18W, 33-25W, 32-20W, 44-25W, 49-25W, and 45-25W will be affected by the proposed Bipole III transmission line. The resources in these townships are required for future construction and maintenance projects and will be sterilized by the proposed Hydro lines, as mining is not permitted under the lines.

Response:

In selecting the final preferred route for Bipole III transmission line active quarry areas were considered and avoided to the degree possible within the context of the multiple criteria used in routing.

The areas indicated above are entire townships of 36 square miles each. The routing for Bipole III only requires a 66 m right-of-way in these areas and as such will not have an effect on quarry interests that are Township-wide. Manitoba Hydro has contacted MIT to set up a meeting to discuss specific occurrences and potential mitigation.

Throughout the Environmental Assessment Consultation Program (EACP), Regional Operations and the Transportation Systems Planning & Development Branch were notified of the upcoming consultation events and were offered a meeting if said parties were interested in the project. A total of four (4) letters were sent to each of the above mentioned departments throughout the EACP. No meetings were called to meet with any Manitoba Infrastructure and Transportation staff with regards to the Bipole III Project.

Where MIT can identify a potential for conflict in a deposit area, Hydro may consider slight modifications to routing and positioning of towers to minimize or avoid interference in accessing the resource. In general Manitoba Hydro is primarily concerned with protecting its infrastructure once built, but that does not preclude all activity on or near a right-of-way. Quarry development plans that ensure the safety of quarry equipment and workers and are compatible with the transmission line may be considered with certain restrictions.

Date	May 16th 2012
Subject	Spills/Releases/Protection (EPP)
Reference	Manitoba Conservation Package – TAC Comments
Source	Manitoba Conservation
Question	MCWS/MH-TAC-005a

Question:

Chapter 8 - page 362, indicates spills will be reported to the local Natural Resource Officer. Spills should be reported to the Environmental Emergency Response number (204) 944-4888 pursuant to federal and provincial spill reporting regulations.

Response:

Manitoba Hydro recognizes that spills must be reported to Manitoba Conservation in accordance with the Notice and Reporting regulation (MR 126/2010) under the *Environment Act*. Spills and accidents with dangerous goods must also be reported under the Environmental Accident Reporting regulation (MR 439/87) under the *Dangerous Goods and Transportation Act*. Manitoba Hydro is committed to compliance with these regulations, and will use the Environmental Emergency Response number to report spills of hazardous materials that are likely to have a significant adverse effect on the environment, or exceed reportable quantities as defined in the Environmental Accident Reporting regulation.

Date	May 16th 2012
Subject	Remediation/Protection (EPP)
Reference	Manitoba Conservation Package – TAC Comments
Source	Lands Branch
Question	MCWS/MH-TAC-005b

Question:

Draft Environmental Protection Plan (EPP) - Table 37. Manitoba Conservation and Water Stewardship must to approve all remedial action plans before remediation is started.

Response:

The Final Environmental Protection Plan - Table 37 will reflect that all Remedial Action Plan proposals will be forwarded to Manitoba Conservation and Water Stewardship pursuant to Information Bulletin No. 96-02E.

Date	May 16th 2012
Subject	Terrains and Soils/protection (EPP)
Reference	Manitoba Conservation Package – TAC Comments
Source	Manitoba Conservation
Question	MCWS/MH-TAC-005c

Question:

The remedial action plan submission guideline is missing from Appendix D of draft EPP.

Response:

Submission of Remedial Action Plans Remedial Action Plan Information Bulletin 96-02E will be added to Section 2.1 of Appendix D of Final Environmental Protection Plan.

Date	May 16th 2012
Subject	Forestry/Route Selection
Reference	Manitoba Conservation Package – TAC Comments
Source	Forestry Branch
Question	MCWS/MH-TAC-005d

Question:

The right-of-way should be located away from the Forestry Branch Permanent Sample Plots (PSP) by at least 200 metres. If this buffer cannot be achieved then Manitoba Hydro should re-establish two new PSPs for each PSP physically damaged or damaged by the right-of-way being closer than 200 meters.

Response:

The Bipole III Final Preferred Route (FPR) has been assessed against known PSP locations provided to Manitoba Hydro by the provincial Forestry Branch. Based on the data provided only one PSP has been identified as being 239 meters from the FPR centre line. This buffer is well in excess of the 100 meters recommended by Forestry Branch in its document "Forest Management Guidelines for Terrestrial Buffers" (2010). If Forestry Branch will be establishing additional PSPs in proximity to the FPR they should be located to avoid the FPR and allow for adequate buffer space.

Manitoba Hydro will monitor its activities during the clearing and construction phase of the Project to ensure the minimum buffer prescribed in the guideline document is maintained. Manitoba Hydro will endeavor to keep all Project related vehicles and equipment contained within the Project footprint and limited to designated access routes within the forest zone. This is designed to minimize Project related disturbance to the environment and minimize the risk of inadvertent damage to forestry values, including PSPs.

Date	May 16th 2012
Subject	Ground Electrode/Ground Water
Reference	Manitoba Conservation Package – TAC Comments
Source	Manitoba Conservation
Question	MCWS/MH-TAC-005e

Question:

Discuss the potential impacts to groundwater from the coke bedding material for the ground electrodes.

Response:

Based on the available data and planned mitigation measures reviewed during the development of the Technical Report on Groundwater for the Bipole III Transmission Project, there are no anticipated residual effects to groundwater from the coke bedding material for the ground electrodes.

At the preferred southern electrode site, there is limited concern for the entry of contaminants to the potable aquifer due to (1) a 10 to 20 m clay layer that underlies the site and acts as a barrier and (2) an apparent upward hydraulic gradient the offers further protection against the downward migration of contaminants from the surface to the aquifer (Rutulis 1990).

At the northern electrode site, the potable bedrock aquifer is covered by approximately 60 to 80 metres of till overburden, which provides good protection to the underlying bedrock aquifer from downward migration of leachate (KGS Acres Ltd. 2008). There is, however, potential that leachate will migrate downwards from the surface at this site, reach the low permeability till layer, migrate laterally to the east and seep out on the Nelson river bank, potentially reaching an aquatic receptor. A dilution will occur in this situation reducing the potential effect to the aquatic environment, according to the analysis presented below.

The analysis considered a dilution of coke leachate by only co-infiltrating un-impacted water during subsurface movement. In this desktop calculation, the following assumptions were made:

- Leachate volume has only been diluted with infiltration percolating inside of the area of the electrode ring (i.e., upstream and downstream infiltration not considered [adds conservatism].
- The infiltration volume is linearly proportional to the area of infiltration.
- Complete mixing of the leachate and co-infiltrating un-impacted water occurs.
- Coke leachate assumed to have contaminants of concern in concentrations presented in Table 1. The concentrations were obtained from literature data due to lack of site-specific tests (Puttaswamy *et al.* 2010).

Dilution was calculated from dimensions of electrode ring and the coke bed as follows:

Dilution factor = 2,009,600 m^2 (area inside the ring)/3,013 m^2 (coke bed area) = 667x

The leachate concentration was divided by this dilution factor to calculate the concentration in the seepage, which was compared to the guidelines and results of toxicity tests (Table 1). The resulting contaminant concentrations in the seepage are at least two orders of magnitude lower than any CCME Guideline for Freshwater Aquatic Life or 7-day LC_{50} for *Ceriodaphnia dubia* reported by Puttaswamy *et al.* (2010). Therefore, the effect of contaminant leaching from the coke to the aquatic environment was not considered to present a potential residual environmental effect.

The following mitigation activities will be conducted to minimize or preclude impairment of groundwater quality at the ground electrode sites and associate lines right-of-way:

- Ground electrode irrigation will only be conducted during dry soil conditions and in amounts not exceeding what is required to maintain saturated soil conditions, to reduce the potential for leaching.
- The coke material will be tested (e.g. leachate analysis) prior to use, for potential contaminants and the need for monitoring based on the results.

Table 1. Concentrations of elements of concern (µg/L).

Element	Leachate concentrations*		Seepage concentrations		Guidelines CCME FAL**	7-d LC_{50}*
	Average	St. error	Average	St. error		
Al	10	5	0.01	0.01	100	497
B	600	77	0.90	0.11	ND	45500
Ba	26	11	0.04	0.02	ND	ND
Mn	136	87	0.20	0.13	ND	12810
Mo	2420	647	3.63	0.97	73	19700
Ni	32	18	0.05	0.03	56	3.8
Sr	360	129	0.54	0.19	ND	ND
V	4126	2817	6.19	4.22	ND	550
Zn	37	35	0.06	0.05	30	165

ND = guideline is not determined.

* Puttaswamy et al. (2010) Table 2

** Canadian Council of Ministers of the Environment Guidelines for Freshwater Aquatic Life

References:

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Canadian Council of Ministers of the Environment (CCME). 1999. Canadian Environmental Quality Guidelines for the Protection of Environmental and Human Health. Report ISBN 1-896997-34-1. Publication No. 1299. Winnipeg, Manitoba. (Updated periodically, see: http://ceqg-rcqe.ccme.ca/).

Date	May 16th 2012
Subject	Process
Reference	Manitoba Wildlands – Public EIS Review Comments
Source	Manitoba Wildlands
Question	MCWS/MH-TAC-006a

Question:

Provide comments/information on the concerns regarding the reliance on desktop studies and problems with desktop data.

Response:

Manitoba Hydro did not rely merely on desktop studies. Desktop studies played an appropriate role early in the Site Selection and Environmental Assessment (SSEA) process. Thereafter additional sources of information as described below were obtained through consultation, expert judgment based on years of field experience, and field studies.

The siting of the Bipole III Final Preferred Route (FPR) is the result of a comprehensive SSEA process involving consultation with government, municipal leaders, stakeholders, First Nation leadership and members, the Manitoba Metis Federation, Aboriginal Traditional Knowledge studies, all available constraints data gathering, multi-disciplinary biophysical and socio-economic studies and technical (including cost) considerations. Twenty-eight primary evaluation criteria were used in the process (see EIS Chapter 7 and supporting appendix 7a). Manitoba Hydro recognizes the fact that the greatest opportunity for mitigating potential Project effects is through avoidance at the routing stage of Project planning.

Imperative to a successful SSEA process is the use of good data. Therefore, Manitoba Hydro went to great lengths to acquire all available data relative to the Project study area with the objective of enabling a thorough route selection process and comprehensive environmental assessment on a final route. Data was acquired through consultation and ATK studies, Manitoba

Conservation & Water Stewardship and Manitoba Hydro regional staff and landowners.. Data collected included reports, documents, tabular and spatial data (e.g. soils, surficial geology, topography, hydrology, Manitoba's ecological land classification system, Manitoba wetland classification, forest resource inventory, the Landsat derived Landcover Classification (LCC), forest fire history, forest depletion and renewal, cadastral, infrastructure, etc.) that was combined in a Project specific GIS database for study purposes. Where possible, data sets were updated to more closely reflect current conditions and to customize it for Project purposes (e.g. the integration of forest fire history, forest depletion and renewal data, soils data, ecological land classification system data with the LCC to create the Landcover Classification Enhanced for Bipole (LLCEB).

With a comprehensive database at hand, Manitoba Hydro's well established SSEA process uses a step wise coarse to fine filter approach to identify and evaluate potential alternative routes. A very broad spectrum of criteria were used to guide route identification and eventual evaluation. The initial study area delineation, characterization and identification of alternative routes was based on the review of available data (e.g. soils, surficial geology, land cover/habitat, socio-economic data) coarse scale constraints data (e.g. parks, ASIs, WMAs, etc.), air photo interpretation and aerial reconnaissance in the north. In agro-Manitoba this was supplemented with ground truthing and adjusting draft alternative routes based on constraint findings.

Broad study area-wide field studies were undertaken at the alternative route stage to augment available baseline information (e.g. bird, caribou, wolf, wolverine studies, etc.) where population based information was required primarily for far-ranging species.

Most biophysical studies are habitat/ecosite driven where landcover data (e.g. forest resource inventory, LCCEB, wetland classifications, hydrology, etc.) are interpreted and evaluated by experienced biologists as habitat for valued environmental component (VEC) species (plants and animals). Models further ranked habitat for quality relative to each VEC species across the study area.

Such habitat/ecosite analysis was further used to identify potential locations of rare and uncommon ecotypes as well as those vegetation communities that may harbour rare, threatened or endangered species. This information, supplemented with aerial photo interpretation and Manitoba Conservation Data Centre data (existing) was then used to plan

targeted field studies (e.g. bird, aquatics, amphibian, reptiles, herptiles, vegetation) relative to the FPR. This latter stage, representing the fine filter aspect of the assessment, identified and deals with many small and point specific values, including heritage resources. Terrain and soils followed a similar approach focusing on rare and single enduring features in ASIs and sensitive site types (e.g. steep slopes, fine erosion prone mineral soils, perma-frost) for field examination and sampling. This approach also led to the identification of a multitude of site-specific environmentally sensitive sites (ESS) each of which are addressed with mitigation measures in the Construction Phase Environmental Protection Plan (CPEnvPP).

In summary, the broad study area delineation and identification of the alternative routes relied substantially on available constraints data, field investigations and consultation input. The evaluation of the alternative routes and selection of the preliminary preferred route (PPR) relied on the evaluation of available data pulled together and customized for the Bipole III Project study area, field studies, study specialist knowledge and expertise and consultation input. The refinement of the PPR to a FPR and FPR specific environmental assessment was based on field studies, data analysis, modeling and additional consultation.

Manitoba Hydro's SSEA coarse to fine filter approach is a well-tested and proven approach to linear utility corridor routing and environmental assessments. While taking advantage of available data, it also allowed for the customization of data for Project purposes as well as the targeted acquisition of new field data, where required. Data were used to construct and run habitat models for VECs and to assist in identifying ESSs so that proper mitigation measures can be applied.

The use of available information and desktop analysis is very much appropriate for initial study area delineation and characterization as discussed in Chapter 4, Section 4.2.3.1. Further, the identification and gathering of available information (as described in Section 4.2.7) is the appropriate and responsible starting point for all environmental assessments. All available information was identified and evaluated for applicability to the Project. Further data needs were then identified and pursued, including field studies. Field data was then again applied to habitat models for environmental assessment purposes and the identification of ESSs.

Date	May 16th 2012
Subject	GHGs/Process
Reference	Manitoba Wildlands – Public EIS Review Comments
Source	Manitoba Wildlands
Question	MCWS/MH-TAC-006b

Question:

Provide comments/information on the green house gas life cycle analysis.

Response:

General Greenhouse Gas Life Cycle Assessment Information:

A Life Cycle Assessment (LCA) was used to estimate the greenhouse gas (GHG) emissions resulting from the construction, land use change, operation, and decommissioning of the Project.

The construction phase includes all GHG emissions due to construction activities, equipment operation and includes the GHG emissions from raw material extraction, production and transportation associated with the construction components such as the steel towers and aluminum conductors. The operation phase includes all emissions from the first day of operation to when the Project is decommissioned including all maintenance activities. Decommissioning includes emissions associated with decommissioning the Project and recycling available materials. Land use change emissions are considered independently and include emissions that occur during the construction phase, land clearing, and emissions during the operation phase. These are discussed in additional detail below.

The LCA was conducted by The Pembina Institute using the ISO "Environmental Management - Life-Cycle Assessment - Principles and Framework" in ISO 14040:2006. A customized model was used to calculate the life cycle results. The majority of the data used in the LCA was based

on early design stage material estimates provided by Manitoba Hydro in response to enquiries from The Pembina Institute. All primary assumptions used by the Pembina Institute are documented within the LCA report. Where key assumptions existed that were determined to have a possible notable impact on the results of this work, a separate sensitivity analysis was completed to determine the GHG impact of revising these assumptions. The sensitivity analyses have been documented in the Pembina Institute report. The land-use change sensitivity results are addressed separately below.

The LCA for the Bipole project presents figures for the entire duration of the project. Over the life of the Project, an estimated total of 923,273 tonnes CO2eq will be emitted where the transmission line accounts for 82% of the total and the converter stations the remaining 18%. The life cycle value is small when annualized (9,233 tonnes CO2eq per year of operation). The largest portion of emissions is associated with production activities associated with the manufacture of aluminum conductors and land use changes associated with right-of-way clearing. In addition to the land-use change GHG implications, GHG emissions due to on-site construction activities for both the transmission line and the converter stations (primarily diesel fuel combustion) are accounted for in the LCA and amount to less than 10% of the total life cycle GHG emissions.

The LCA study area is not restricted geographically. The raw materials, manufacturing and distribution have an international aspect. In excess of 40% of the GHG emissions occur outside Manitoba and are related to manufacture of construction materials and transportation.

Land-Use Change Comments:

The Project will disturb 9,017 ha of land of which 3,270 ha of land is forested or semi-forested land that will be permanently altered to maintain the right-of-way. A land cover classification for the Project was completed in order to identify the various land-use types and associated areas. The full 9,017 ha of land was considered in this analysis.

Land cover areas such as broadleaf, coniferous and mixed woods were all assumed to be permanently disturbed and these permanent changes contribute to life cycle GHG emissions and have been accounted for in the analysis. The land-use change contribution is estimated based on the difference in carbon content between forested land and the resulting vegetation cover

on a cleared right-of-way. An effort was made by Pembina Institute to utilize conservative assumptions in consideration of the land-use GHG implications. For example, all biomass cleared is assumed to be combusted during time of clearing, none is assumed to be salvaged or reclaimed. Actual practice will strive to salvage timber.

Areas of disturbances that are temporary (less than 100 years in duration) such as agricultural, developed, exposed, grassland and shrub are not included in net GHG production calculations. For example, grasslands that may be temporarily disturbed during construction activities will be allowed to return to grasslands resulting in no permanent GHG implications. The areas associated with the foundations of the transmission towers are accounted for and are assumed to be permanently disturbed, with no post-project biomass. Aside from the area associated with the foundations, wetlands will remain intact with no changes in water levels or flows associated with the Project.

The carbon contents utilized in this analysis are based on Manitoba specific values from the Canadian Forest Service's "An Ecosystem Carbon Database for Canadian Forests" as referenced in the life cycle report. In order to develop an estimate of the GHG implications, the Manitoba carbon contents for various vegetation types were averaged into the categories of "Coniferous, Broadleaf, Mixed, and Grassland/Shrub". These overall average carbon content values are presented in the Pembina Institute report and were aligned with their land cover classifications and Project footprint areas to calculate the associated GHG emissions. Nearly all of the permanent land-use change GHG emissions calculated through this analysis are the result of the difference in the carbon contents of various forested areas in the right-of-way being replaced with the carbon contents of grassland/shrubs over the duration of the project.

A comparison was made to generic IPCC values for Canada listed in Chapter 3 of the "2003 IPCC Good Practice Guidance for Land-Use Land-Use Change and Forestry" and Pembina Institute selected the Canadian Forest Service's data for inclusion in the study. To understand the implications on the range of possible carbon contents, Pembina Institute also completed a sensitivity analysis to include the high-end generic carbon content emissions from the IPCC Guidance document. As with the base analysis, the specific emission factors were aligned with their land cover classifications and areas associated with the Project to calculate the associated GHG emissions. This sensitivity demonstrated that even under conservative assumptions, the

overall life cycle GHG emissions associated with this project remain small in magnitude. Reducing the GHG uncertainty via specific right-of-way carbon content measurements would add disproportional costs and effort relative to the incremental value it would provide in refining the land-use change GHG implications.

Date	May 16th 2012
Subject	Wetlands/Process
Reference	Manitoba Conservation Package – TAC Comments
Source	Manitoba Wildlands
Question	MCWS/MH-TAC-006c

Question:

Provide comments/information on the concerns regarding wetlands.

Response:

To minimize its project effects on the environment, including wetlands, Manitoba Hydro adheres to all federal and provincial regulations and guidelines respecting streams, wetlands, water quality and fish habitat. In addition, the Corporation has developed a comprehensive suite of environmental protection measures and Project-specific mitigation measures that, when applied, limit effects to above surface vegetation structure primarily and with little effect on the functionality of wetlands and streams. The single most important mitigation measure regarding wetlands and streams is to clear and construct on frozen ground conditions. The Project will therefore not cause any draining, damming or obstructing of water flow and hence, no losses of wetlands. As a result wetlands are not included in the Green House Gas emissions assessment

Manitoba Hydro's approach to maintaining wetlands is to identify potential negative effects that could occur as a result of the Project and then design and apply corresponding protection and mitigation measures. Included are measures to address mishaps that may occur during the course of the work (e.g. erosion control, spill response, etc.). Critical to the process are Manitoba Hydro's implementation procedures, complete with environmental inspectors and monitors, to ensure the Project-specific mitigation measures are implemented and adhered to.

For a review of the Project-specific mitigation measures see EIS Chapter 11, Attachment 11-1 (Draft Environmental Protection Plan). Detailed Construction Phase Environmental Protection

Plans (CPEnvPP) will be developed and provided to to contractor and staff before the start of clearing and construction activities.

Date	May 16th 2012
Subject	Process/Protection (EPP)
Reference	Manitoba Conservation Package – Public EIS Review Comments
Source	Manitoba Wildlands
Question	MCWS/MH-TAC-006d

Question:

Provide comments/information on the concerns regarding standards and best practices.

Response:

1) However, it appears Manitoba Hydro has not implemented the ISO 2600 on Social Responsibility as outlined in our 2010 Bipole III Scoping Document Recommendation L (also see pg. 16 of our Scoping Document comments). As stated in our recommendation Manitoba Hydro should support and follow this standard, and failing that, an explanation should be provided as to why this standard was not adhered to.

Manitoba Hydro is not convinced of the value of implementing the ISO 26000 guidance document at this time. The ISO 26000 core subjects are generally addressed by federal & provincial legislation and related policies. In addition, technical tools such as Manitoba Hydro's Environmental Management System (registered to the ISO 14001 standard) provide additional assurance of compliance with legal, contractual and voluntary obligations.

2) Manitoba Wildlands recommends that the proponent indicate whether Manitoba Hydro supports and applies these ISO standards in its operations. As a public utility which espouses corporate social responsibility Manitoba Hydro needs to inform its shareholders whether these principles of social responsibility, including with environmental principles, are integrated into its project planning.

In full recognition of the fact that corporate facilities and activities affect the environment, Manitoba Hydro integrates environmentally responsible practices into its business and supports and applies the ISO 14001 standard in its operations.

3) *Manitoba Hydro is a signatory and partner to the International Hydropower Association's (IRA's) Hydropower Sustainability Assessment Protocol (HSAP). Yet the EIS contains no reference to HSAP. This is a deficiency.*

The Hydropower Sustainability Assessment Protocol is a sustainability assessment framework for hydropower development and operation (Hydropower Sustainability Assessment Protocol 2010, page 5).

The Protocol has not been designed to be applied stand alone transmission lines, such as Bipole III.

The Hydropower Sustainability Assessment Protocol has been under development for many years. The latest review of the Protocol dates November 2010. Since then, IHA has been working in the implementation of this reviewed version through the Sustainability Partners Initiative. As of today, no official Protocol assessments have been completed using the 2010 Hydropower Sustainability Assessment Protocol

Date	May 16th 2012
Subject	Culture and Heritage/ Process
Reference	Manitoba Wildlands – Public EIS Review Comments
Source	Manitoba Wildlands
Question	MCWS/MH-TAC-006e

Question:

Provide comments/information on the concerns regarding aboriginal cultural heritage.

Response:

Concerns regarding Aboriginal cultural heritage are discussed in the Executive Summary of the Bipole III Report titled Assessing the Potential Effects of the Bipole III Transmission Project: A Major Reliability Improvement Initiative on Aboriginal Traditional Knowledge, Report Number 1.

In particular, the Executive Summary, paragraph 1 outlines the nature of the communities that participated, that is, First Nation, Metis and Northern Affairs (non-Aboriginal and Aboriginal non-First Nation).

Further, Section 4.0 Effects of the Project on Culture, Sub-sections 4.1 Effects Derived from ATK Workshops – 4.1.2 Common Community Concerns with Respect to Potential Project Effects in the Bipole III Study Area and 4.1.3 – Unique Community Effects in the Bipole III Study Area and 4.2 (Self Directed Studies) and sub-section 4.2 – Self-Directed Studies, pages 26-47 discuss the concerns regarding Aboriginal cultural heritage. Section 5.4 Environmentally Sensitive Sites and Community Reflections (p. 85) and Table 7, Table of Constraints (p. 87) list outstanding concerns.

Report Number 2 represents the Self-Directed Studies as conducted by the communities that selected to conduct their own ATK studies.

Definitions

Cultural heritage is described by UNESCO in Article 1 of the Convention Concerning the Protection of the World Cultural Heritage (1972) as "...monuments: architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of outstanding universal value from the point of view of history, art or science; groups of buildings: groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of outstanding universal value from the point of view of history, art or science; sites: works of man or the combined works of nature and man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological point of view."

The Canadian Environmental Assessment Agency (CEAA), in its reference guide on Physical and Cultural Heritage Resources (2010), acknowledges that both tangible and intangible cultural heritage exist but states up front that the focus is on the tangible nature of cultural heritage. The CEAA defines cultural heritage as "....a human work or a place that gives evidence of human activity or has spiritual or cultural meaning, and that has historic value. Cultural heritage resources are distinguished from other resources by virtue of the historic value placed on them through their association with an aspect(s) of human history. This interpretation of cultural resources can be applied to a wide range of resources, including, cultural landscapes and landscape features, archaeological sites, structures, engineering works, artifacts and associated records.

Frequently, cultural resources occur in complexes or assemblages. Such assemblages might include movable and immovable resources, resources that are above and below ground, on land and in water, and whose features are both natural and fabricated. It is important to note... that not all valued cultural heritage resources have official designation status and therefore may not always be identified in government heritage registries. They may not even be formally recognized or documented" (CEAA 2010: 1).

The Manitoba *Heritage Resources Act* (1986) (*the Act*), while focusing on the tangible aspects of heritage, infers the inclusion of "intangible culture" within its definition of heritage resources to include

(a) a heritage site,

(b) a heritage object, and

(c) any work or assembly of works of nature or of human endeavour that is of value for its archaeological, palaeontological, pre-historic, historic, **cultural**, natural, scientific or **aesthetic** features, and may be in the form of sites or objects or a combination thereof (*The Heritage Resources Act* 1986:1).

Cultural heritage is all-inclusive and the *Heritage Resources Act* is the legislation under which tangible heritage is assessed in Manitoba. It is concerned with all heritage resources within Manitoba that provide substance to the historic record of the province; this includes those aspects of culture that are intangible, abstract and personal, but which describe the distinctive qualities by which cultural groups self-identify. For example, the nine universal, cultural indicators used to complete the Manitoba Hydro ATK study conducted by the Bipole III ATK Study Team: worldview, language, kinship, cultural practices, cultural products, traditional knowledge, health and well being, law and order, and leisure were considered practical because they could be used to understand both subsistence and social activities.

Within the Hydropower Sustainability Assessment Protocol (2010) the definition follows in the same vein where if refers to "...the legacy of physical art[e]facts [sic]and intangible attributes of a group or society that are inherited from past generations, maintained in the present and bestowed for the benefit of future generation"

Bouchenaki (2003) has shown that there is an interdependency of tangible and intangible cultural heritage and has suggested that as this "synchronized relationship"(Bouchenaki 2003:2) between the two is explored more deeply that the dynamic interaction is not as subtle as once believed. Indeed, Bouchenaki provides substance to the emerging definition that cultural heritage is a "social ensemble of many different, complex and interdependent manifestations" (Bouchenaki 2003:1). In other words, the expression of culture, whether song, dance or artifact, exists within a larger dynamic framework.

In part, these definitions of tangible and intangible cultural heritage assisted in building the methods by which the Heritage Resources Impact Assessment and Manitoba Hydro ATK Study

were conducted. Self-directed ATK studies were conducted by the communities according to their own understanding of ATK.

Tangible (Physical) Cultural Heritage

Considered in this category are "…movable and immovable objects, sites, structures, groups of structures and natural features and landscapes that have archaeological, pal[a]eontological, historical architectural, religious, aesthetic or other cultural significance (IHA 2010:87). Please note the similarity of this definition with *the Act*.

For the Bipole III Project, the methods used in identifying tangible cultural heritage included literature review (using triangulation), acquisition of the Provincial Heritage Resources Inventory (archaeological, historical and architecturally historical), development of a predictive model of potential heritage resources, valuation of known sites, in-field assessment (over-flight and ground investigations) of Crown Lands, and continued investigations during the summer of 2012 of some Crown Lands that were not accessible during the previous two field seasons. Private property was not accessed because permission was not received. Site analysis and reporting as partial fulfillment of Manitoba's Heritage Permit and the HRIA were completed.

Given the nature of tangible cultural heritage, it is understood that there would be areas where investigation could not be carried out that may contain evidence of past people. This is a legitimate concern. To this end a Heritage Resources Protection Plan (HRPP) is being developed to ensure that known and unknown tangible cultural heritage resources will be mitigated and monitored. For example, three important archaeological sites are presently undergoing mitigation: two at the Keewatinoow Converter Station and one on the Bipole III Right of Way (ROW) near Cormorant.

It should be noted that during the ATK studies that were conducted by the Bipole III Study Team both tangible and intangible cultural heritage sites were identified by the various communities and these were identified as Environmentally Sensitive Sites for avoidance or further investigation. The archaeological study team will be working in the field with some First Nations who have identified culturally sensitive sites within their traditional lands. Remaining areas that are not accessible due to lack of permission to access will be monitored during construction.

Intangible Cultural Heritage

The 1992 Convention on Biodiversity set the stage for further efforts to be made to ensure that the gathering and use of Aboriginal Traditional Knowledge of indigenous people globally, was conducted under ethically sound principles. Guidelines for this practice have been established and stem from anthropological ethics that have long been in operation. Moreover, the**"2003, UNESCO Convention (Intangible Cultural Heritage)** *Convention for the Safeguarding of the Intangible Cultural Heritage,* **Article 2 – Definitions,** for the purposes of this Convention defined intangible cultural heritage as "1....the practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognize as part of their cultural heritage. This intangible cultural heritage, transmitted from generation to generation, is constantly recreated by communities and groups in response to their environment, their interaction with nature and their history, and provides them with a sense of identity and continuity, thus promoting respect for cultural diversity and human creativity. For the purposes of this Convention, consideration will be given solely to such intangible cultural heritage as is compatible with existing international human rights instruments, as well as with the requirements of mutual respect among communities, groups and individuals, and of sustainable development.

2. The "intangible cultural heritage", as defined in paragraph 1 above, is manifested inter alia in the following domains: (a) oral traditions and expressions, including language as a vehicle of the intangible cultural heritage; (b) performing arts; (c) social practices, rituals and festive events; (d) knowledge and practices concerning nature and the universe; (e) traditional craftsmanship.

3. "Safeguarding" means measures aimed at ensuring the viability of the intangible cultural heritage, including the identification, documentation, research, preservation, protection, promotion, enhancement, transmission, particularly through formal and nonformal education, as well as the revitalization of the various aspects of such heritage" (Jokilehto, 1990, 2005:43).

Both components of cultural heritage, tangible (physical culture) and intangible (non-physical culture) as described in the Hydropower Sustainability Assessment Protocol, were addressed as two separate documents for clarity of the terms. Tangible heritage was addressed through the

Heritage Resources Impact Assessment (HRIA) which assessed the potential effects of Project impacts on heritage resources, as defined under provincial legislation. Intangible heritage was addressed through UNESCO principles and guidelines designed to protect the knowledge, and knowledge givers associated with the ATK component of the Bipole III Project.

Both aspects of the study (Heritage and ATK) acknowledge that there is the potential for yet-to-be-discovered tangible and intangible cultural heritage resources. The Project has, however, established a knowledge baseline that can be built upon by First Nations, Métis and other aboriginal and non-aboriginal communities and which also is in part (Heritage Resources), included in the Provincial Inventory.

The main concern regarding the intangible cultural record is the fact that as the Elders pass away there are vast libraries of knowledge that go with them. ATK has been subscribed as a means of acquiring a portion of the knowledge base that exists within the community of Elders. Many people conducting ATK studies tend to focus on resource harvesting, which is only a part of the knowledge base. Both audio and video recordings and GIS maps acquired through memory mapping/map biography are confidential documents that require agreements of understanding. Proprietary right of knowledge rests with the giver of the knowledge and collectively with the community; it does not rest with the consultant. The signing of informed consent agreements binds both parties legally to ensure that the terms are mutually agreed upon and must be upheld according to ethical and legal guidelines, which means not withholding pertinent knowledge analysis from the community.

For the Bipole III Project, CD copies of interviews were returned to the interviewee along with transcription and copy of memory map for verification. Community leaders received summaries of transcripts and a general map of recorded ATK.

References

Bouchenaki, M. *The Interdependency of the Tangible and Intangible Cultural Heritage*. ICOMOS 14th General Assembly and Scientific Symposium, 2003).

CEAA. Reference Guide on Physical and Cultural Heritage Resources (2010).

Government of Manitoba. *Heritage Resources Act* (1986).

International Hydropower Association (IHA). Hydropower Sustainability Assessment Protocol (2010.

Jokilehto, J. Definition of Cultural Heritage. ICCROM Working Group `Heritage and Society` (1990, Revised 2005).

UNESCO. Convention Concerning the Protection of the World Cultural Heritage (1972).

UNESCO. Convention (Intangible Cultural Heritage) *Convention for the Safeguarding of the Intangible Cultural Heritage* (2003).

United Nations. The 1992 United Nations Convention on Biological Diversity (1992).

Date	May 16th 2012
Subject	Caribou/Process
Reference	Manitoba Conservation Package – Public EIS Review Comments
Source	Manitoba Wildlands
Question	MCWS/MH-TAC-006f

Question:

Provide comments/information on the concerns regarding woodland caribou.

Response:

All boreal woodland caribou ranges were considered in the Site Selection and Environmental Assessment (SSEA) process. The majority of potential effects on regional boreal woodland caribou populations were mitigated through the selection of the FPR (Final Preferred Route) that avoided the majority of significant boreal woodland caribou range including; Harding, Wimapedi-Wapisu, Wheadon, Kississing and the Naosap caribou ranges. These ranges were not specifically dealt with in the EIS as there are no potential barriers or avoidance effects as a result of the FPR associated with these ranges as they are far beyond the zone of potential effect. Literature exists on the distance by which anthropogenic features including linear development influence caribou persistence. Examples of accepted literature on this include a 13 km tolerance threshold to forest harvest areas (Vors et al. 2007). Effects of fragmentation and loss of functional habitat loss are minimal for most linear development types with the highest degree of effect being associated with intensively used linear features such as all weather roads. The literature of linear development indicate measureable effects less than 6 kilometers, typically less than 2 kms. Dyer et al. (2001) found that the maximum avoidance distance on roads and seismic lines to be 250 m. In Manitoba, effects of an all weather logging road on boreal caribou habitat selection were found to show a loss of functional habitat within one km of an active logging road (Schindler et al. 2007)

The evaluation of effects in the EIS are inclusive of the entire ranges for the Wabowden, Reed and The Bog evaluation ranges. The predicted effects and summary of residual effects identified in the EIS extend beyond the 3 mile evaluation corridor into the entire range area. A supplemental caribou technical report will provide additional information on the cumulative effects associated with these evaluation ranges and a more detailed examination of ranges biected by the FPR.

It should also be noted that evaluation of the entire meta population or other ranges across the Bipole III study area would significantly minimize the assessment of potential effects on local populations being intersected by the FPR. They would become regionally insignificant and the effects of the FPR on local populations would be lost amidst regional effects. Further mitigation and monitoring activities will be identified in the Environmental Protection Plan being prepared by Manitoba Hydro.

References:

Dyer, S. J., Neill, J. P. O., Wasel, S. M., & Boutin, S. (2001). Avoidance of industrial development by woodland caribou. *The Journal of Wildlife Management*, *65*(3), 531-542.

Schindler, D. W., Walker, D., Davis, T., & Westwood, R. (2007). Determining effects of an all weather logging road on winter woodland caribou habitat use in south-eastern Manitoba. *Rangifer*, (17), 23-27.

Vors, L. S., Schaefer, J. a., Pond, B. a., Rodgers, A. R., & Patterson, B. R. (2007). Woodland Caribou Extirpation and Anthropogenic Landscape Disturbance in Ontario. *Journal of Wildlife Management*, *71*(4), 1249-1256. doi:10.2193/2006-263

Date	May 16th 2012
Subject	Travel and Transportation/EMF
Reference	Manitoba Conservation Package – Mr. John Roschuk Comments
Source	Mr. John Roschuk
Question	MCWS/MH-TAC-007

Question:

Provide comments/information on the concerns regarding the impacts of electric and magnetic fields in the January 25, 2012 comments from John Roschuk.

Response:

Manitoba referred Mr. Roschuk's comments to Dr. William H. Bailey. Dr. Bailey's review of Mr. Roschuk's comments is attached in the following memorandum.

Exponent®

MEMORANDUM

TO:	Gerald Neufeld Elissa Neville Patrick McGarry
FROM:	William H. Bailey, Ph.D.
DATE:	February 20, 2012
PROJECT:	Bipole III
SUBJECT:	Review of "Bi-Pole 3 West Side Route Toll on Human Lives, Health and Property" by John Roschuk

The document that Mr. Roschuk has provided to Manitoba Hydro alleges that the proposed Bipole III project will adversely affect public health and property values. This review focuses on his allegation that "electromagnetic influence" from high voltage transmission lines "affect[s] human neurological systems to varying degrees" to cause an increase in traffic accidents on parallel or crossing highways. There are four major flaws in the argument put forth by Mr. Roschuk:

1. Alternating current vs. direct current

Mr. Roschuk fails to distinguish studies and reports pertaining to sources of alternating current (AC) electric and magnetic fields (EMF) and direct current (DC) EMF. AC EMF oscillates with a frequency of 60-Hertz (Hz),[1] while DC EMF does not vary over time, i.e., they are static. Since the Bipole III DC line will be a major source of DC EMF, not AC EMF, Mr. Roschuk's references to AC EMF studies are irrelevant with respect to this line.[2] Of the 19 studies cited in support of his arguments, only 3 focus on DC EMF, while 14 focus on AC EMF; the remaining

[1] In North America, AC electricity is transmitted at 60 Hz; in most of the rest of the world, it is transmitted at 50 Hz.

[2] Short AC transmission interconnections to the northern Bipole III converter station are proposed, but traffic is not an issue at this very remote location.

two citations are data sources on traffic. The subject matter of Mr. Roschuk's 19 citations is summarized in Table 1.

Table 1. Mr. Roschuk's 19 Cited References*

Total number of citations by topic			
AC EMF	DC EMF	Highway Traffic	Total Citations
14	3	2	19
Specific citations in document by topic*			
AC EMF	DC EMF	Highway Traffic	
1-3, 5-9, 11-13, 16-18	4, 10, 19	14, 15	

* Links to these specific documents are provided below.

2. Insufficient data and analysis

The four diagrams that Mr. Roschuk provides do not provide persuasive support for his argument that both AC or DC transmission lines contribute to traffic accidents on a section of Highway 6 (pp. 2-3) and Highway 101A (pp. 4-5). He claims that a clustering of accidents has occurred near high voltage AC transmission lines based on his representation in Figure 6101A-HVPTL of Manitoba Infrastructure and Transportation accident data on Route 6 (from Figure MIT-TO-068) and his overlay of six AC transmission line routes (one of the routes that is most distant from Route 6 also contains DC transmission lines [Bipole I and II]). He does not comment on five of the six areas noted in Figure 6101A-HVPTL where AC (or DC lines) cross Highway 6 in support of this argument. Rather, he focuses on one area in the south where just AC transmission lines cross to the west (Figure 101A) and north (Figure 101A-N) of Highway 101A. At four crossings in this area, he reports traffic accident summaries but no markings on the figures to show where the accidents occurred. While he strongly asserts his claim as to "electric and/or magnetic fields from high voltage power transmission lines are a major factor in the cause of traffic accidents," it is clear that this claim is based upon what he perceives in the data from one of the six areas he identified, which is a tiny and non-random sample of the many other transmission line crossings of highways that would be found in any citywide or provincial analysis. Thus, there is no way to judge if the few locations he points to as examples are representative; in general, "cherry picked" data are not scientifically relevant. For example, if

100 locations of clusters of traffic accidents in Manitoba were examined and only 1 cluster was found to have occurred near an AC transmission line, the inference that the transmission line was a contributing factor to traffic accidents in general is not scientifically justified; without sufficient data, a cluster near a transmission line may be simply coincidental. This issue is a basic statistical issue, similar to those that arise with the interpretation of the clustering of basic health events, which are outlined by the U.S. Centers for Disease Control (CDC) in their report, "Guidelines for Investigating Clusters of Health Events."[3] Mr. Roschuk's analysis does not conform to the basic scientific methods for investigation of clusters as described by the CDC.

In addition, Mr. Roschuk provides no comparisons of measured electric fields, magnetic fields, or corona-generated products along sections of highway near to or at a distance from the AC and DC transmission lines that would provide a basis for identifying exposures at locations where accidents are more common. It is not possible, therefore, to determine if a higher density of accidents occur in areas of any type of potential exposure. Finally, as is obvious, the causes of vehicle accidents are multifactoral and Mr. Roschuk provides no analysis of other potential confounding factors at the locations he has selected, e.g. traffic density and flow, visibility, turns, road conditions, or intersections. In the absence of consideration of more plausible, dominant risk factors for accidents and insufficient data, the allegation that EMF or other factors from transmission lines influences the clustering of accidents deserves no credence.

3. Weakness of data cited regarding DC transmission lines

A review of the three cited studies that discuss DC transmission lines does not reveal any conclusions regarding adverse effects from DC EMF, particularly relating to traffic accidents.

- **Citation (4)** is an unpublished paper presented at a conference that describes the well-known electrical aspects of the DC transmission line environment. No adverse effects from DC EMF are described, there are no references to human health effects or traffic accidents, and the authors conclude:

[3] Centers for Disease Control (CDC). Guidelines for Investigating Clusters of Health Events. CDC Report 39(RR-11), July 27, 1990. http://www.cdc.gov/mmwr/preview/mmwrhtml/00001797.htm

> The combination of several specific physical characteristics and related technical aspects related to line construction and operation, HVDC transmission lines have advantages over HVAC transmission lines for a majority of environmental impact indices... Thus, from the ecological point of view, a HVDC power transmission system as a whole is preferable to a system using exclusively HVAC transmission lines (p. 10).

- **Citation (11)** contains the recommended guidelines for exposure of the public and workers to DC (static) magnetic fields published by the International Commission on Nonionizing Radiation Protection (ICNIRP). The guideline concludes the following with regard to public exposures:

> Based on scientific knowledge on the direct effects of static fields on humans, acute exposure of the general public should not exceed 400 mT [4,000,000 mG] (any part of the body). However, because of potential indirect adverse effects, ICNIRP recognizes that practical policies need to be implemented to prevent inadvertent harmful exposure of people with implanted electronic medical devices and implants containing ferromagnetic materials, and injuries due to flying ferromagnetic objects, and these considerations can lead to much lower restriction levels, such as 0.5 mT [5,000 mG] (IEC 2002).

The highest magnetic field expected to be measured under the Bipole III transmission line is less than 0.05 mT (500 mG) and thus is only a small fraction of the recommended limit on continuous exposure to DC magnetic fields. ICNRIP does not discuss DC magnetic field effects and traffic accidents in this document.

- **Citation (19)** is a summary of a workshop on the causes of corrosion of dock pilings and other steel structures in the Duluth-Superior Harbor in Minnesota. Although the report mentions the possibility that a DC transmission line could be a source of corrosion, the authors note that the line is oriented away from the harbor and conclude:

> Water chemistry, dissolved oxygen content, and dissolved chlorides from de-icing salts seem to be the most likely agents of accelerated corrosion of 12 causes discussed (p. ii).

This document does not conclude that a DC line is the cause of corrosion of steel structures in the harbor or that DC EMF contributes to vehicle accidents.

4. Weakness of data cited regarding AC transmission lines

In addition to his complaints about existing or proposed DC transmission lines, Mr. Roschuk cites a large number of sources to support his argument that AC transmission lines have negative impacts on public health and safety, and he perceives them as contributing to clusters of traffic accidents. Without reviewing in detail each and every citation, the common and significant limitations are that his citations are to sources that have not been published in peer-reviewed scientific journals (citations 1, 2, 5, 7, 8, 16) or if peer reviewed, are woefully out of date (citations 3, 6, 9, 10, 11, 12, 13, 17, 18). Even if supported by subsequent studies and reviews, out of date peer reviewed publications, like the traffic accident data cited by Mr. Roschuk, will not provide accurate views if the authors' text is cherry picked or erroneously interpreted.

Peer review is the process by which studies reporting new research or evaluating past research are reviewed by scientific 'peers' with expertise in the relevant scientific disciplines before publication in a scientific journal. Studies that are not peer reviewed are much less likely to meet minimum standards for data quality and valid conclusions and are routinely rejected by health agencies in performing health risk assessments. New scientific research is continually being published so that it is necessary to consult not only peer-reviewed publications but also current publications, which are often designed to address limitations in previous research. In 2007, the World Health Organization published a comprehensive review and evaluation of the research on the potential biological or health effects of AC EMF.[4] Subsequent reviews by national and international health agencies include those published by the Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR, 2009),[5] the European Health Risk

[4] World Health Organization (WHO). Environmental Health Criteria 238: Extremely Low Frequency (ELF) Fields. WHO: Geneva, Switzerland, 2007.

[5] Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR) for the Directorate-General for Health & Consumers of the European Commission. Health Effects of Exposure to EMF. January 2009.

Assessment Network on Electromagnetic Fields Exposure (EFHRAN, 2010),[6] the International Commission on Non-Ionizing Radiation Protection (ICNIRP, 2010),[7] and the Swedish Radiation Safety Authority (SSM, 2010).[8] These agencies appropriately weighed the scientific evidence from peer-reviewed studies and considered the validity and reliability of both past and current research. None of these agencies have concluded that EMF pose a health hazard nor do they support the allegations made by Mr. Roschuk. Based on similar reviews performed by Canadian agencies, Health Canada states "You do not need to take action regarding daily exposures to electric and magnetic fields at extremely low frequencies. There is no conclusive evidence of any harm caused by exposures at levels found in Canadian homes and schools, including those located just outside the boundaries of power line corridors (Health Canada, 2010).[9]

Conclusion

A review of Mr. Roschuk's document reveals major flaws. He confuses studies of AC EMF with the DC EMF that will be produced by Bipole III. In addition, his mappings of traffic accidents in relation to transmission lines along two highways are unrepresentative and biased in multiple ways, and the three studies he cites that pertain to DC EMF transmission lines do not conclude, or even address his opinion that DC transmission lines may produce, cause, or contribute to traffic accidents or other safety or health effects in surrounding populations. Finally, Mr. Roschuk's opinions regarding EMF from AC lines, for the most part, are not based upon sources of information that are used by scientists for health risk assessments nor do they reflect the current state of knowledge.

References cited in Roschuk document with links

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[7] International Commission on Non-Ionizing Radiation Protection (ICNIRP). Guidelines for limiting exposure to time-varying electric and magnetic fields (1 Hz – 100 kHz). Health Physics 99:818-826, 2010.

[8] Swedish Radiation Safety Authority (SSM). Recent Research on EMF and Health Risks: Seventh annual report from SSMs independent Expert Group on Electromagnetic Fields 2010. Report Number: 2010:44. SSM; 2010.

[9] Health Canada. Electric and Magnetic Fields at Extremely Low Frequencies - It's Your Health, 2010.

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Date	May 16th 2012
Subject	EMF/Human Health
Reference	Manitoba Conservation Package – Ms. Pamela Pugh
Source	Ms. Pamela Pugh
Question	MCWS/MH-TAC-008a

Question:

Health impacts to farmers working beneath the transmission lines.

Response:

The potential health effects of ac and dc transmission lines have been reviewed in the EIS (Chapter 8, pages 8-313 to 8-320). Based on reviews by national and international scientific agencies there are no known adverse health effects associated with EMF from ac or dc transmission lines. Electric and magnetic fields from the proposed dc transmission line are at very low levels. Based upon modeled field levels (cited in Chapter 8), farmers or others working on the right-of-way would not encounter levels that exceed exposure limits for the general public as published by health and scientific agencies.

Date	May 16th 2012
Subject	Route Selection/ Transmission Design
Reference	Manitoba Conservation Package – Ms. Pamela Pugh Comments
Source	Ms. Pamela Pugh
Question	MCWS/MH-TAC-008b

Question:

Where are Bipole 4, 5, 6, and 9 going? How much more prime agricultural land will be lost?

Response:

Beyond Bipole III, Manitoba Hydro has not committed to any other future high voltage north-south transmission lines.

Date	May 16th 2012
Subject	Route Selection/Weather Events
Reference	Manitoba Conservation Package – Ms. Pamela Pugh Comments
Source	Ms. Pamela Pugh
Question	MCWS/MH-TAC-008c

Question:

The field in which Bipole is to be placed has had two major cyclones go through it.

Response:

As a reliability initiative, Bipole III is designed to mitigate the impact of catastrophic events that could result in the loss of the existing Bipole I &II HVdc lines and/or the Dorsey Station. As such, one critical consideration is to avoid the simultaneous loss of the existing Bipole I & II lines and the proposed Bipole III line by placing the Bipole III on a corridor well separated from Bipoles I and II, and using higher reliability tower design criteria for Bipole III in areas where separation of these corridors is reduced. The occurrence of extreme weather events such as tornado is statistical by nature and is not possible to predict accurately. However, the routing and design of Bipole III is planned to reduce the probability of the simultaneous loss of all three dc bipole lines such that the system reliability can be maintained well into the future with the loss of only one transmission corridor.

Date	May 16th 2012
Subject	Vegetation/agricultural Land Use and Productivity
Reference	Manitoba Conservation Package – Ms. Pamela Pugh Comments
Source	Ms. Pamela Pugh
Question	MCWS/MH-TAC-008d

Question:

The weeds that grow under the towers will have a negative effect on their Pedigreed Business.

Response:

Weed control is taken into consideration when determining the amount of compensation paid to land owners. Weed control forms part of the "Structure Impact Compensation" portion of the compensation package. The landowner is responsible for weed control under and around towers and is compensated for this with "Structure Impact Compensation".

Structure Impact Compensation (Structure Payment)

These payments are to compensate the land owner (where the lands zoned for agricultural activities only) for the future loss' they may incur due to the affect the location of the structure(s) on their farming operations. The compensation calculations include:

- crop losses on lands permanently removed from production;
- reduced productivity in an area of overlap around each structure;
- the additional time required to maneuver machinery around each structure;
- double application of seed, fertilizer and chemicals in the area of overlap around each structure; and
- weed control around each structure.

Date	May 16th 2012
Subject	Vegetation/Agricultural Land Use and Productivity
Reference	Manitoba Conservation Package – Ms. Pamela Pugh Comments
Source	Ms. Pamela Pugh
Question	MCWS/MH-TAC-008e

Question:

To manage weeds, Pedigreed Seed farmers have to get close to hydro towers with their equipment, running the risk of hitting a tower and increasing liability.

Response:

Manitoba Hydro's Structure Impact Compensation (SIC) schedule allows for 100% crop loss in near proximity to the structure. An example of the compensation area is shown below. The need to get close to the tower with large farm equipment is reduced for normal cropping practices as the area of crop loss is compensated for through tower payments.

Below is a sketch for a 23' x 23' self supporting structure which is used to determine how the structure affects farming operations. This sketch is the basis for the SIC calculations which include:

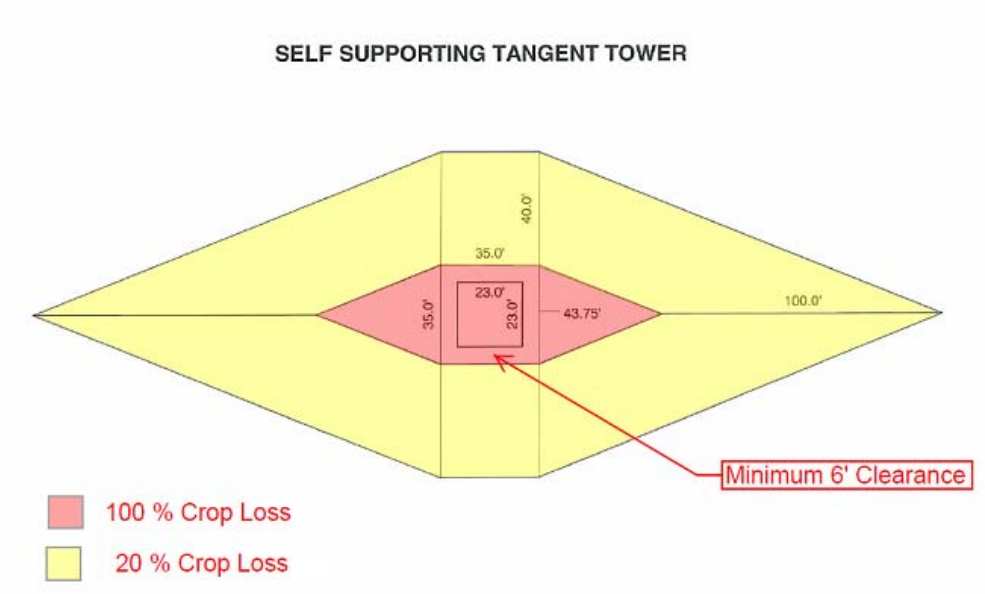
(I) crop losses on lands permanently removed from production *(area shaded red)*;

(ii) reduced productivity in an area of overlap around each structure *(area shaded yellow)*;

(iii) the additional time required to maneuver farm machinery around each structure;

(iv) double application of seed, fertilizer and chemicals in the area of overlap around each structure; and

(v) weed control around each structure.



Date	May 16th 2012
Subject	Access/Transmission Line Construction
Reference	Manitoba Conservation Package – Public EIS Review Comments
Source	Ms. Pamela Pugh
Question	MCWS/MH-008f

Question:

Construction and maintenance vehicles for Bipole III will drive through their field and introduce foreign seeds.

Response:

In an effort to minimize the spread of noxious weeds and invasive plants all contractor construction and maintenance vehicles are cleaned prior to start of work. During construction, cleaning stations will be set up at predetermined locations to prevent the spread of invasive plants and noxious weeds from infested areas to non-infested areas. Manitoba Hydro will work with local Rural Municipalites and Weed Districts to determine cleaning station locations. Manitoba Hydro and its contractors will restrict construction vehicle traffic within the right of way (ROW) during construction and maintenance. If crossing a field is required to access the ROW, Manitoba Hydro will work with the landowner to determine field crossing locations.

Date	May 16th 2012
Subject	Public Safety/Route Selection
Reference	Manitoba Conservation Package – Ms. Pamela Pugh Comments
Source	Ms. Pamela Pugh
Question	MCWS/MH-TAC-008g

Question:

A wind storm may knock a tower down onto the railway tracks and cause an environmental disaster.

Response:

The design of the Bipole III HVdc transmission line follows the industry standards to meet all electrical and safety clearances. Adequate separation will be maintained to avoid cascading events when placing towers nearby critical infrastructure including the railway track. The proposed tower design of Bipole III HVdc is based on a higher reliability level of 1 in 150 years return or better in terms of wind and ice loadings, a significant improvement of the existing Bipole I& II lines (1 in 50 year return).

Date	May 16th 2012
Subject	Access/Transmission Line Construction
Reference	Manitoba Conservation Package – Public EIS Review Comments
Source	Green Party
Question	MCWS/MH-TAC-009

Question:

Provide comments/information on the comments regarding alternatives to northern generation in the March 21, 2012 comments from the Green Party.

Green Party's key comments

-" Another alternative might be to considering both reducing domestic demand and adding additional generating capacity in Southern Manitoba through other means such as wind generation."

- "it does not consider Demand-Side-Management (DSM) (i.e. reducing energy consumption rather than increasing energy supply), including emergency DSM"

Response:

The Bipole III project is a system reliability enhancement and does not add new northern generation. The project provides redundancy and maintains access to existing northern generation in the event that the existing Bipole I and II transmission is lost due to a severe event.

Demand-Side Management (DSM) was considered in the evaluation of load serving capability for the catastrophic events impacting the existing HVDC system presented in Chapter 2 of the EIS. In fact, the energy savings through the existing DSM program and forecasted DSM were used to reduce the amount of the supply deficit in the calculation.

The shortfalls presented in the EIS indicated the amount of generation that can be counted on to be available at the time of peak demand during the coldest months of the year.

Manitoba Hydro has interconnected 237 MW of independently owned wind generation capacity to its system with an additional 16.5 MW to be connected shortly. Wind generation is a good source of energy but the capacity to meet winter peak demand when power is most needed, may not be available due to wind conditions at the time and the fact that when the ambient temperature falls below -30 °C wind turbines will shut down. Even in warmer temperatures wind capacity may not be available for dispatch when needed.

Manitoba Hydro analysis indicates that the capital cost of gas fired generation exceeds that of Bipole III.

Green Party's key comments

"What is not clear is, if when the Riel Seectionalization project is completed in 2014-15, would it be possible to somehow connect Bipoles I & II to the Riel Converter station in the event of a Dorsey Station failure? This would likely require additional HVDC transmission line from the current Dorsey converter station to the future site of the Riel Converter Station. This additional stretch of HVDC transmission is likely to remain largely unused, but would help to serve as a back-up in the event of Converter Station failure. I am not an electrical engineer, so I admit I am unsure if this would be technically and/or economically feasible, but it is something that I would like to see investigated. Can the proponent or Manitoba Conservation provide any comment on whether such a back-up connection route between the Dorsey and future Rid converter stations would be possible?"

Response:

The Riel Sectionalization Project does not establish a converter station at Riel. The project sectionalizes the existing Dorsey to Forbes 500 kV AC line into Riel, provides a 500-230 kV transformation, establishes a Riel 230 kV station, and ties this 230 kV station into the Winnipeg area 230 kV transmission grid. The project provides an alternate termination to Dorsey for the

500 kV line and continued access to contracted import from the United States if Dorsey Station is lost.

Utilizing Riel Station to back up Dorsey would still require the construction of Riel converter station (all DC equipment and associated ac), in addition to the new HVDC line from Dorsey to Riel. Although it can reduce the consequences of a catastrophic failure of Dorsey, such a solution will not be able to mitigate the risk of losing the Bipole I & II lines with a repair time up to 8 weeks. As indicated in Chapter 2 of the EIS, the loss of the lines will result in extended rotating blackouts during the cold winter months. This option was identified as a potential solution to backup a Dorsey loss in the early planning analysis only if the Bipole III could not be built since it does not protect against the loss of the Bipole I & II lines.

Date	May 16th 2012
Subject	Route Selection/Culture and Heritage
Reference	Manitoba Conservation Package – Swan Lake First Nation Comments
Source	Swan Lake First Nation
Question	MCWS/MH-010a

Question:

Investigations conducted subsequent to the SLFN preliminary TK Report have suggested that the Round Plain and Indian Gardens sites are larger than originally determined. The exact extent of the sites is not known and additional research and archeological analysis need to be completed to confirm the site's boundaries. Additional disturbance of these sites in any way would not be supported by SLFN.

Response:

Manitoba Hydro intends to continue discussions with Swan Lake First Nation in an effort to address the community's concerns and interests related to the Bipole III Transmission Project traversing the Assiniboine Valley. The Assiniboine River crossing was identified as a sensitive site by Swan Lake First Nation as well as through an archeological inventory, developed by Manitoba Hydro's archaeological consultants. As a result, this area has been identified as a sensitive site in the Bipole III EIS. Swan Lake First Nation has completed some heritage field work in this area. A detailed survey by the Project Archaeologist working with the Swan Lake First Nation archaeologist will be conducted prior to construction. Manitoba Hydro has also agreed to support an Environmental Monitor from Swan Lake First Nation to be on site during clearing and construction activities.

Protection measures for heritage resources have been incorporated into the Environmental Protection Plan as general and specific mitigation measures. Detailed actions and procedures for heritage discoveries will be developed by the Project Archeologist on a site by site basis. All information regarding heritage resources and/or found human remains will be submitted to the

Historic Resources Branch as per the terms of the Heritage Resources Act (1986) and heritage permit and to the local Aboriginal Communities. Ownership of all heritage objects found within Manitoba rests with the Province of Manitoba.

The Environmental Protection Plan for the Bipole III Transmission Project will include the following mitigation measures for addressing heritage resources. Additional mitigation measures will be considered during the final design process.

Heritage Resources Environmental Protection Measures	
No.	**Environmental Protection Measures**
EC-5.1	Environmental protection measures for heritage resources will be reviewed with the Contractor and employees prior to commencement of any construction activities.
EC-5.2	Provincial legislation (Appendix C) and guidelines (Appendix D) protecting heritage resources will be adhered to during pre-construction and construction activities.
EC-5.3	Orientation for project staff working in construction areas will include heritage resource awareness and training including the nature of heritage resources and the management of any resources encountered.
EC-5.4	Orientation information will include typical heritage resource materials and reporting procedures.
EC-5.5	Construction activities will not be carried out within established buffer zones for heritage resources except as approved by Project Archaeologist.
EC-5.6	The Environmental Inspector will inspect borrow pits and other excavations regularly for the presence of heritage resource materials.
EC-5.7	The Environmental Inspector will inspect routine stream crossings for the presence of heritage resource materials and will report any findings immediately to the Project Archaeologist.
EC-5.8	The Project Archaeologist will inspect major stream and large river crossings for the presence of heritage resource materials.
EC-5.9	All archaeological finds discovered during site preparation and construction will be left in their original position until the Project Archaeologist is contacted and provides instruction.
EC-5.10	The Contractor will report heritage resource materials immediately to the Construction Supervisor/Site Manager and will cease construction activities in the immediate vicinity until the Project Archaeologist is contacted and prescribes instruction.
EC-5.11	Project Archaeologist will report heritage resource discoveries to the appropriate First Nation or Aboriginal community.
EC-5.12	The Project Archaeologist will visit the site, confirm the presence of heritage resources, establish a buffer zone, conduct an evaluation and determine protection/salvage requirements.

Heritage Resources Environmental Protection Measures	
EC-5.13	Any culturally significant heritage resource materials discovered during construction will be inventoried and/or salvaged by the Project Archaeologist as per standard archaeological best practices
EC-5.14	The Contractor will stop work immediately in the immediate vicinity if human remains are discovered during construction activities. The finding will be reported to the Construction Supervisor/Site Manager who will contact the Project Archaeologist. The project archaeologist will report immediately to the Historic Resources Branch (HRB) who will, in turn, contact the RCMP and Medical Officer. The closest First Nation community will also be notified by the Project Archaeologist. . A site visit will take place immediately along with the RCMP and Medical Officer to confirm the presence of human remains and determine the forensic/non-forensic nature of the human remains. The Project Archaeologist will work closely with the HRB once the status of the human remains is determined.
EC-5.15	Major heritage resource sites including burial sites discovered during construction will be protected by erecting a snow fence around the site, designating the site off-limits, posting signage, directing water away from the site and placing barricades on access routes, until a permanent solution is agreed upon

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Date	May 16th 2012
Subject	Route Selection/Caribou
Reference	Manitoba Conservation Package – TAC Comments
Source	Wildlife Branch
Question	MCWS/MH-TAC-010b

Question:

SLFN requests further detail on mitigation measures for potential impacts to plants, plant communities, terrain, and soils during construction, operation, and maintenance of the transmission line.

Response:

Manitoba Hydro is in the process of developing both general and site specific mitigation measures for potential impacts of the Bipole III transmission line. General mitigation measures apply to all project areas and specific mitigation will apply to identify individual Environmentally Sensitive Sites (ESS). SLFN identified the Assiniboine River crossing as an Environmentally Sensitive Site, as it could potentially contain artifacts and a burial site. It is culturally significant to the community and Manitoba Hydro will work with the community to ensure their concerns are addressed. Manitoba Hydro has agreed to support an Environmental Monitor from Swan Lake First Nation to be on site during clearing and construction activities.

The following is a list of draft mitigation measures and plans for potential impacts to plants, plant communities, terrain and soils specific to the Assiniboine River crossing. For more detailed information, please refer to the Bipole III Transmission Project Draft Environmental Protection Plan (Volume 4). Please note that the Environmental Protection Plan is currently in draft format, the Construction Phase Environmental Protection Plans for the area will be developed with Aboriginal communities and Manitoba Conservation and will be finalized once Manitoba Hydro is in receipt of the *Environment Act* licence for the Project. It will be updated and refined as the Project moves through the Regulatory process.

Below are the general mitigation measure related to plants, plant communities, terrain and soils. Manitoba Hydro will be developing an operation environmental management plan for line maintenance to follow once the line has been energized.

Clearing

Environmental protection measures related to clearing and related activities include:

- Where sensitive sites have been identified existing low growth vegetation such as grasses, forbs and shrubs will be maintained to the extent possible. Disturbance to roots and adjacent soils will be minimized (PA-3.5)[1].
- Selective clearing will be carried out in erosion prone areas. Hand clearing or other low disturbance methods may be employed to minimize soil disturbance (PA-3.14)
- Environmentally sensitive areas located adjacent to watercourses or located on rugged terrain will be cleared by low ground disturbance methods (i.e hand clearing on steep slopes) (PA-3.15).
- Trees within established buffer zones will be selectively cleared using methods that cause the least impact. Low growth vegetation such as grasses and shrubs within buffer zones will not be cleared (PA-3.16).
- Construction vehicles where possible will be wide-tracked or equipped with high floatation tires to minimize rutting and limit damage and compaction to surface soils (PA-3.18).
- The Construction Supervisor/Site Manager will issue a stop work order if extreme wet weather or insufficient frost conditions results in soil damage from rutting, and soil erosion is resulting in sedimentation of adjacent waterbodies (PA-3.19).
- Vegetation will be removed by mechanical means except where other selective clearing methods are stipulated (PA-3.26).
- Specified clearing methods will be carried out in a manner that minimizes disturbance to existing organic soil layer (PA-3.27).

[1] The coding listed at the end of the environmental protection measures refers to the tables in the draft environmental protection plan.

- Machine clearing will remove trees and brush with minimal disturbance to existing organic soil layer using only “V” or “K-G” type blades, feller-bunchers and other means approved by the Construction Supervisor/Site Manager (PA-3.28).
- Chemical control of vegetation is not permitted during clearing (PA-3.31).
- Danger trees will be identified and removed by hand or other methods that do not damage soils and adjacent vegetation (PA-3.32).

Burning

Environmental protection measures related to burning and related activities include:

- Slash will be piled in a manner that allows for clean, efficient burning of all material. Mixing soil into the slash is to be avoided (PA-2.4).
- Debris piles scheduled for burning will be piled on mineral soils or on areas having an average maximum depth of less than 15 cm of duff, where possible (PA-2.5).

Grubbing

Environmental protection measures related to grubbing and related activities include:

- Construction areas containing soil with high silt content, artesian springs or areas of previous erosion will receive special erosion protection and sediment control techniques (PA-8.5).
- Grubbing will be halted during heavy precipitation events when working in areas of finely textured soils (PA-8.6).

Stripping

Environmental protection measures related to stripping and related activities include:

- Mineral topsoils and surficial organic materials should be stripped separately from subsoils, segregated, and stockpiled for later use in backfilling, contouring and rehabilitation. Soils should be replaced in the reverse order to which they were removed. Where problem subsoils (e.g., saline, gravelly, stony) are encountered in agricultural landscapes, three-lift soil handling will be used to segregate the problem subsoils from

higher quality subsoils. Once replaced, soils will be compacted similar to pre-disturbed condition." (PA-10.5)

- Construction areas containing soil with high silt content, artesian springs or areas of previous erosion will receive special erosion protection and sediment control techniques (PA-10.6).
- In areas of known salinity, excavated or stripped soil will be stored on liners or in designated areas were possible (PA-10.9).

Rights-of-Way

Environmental protection measures pertaining to Rights-of-Way include:

- Vegetation control along rights-of-way during construction will be in accordance with the Vegetation Management Plan (PC-8.10).
- The Environmental Inspector will inspect rehabilitated areas along rights-of-way in accordance with the Site Rehabilitation Plan to assess the success of any re-vegetation and to determine if additional rehabilitation is required (PC-8.13).

Transmission Towers and Conductors

Environmental protection measures pertaining to transmission towers, guy wires and conductors include:

- Transmission tower locations will avoid riparian areas, floodplains, wetlands, permafrost and unstable soil conditions to the extent possible (PC-10.2).
- Where thawing occurs, construction equipment, tires and loadings, and access routes will be reviewed to ensure that there will be minimum damage to the soils (PC-10.8).
- The Construction Supervisor/Site Manager will issue a stop work order if extreme wet weather conditions result in soil damage from rutting and erosion is resulting in sedimentation of adjacent waterbodies (PC-10.14).
- During tower foundation excavation the duff layer and A horizon soils shall be stripped and stored separately from other soils. When back filling, these soils are to be replaced as the surface soils to encourage site re-vegetation (PC-10.16).
- Areas where soil was disturbed will be stabilized and re-vegetated with low growth vegetation as soon as practical (PC-10.17).

- Vegetation control around transmission towers will be in accordance with contract specifications and Manitoba Hydro guidelines (PC-10.20).

Stream Crossings

Environmental protection measures pertaining to stream crossings include:

- Clearing for stream crossings will only remove tree species by hand or other low impact methods. Shrub understory will be retained and soils will not be disturbed in riparian areas (PC-9.14).
- Disturbed stream banks will be stabilized and re-vegetated with low growth vegetation as soon as practical (PC-9.26).
- The Environmental Inspector will inspect rehabilitated watercourse crossings in accordance with the site Rehabilitation Plan to assess the success of re-vegetation and to determine if additional rehabilitation is required (PC-9.30).

Buffers and Setbacks

Buffers are work areas where restricted activities such as low disturbance clearing are permitted. Setbacks are areas to be maintained from a given environmental feature where no work shall occur.

Recommended setbacks and buffer distances for sensitive environmental features are provided in Table 1.

Table 1. Buffers and Setbacks for Species at Risk

Activity	Non Frozen Ground Setback Distance (no work allowed)	Frozen Ground Setback Distance (no work allowed)	Winter Vegetated Buffer Distance (Shrub and Herbaceous Vegetation Retained)	Rationale
Tower Foundation Siting	100m	100m		Protect from disturbance
Clearing And Construction	30m		30m	Protect from disturbance
Maintenance	30m		30m	Protect from disturbance
Access Trail	30m	30m		Protect from disturbance

Erosion Protection and Sediment Control Plan

An Erosion Protection and Sediment Control Plan will be prepared by Manitoba Hydro in accordance with Canadian professional erosion and sediment control standards to manage construction activities that cause soil erosion and result in sediment releases to the aquatic environment.

- The objective of the plan will be to minimize any adverse environmental effects of sediment releases on the aquatic environment in accordance with provincial and federal legislation and guidelines, and corporate environment policies and guidelines.
- Environmental protection measures will be prescribed for erosion protection and sediment control including winter construction, establishment of buffer zones, avoidance of sensitive areas and use of bioengineering techniques.
- Environmental Inspectors will conduct regular inspections of construction activities including erosion protection and sediment control measures.
- The plan will be reviewed after each construction season and annually and results from the reviews will be used to adjust plan provisions to ensure continued effectiveness.
- The Erosion Protection and Sediment Control Plan will be completed and implemented prior to the commencement of the construction phase for the Project.
- The plan will be provided to the Contractor and Manitoba Conservation, and will be placed on the public registry established for the Project.
- Contractors will be required to prepare contract-specific Erosion Protection and Sediment Control Plans that conform to and are consistent with the Manitoba Hydro Erosion Protection and Sediment Control Plan.

Vegetation Management Plan

A Vegetation Management Plan will be prepared by Manitoba Hydro to manage vegetation during construction of the Project.

- The objective of the plan will be to provide for effective vegetation management in accordance with provincial legislation and guidelines, and corporate policies and procedures for the protection vegetation and the environment.
- The scope of the plan will include introduction of exotic species, controlling vegetation, protection of protected species, forest insects and diseases, and re-vegetation of disturbed sites.
- Environmental protection measures will be prescribed for washing equipment and vehicles prior to entering construction sites, protecting protected species, controlling vegetation at construction sites and restoring and re-vegetating disturbed sites.

- Environmental Inspectors will conduct regular inspections of construction activities including vegetation management.
- The plan will be reviewed after each construction season and annually and results from the reviews will be used to adjust plan provisions to ensure continued effectiveness.

The Vegetation Management Plan will be completed and implemented prior to the commencement of the construction phase for the Project.

Date	May 16th 2012
Subject	Groundwater/Protection (EPP)
Reference	Manitoba Conservation Package – Swan Lake First Nation Comments
Source	Swan Lake First Nation
Question	MCWS/MH-TAC-010c

Question:

The EIS states that the groundwater assessment was conducted on a regional scale. SLFN is concerned about potential impacts of the project to local groundwater and aquifers in SLFN's area of interest.

Response:

The groundwater assessment focused on the major hydrogeological features located in the vicinity of the proposed route of the transmission line due to the regional extent of the Project, but considered local groundwater environments as information allowed. The information relied upon for the groundwater assessment came from multiple sources and personal communications with experts with knowledge of the groundwater in the assessment area.

While it was noted that the large scale resolution of the Local Study Area may mean that some small aquifers were not represented and assessed, where possible, supplemental information for detailed evaluations was obtained, reviewed and described. It was acknowledged that there may still be some unidentified small aquifers in the study area but it was noted that these would be expected to be in areas where groundwater is not presently relied uponAlong the southern portion of the route, and in the area of interest to SLFN, specific information was available and reviewed during the assessment. The preferred route for the Bipole III transmission line will go over the eastern edge of the unconfined Assinaboine Delta Aquifer (ADA) – an aquifer which is relied upon for drinking water. This aquifer is recharged by precipitation (i.e., is already connected to surface water). Another aquifer will be crossed by the transmission line in the area of Dakota Plain First Nation.This aquifer is overlain by a clay

layer (confined) and unconnected to surface water or precipitation. Both of these aquifers, due to their near-surface nature, have been identified on Groundwater Vulnerability Maps developed and maintained by the Province.

The Project components are generally land-based or surficial in nature and will not interfere with the existing groundwater regime associated with either aquifer discussed above. No artesian (flowing groundwater) conditions were identified in the area of interest to SLFN. The identified aquifers, however, would be vulnerable to impact in a contingency event (e.g., hydrocarbon or pesticide spill).

Mitigation measures that will be in place to minimize or preclude any groundwater effects associated with contingency events are discussed in the EIS and can be summarized as follows:

- Fuel, lubricants, pesticides and other potentially hazardous materials will be stored and handled within dedicated areas at work sites and marshalling yards in full compliance with regulatory requirements.
- Transfer of chemicals will be attended at all times.
- An Emergency Preparedness and Spill Response Plan is developed and an emergency response spill kit will be kept on-site at all times in case of fluid leaks or spills from machinery.
- Hazardous materials, fuel containers and other materials will be removed from the site for proper disposal in accordance with regulatory requirements.
- Herbicide and pesticide applications will be made by a licensed certified applicator and will be applied according to product label directions.

Edwin

Squirrel Creek

34

242

350

LONG PLAIN FIRST NATION

Rossendale

DAKOTA PLAIN FIRST NATION

Lavenham

Assiniboine Delta Aquifer

ASSINIBOINE RIVER

34

305

240

INDIAN GARDENS 8

242

Boyne River

2

Treherne

Rathwell

St. Claude

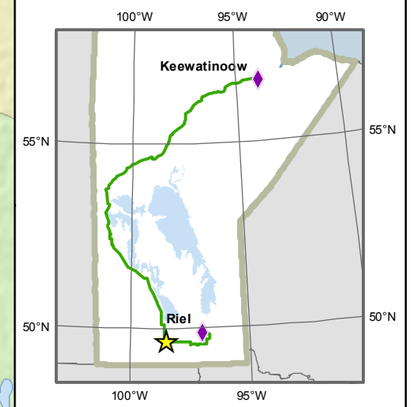
Haywood

Bipole III Final Preferred Route

242

Holland

305



Bipole III Transmission Project

Manitoba Hydro

Coordinate System: UTM Zone 14N NAD83
Data Source: MB Hydro, Stantec, Heritage/Cultural - SLFN, ProvMB, NRCAN
Date Created: June 12, 2012

0 2.5 5 Kilometres

0 2.5 5 Miles

N

1:150,000

Project Infrastructure
- Final Preferred Route
- Local Study Area

Heritage
- Area with Potential for Additional Heritage Values

Sand and Gravel Aquifers
- Areas With Very Few Widely Scattered Minor Sand and Gravel Aquifers
- Thin Unconfined Sand
- Lenses of Sand and Gravel
- Major Buried Sand and Gravel
- Thick and Extensive Unconfined Sand and Gravel
- No Aquifer/No Data in Regional Study Area

Sand and Gravel Aquifers Within the Southern Bipole III Transmission Project Study Area

Draft: For Discussion Purposes Only

File Location: G:_GIS_Project_Folder\00_Hydro\111450528_BPIII_Groundwater\ArcMap\BPIII_GEOTECH_SandAquiferSouthernManitoba_B_150K_Stantec_20120612.mxd

Date	May 16th 2012
Subject	Moose/Hunting and Harvesting
Reference	Manitoba Conservation Package – Manitoba Metis Federation Comments
Source	Manitoba Metis Federation
Question	MCWS/MH-TAC-011a

Question:

Explain whether or not the effects assessment on moose populations and Aboriginal traditional use of moose, both related to increased harvester access in Game Hunting Areas (GHA) 6, 6A, 7, 8, 11, 12 and 19A was considered in light of the closure of many other GHAs to moose hunting in the central western and central eastern portions of the Province. Please advise if the conclusion regarding residual effects and cumulative effects would change if these factors were fully considered.

Response:

The closure of GHAs 13, 13A, 14, 14A, 18, 18A, 18B and 18C and the partial closure of GHAs 2A, 4 and 7A to moose hunting and effects of these closures on moose populations and harvesting opportunities in adjacent and/or further removed GHAs was not considered in the effects assessment conducted by Manitoba Hydro. And in considering them now the conclusions reached in the EIS respecting residual effects and cumulative effects would not change as a result of these closures.

Numerous access routes/travel corridors already exist in much of western Manitoba. As a result the Bipole III transmission line, though creating potentially one more access route through the closed and remaining open GHAs (potentially is used here as transmission lines are often not easily traversable in some locations and in other locations parallel existing linear corridors), is not expected to significantly increase the ability of hunters to access new areas and/or new opportunities for wolf predation on moose in this area of Manitoba.

As to the concern regarding the effect of concentrating hunters in the remaining open GHAs, presumably this would occur irrespective of the Bipole III project and was considered by Manitoba when implementing the closures and since the closures are already in effect it is being managed by the responsible management authority, that being Manitoba Conservation and Water Stewardship.

Date	May 16th 2012
Subject	Cumulative Effects Assessment
Reference	Manitoba Conservation Package – Manitoba Metis Federation Comments
Source	Manitoba Metis Federation
Question	MCWS/MH-TAC-011b

Question:

Provide comments on the concerns expressed regarding the Cumulative Effects Assessment.

Response:

This question refers to concerns expressed by the Manitoba Métis Federation (MMF).

Manitoba Hydro would like at the outset to clarify one apparent misstatement in comments provided by MMF, where page 19 of the submission notes that "MH further indicates that their approach was to restrict the cumulative effects assessment to VECs that were found to have no residual effect or a positive residual effect." As stated, this is incorrect and in fact the opposite is true. As noted on page 4-38 of the EIS, VECs (valued environmental components) with no residual effect or a positive residual effect from the Project, as identified in Chapter 8, are not included in the cumulative effects assessment, and the cumulative effects assessment only includes VECs with an adverse effect of the Bipole III Transmission Project (the Project) that overlaps both temporally and spatially with the effects of other identified projects and human activities.

The comments provided by the MMF relating to cumulative effects included the following specific information requests at page 21:

(1) Please provide an explanation as to why only the socio-economic aspect of the Keeyask project was considered in the cumulative effects assessment;

(2) Please provide an explanation as to why the cumulative effects assessment only considered the Conawapa project to a limited extent;

(3) Please provide an explanation as to why the transportation component of the Victory Nickel Mine project, which overlaps the Project Study Area, was not included as a future project in the cumulative effects assessment;

(4) Please re-consider the findings of residual impact on moose populations and "Domestic Resource Use" in light of the evidence of GHA closures and the high potential for concentration of harvesters in the remaining GHAs that are transected by the HVdc.

(5) Please reassess the potential environmental effect on moose populations and habitat in GHA 12 by considering the cumulative effect of coal exploration, the pending designation of all or a portion of GHA 12 as a Wildlife Management Area, existing closure of various GHA's in central western Manitoba to moose hunting, in combination with the potential for increased access by harvesters and/or wolf predation associated with the HVdc ROW.

Manitoba Hydro's response to each information request as asked is provided below.

(1)

The Bipole III EIS cumulative effects assessment considered biophysical as well as socio-economic aspects of the proposed Keeyask project.

Please see Table 9.3-1 and Table 9.3-2 of Chapter 9 of the Bipole III EIS (attached to this response for reference). These tables indicate that the cumulative effects assessment in Chapter 9 considered both the biophysical and the socio-economic effects of Keeyask Generation and Keeyask Transmission. Temporal or spatial overlaps of residual adverse biophysical effects of the Project are not expected with the Keeyask projects; however, material spatial and temporal overlaps of residual adverse socio-economic effects for the Project with the Keeyask project are expected and were described and assessed in section 9.3.3.1 of Chapter 9.

(2)

The Bipole III EIS cumulative effects assessment considered the proposed Conawapa project to the extent that was feasible and relevant.

Compared with many other projects considered in this cumulative effects assessment, information on the Conawapa project was somewhat more limited. As noted on page 9-10 of Chapter 9 of the Bipole III EIS, prospective future projects and activities such as the Conawapa project are defined as those projects or activities that were not yet approved or in the planning/approvals process preparatory to being constructed or carried out and that were initially considered in the assessment as potentially having effects that overlap with the effects of the Project. Conawapa is considered a prospective future project as it has not been approved at this time for regulatory filings and is not yet today in the regulatory approval stages – this development will occur only after comprehensive environmental impact assessment, extensive public consultation and approval and licensing by the relevant regulatory authorities. Any future Conawapa EIS will set out a full description of the proposed project and the assessment of all expected environmental effects of this project, including (if Bipole III is approved) the cumulative effects of the Conawapa project in combination with the Bipole III Transmission Project as approved.

As noted in Tables 9.3-1 and 9.3-2 in Chapter 9, potential coincidence of effects of Conawapa and Bipole III on the biophysical and socio-economic environment were considered as part of the biophysical and socio-economic cumulative effects assessments. Based on the information available at this time regarding potential overlap of effects from these projects, the Project's cumulative effects assessment focused on the potential effects of Bipole III that may overlap with Conawapa construction activities (and all of the related northern workforce and infrastructure implications).

(3)

The Bipole III EIS cumulative effect assessment focused on future projects within the Project Study Area with environmental effects that could potentially overlap with effects of the Project. In addition, the corridor for the Bipole III Project is extensive and it was recognized that every

local future project or activity along the HVdc route cannot be considered, for practical reasons, as part of the cumulative effects assessment.

As noted on page 20 of the review comments provided by MMF, the Victory Nickel Mine occurs outside the Project Study Area, approximately 55 km from the centre of the Project's HVdc centre line. The MMF review comments also note that this mine, once operational, proposes to transport materials and ore along PTH 6 north to the rail line at Ponton, and that a segment of the PTH 6 transportation route falls within the Project Study Area and intersects the HVdc ROW. Aside from the cumulative effects of added truck traffic on this specific segment of PTH 6, no potential overlap of Bipole III and Victory Nickel Mine environmental effects is suggested for consideration in the MMF review.

In relation to increased traffic volumes, PTH 6 was assessed in the EIS and it was determined that the increase in project-related construction traffic in the vicinity of the Victory Nickel Mine and the rail line at Ponton was either below five percent of existing traffic and / or within the existing design capacity of the roadway (as defined by Manitoba Infrastructure and Transportation. For more detailed explanation please refer to section 7.2.3 of the Transportation Technical Report).

As reviewed in the Bipole III EIS with regard to transportation activity effects, the residual adverse effects of transportation related activities for the Project HVdc line and Keewatinoow are expected to be limited, in practical terms, to the construction phase. Further, potential transportation activity effects of the Project are expected to be short term and reversible in nature (see, Chapter 8 page 8-297 and page 8-303 of the EIS). Roads likely to notice an increase in traffic will be those used to transport materials for all major construction components of the Project. This would include roads between the Riel site, the northern transmission line segments and Keewatinoow (PTH 6, PTH 10, PR 391, PR 280 and PR 290).

Given the residual adverse effects of the Project's construction-related transportation activities are considered to be short term and reversible, material overlaps of the Project's effects with traffic related effects from other projects occurring outside the Project Study Area are not anticipated, and any such overlaps that may occur from time to time are not expected to result in significant adverse effects and/or additional mitigation requirements for the Project.

(4) and (5)

These two information requests deal with basically the same issues regarding potential residual environmental effects of the Project on moose populations and habitat and moose-related Domestic Resource Use in light of GHA (Game Hunting Area) closures to moose hunting. On this specific matter, please see Manitoba Hydro's response to MCWS/MH-TAC-011a, which notes as follows:

> The closure of GHAs 13, 13A, 14, 14A, 18, 18A, 18B and 18C and the partial closure of GHAs 11 2A, 4 and 7A to moose hunting and effects of these closures on moose populations and harvesting opportunities in adjacent and/or further removed GHAs was not considered in the effects assessment conducted by Manitoba Hydro. And in considering them now the conclusions reached in the EIS respecting residual effects and cumulative effects would not change as a result of these closures.
>
> Numerous access routes/travel corridors already exist in much of western Manitoba. As a result the Bipole III transmission line, though creating potentially one more access route through the 18 closed and remaining open GHAs (potentially is used here as transmission lines are often not easily traversable in some locations and in other locations parallel existing linear corridors), is not expected to significantly increase the ability of hunters to access new areas and/or new opportunities for wolf predation on moose in this area of Manitoba. Also as it is assumed the closures are only temporary and of a relatively short term nature (<5 years).
>
> As to the concern regarding the effect of concentrating hunters in the remaining open GHAs, presumably this would occur irrespective of the Bipole III project and was considered by Manitoba when implementing the closures and since the closures are already in effect it is being managed by the responsible management authority, that being Manitoba Conservation and Water Stewardship.

The final information request also asks for reassessment of the potential environmental effect on moose populations and habitat in GHA 12 by considering the cumulative effect of the Project in combination with coal exploration, the pending designation of all or a portion of GHA 12 as a Wildlife Management Area, existing closures of GHA's in central western Manitoba to moose

hunting, in combination with the potential for increased access by harvesters and/or wolf predation associated with the HVdc ROW. For the Bipole III Project EIS, the only relevant consideration is the incremental effect of the Project in combination with other projects - and in this context, the conclusions reached in the EIS respecting residual effects and cumulative effects of the Project on moose populations and habitat would not change as a result of consideration of the cumulative effects of the Project in combination with the other activities noted in this IR. The Bipole III FPR follows existing rights of ways and will not augment additional hunting opportunity to what already exists as described above. Moose resource management by the relevant authorities continues to respond to pressures on moose populations and habitat, from hunting or other sources, and it is expected that ongoing responses will continue in the future as required in each area. The effects of the Bipole III transmission line in the GHA 12 area is not expected to significantly reduce overall moose habitat in this region or to significantly increase the ability of hunters and/or wolf predators to reduce moose populations in this region.

Table 9.3-1: Potential Coincidence of Effects on Biophysical Environment

Other Projects & Activities	Bio-physical Environment Sub-components								
	Soils & Terrain	Air Quality and Climate	Groundwater	Aquatic Environment	Terrestrial Ecosystems & Vegetation	Mammals & Habitat	Birds & Habitat	Amphibians & Reptiles	Terrestrial Invertebrates
Adverse Project Effects on VECs (Not Significant as discussed in Chapter 8) ◊									
No Adverse Cumulative Effects ✓									
Negligible Cumulative Effects (beyond assessment discussed in Chapter 8) □									
Potentially Non-negligible Cumulative Effects □									
Bipole III Project	◊	◊	◊	◊	◊	◊	◊	◊	◊
Wuskwatim Transmission Project (230 kV transmission lines, Thompson-Birchtree Station)	✓	□	□	✓	✓	□	✓	✓	✓
Riel Sectionalization Project - The Riel Reliability Improvement Initiative	□	□	□	✓	✓	✓	✓	✓	✓
Multiple existing (utility) corridors, such as water pipelines, fibre optics line, that serve local and regional needs	□	□	□	□	✓	□	✓	✓	✓
Forestry operations and road development (Tolko, Louisiana Pacific)	✓	✓	□	✓	✓	□	✓	✓	✓
Mineral licence area exploration, mineral lease, mining claim, and quarry lease developments	✓	✓	□	✓	✓	□	✓	✓	✓
Provincial Highways and Roads, Winter road development	□	□	□	✓	✓	□	✓	✓	✓
Keewatinoow wastewater management	✓	□	✓	✓	✓	✓	✓	✓	□
Keeyask Generation/Transmission	□	□	□	✓	□	□	✓	✓	✓
Kettle Generating Station Upgrades	□	□	□	□	□	□	□	□	□
Urban residential development (potential for new housing stock within the Town of Gillam)	□	□	□	□	□	□	□	□	□
Conawapa Generating Station Projects	□	□	✓	✓	□	□	✓	✓	□
Forestry operations including road development (Tolko, Louisiana Pacific)	✓	✓	□	✓	✓	□	✓	✓	✓
Mineral licence area exploration, mineral lease, mining claims, and quarry lease developments	✓	✓	□	✓	✓	□	✓	✓	✓
Current and future agricultural activities	✓	✓	□	✓	✓	✓	✓	✓	✓

Table 9.3-2: Potential Coincidence of Effects on Socio-economic Environment

Other Projects & Activities	Socio-economic Environment Sub-components					
Adverse Project Effects on VECs (Not Significant as discussed in Chapter 8) ◊	Land Use	Resource Use	Economy	Services	Personal, Family & Community Life	Culture & Heritage
No Adverse Cumulative Effects ✓						
Negligible Cumulative Effects (beyond assessment discussed in Chapter 8) □						
Potentially Non-negligible Cumulative Effects □						
Bipole III Project	◊	◊	◊	◊	◊	◊
Wuskwatim Transmission Project (230 kV transmission lines, Thompson-Birchtree Station)	✓	✓	□		□	✓
Riel Sectionalization Project - The Riel Reliability Improvement Initiative	✓	□	□		□	✓
Multiple existing (utility) corridors, such as water pipelines, fibre optics line, and serve local and regional needs	✓	✓	□	□	□	✓
Forestry operations and road development (Tolko, Louisiana Pacific)	✓	✓	□	□	□	✓
Mineral licence area exploration, mineral lease, mining claim, and quarry lease developments	✓	✓	□	□	□	✓
Provincial Highways and Roads, Winter road development	✓	✓	□	□	□	✓
Keewatinoow wastewater management	□	□	□	□	□	✓
Keeyask Generation/Transmission	✓	✓	□	□	□	✓
Kettle Generating Station Upgrades	□	□	□	□	□	✓
Urban residential development - plans (potential for new housing stock within the Town of Gillam)	✓	□	□	✓	✓	✓
Conawapa Generating Station Projects	✓	✓	□	□	□	✓
Forestry operations including road development (Tolko, Louisiana Pacific)	✓	✓	□	□	□	✓
Mineral licence area exploration, mineral lease, mining claims, and quarry lease developments	✓	✓	□	□	□	✓
Current and future agricultural activities	✓	✓	□	□	□	□

Date	May 16th 2012
Subject	Hunting and Harvesting/ Protection (EPP)
Reference	Manitoba Conservation Package – Manitoba Metis Federation Comments
Source	Manitoba Metis Federation
Question	MCWS/MH-TAC-011c

Question:

Metis won't gather in areas that have been sprayed with chemicals. Will Manitoba Hydro consider non-chemical vegetation management in important gathering areas along the right-of-way?

Response:

Manitoba Hydro would consider non-chemical vegetation management in clearly identified sensitive sites.