APPENDIX C

VALUED ENVIRONMENTAL COMPONENTS

C.1. VALUED ENVIRONMENTAL COMPONENTS

Valued environmental components (VECs) are defined as fundamental elements of the physical, biological or socio-economic environment, including the air, water, soil, terrain, vegetation, wildlife, fish, birds and land use that may be affected by a proposed project.

This appendix outlines the selection process for VECs with respect to the Keeyask Transmission Project.

C.1.1 Physical Environment

Physical components include features such as climate, physiography and topography, soils/geology, groundwater and hydrology. This Environmental Assessment (EA) Report describes and assesses key physical features including:

- Atmosphere: climate conditions and trends, and extreme weather events and air-quality conditions.
- Physiography and Geology: physiography such as landforms, elevations, relief and unique features; surficial geology including types and depths; and bedrock geology including types, location and depths.
- Soils: soil types and characteristics, soil capabilities and limitations, and permafrost conditions.
- Surface Water: watersheds and waterbodies characteristics, shoreline environment, and sources of potable water.
- Groundwater: primarily local groundwater characteristics.

Transmission projects typically provide a description of the existing environment within the context of biophysical and socio-economic features that are traversed by the proposed route. VECs are typically not used in the process of evaluating the effects of the project on physical environmental features such as soils. Project effects on the physical environment are described with respect to their potential pathway to the components of the terrestrial, aquatic and socio-economic environments. VECs are generally reserved for the evaluation of biological components that may be affected by changes in the physical environment. As such, no physical environment VECs were selected for the Keeyask Transmission Project.

C.1.2 Aquatic Environment

Fish habitat is selected as the aquatic VEC. The key issues considered when selecting the aquatic VEC include importance to regulatory agencies and people that may be affected by the

Keeyask Transmission Project. Fish habitat (the aquatic VEC) focuses on the assessment of the significance of adverse effects using species with the highest ecological or societal importance.

The selection criteria which lead to the selection of fish habitat as the aquatic VEC primarily involved the following considerations:

- Importance to regulatory agencies: selection of the aquatic VEC addresses Section 35.1 of the *Fisheries Act* which prohibits Harmful Alteration, Disruption or Destruction of Fish Habitat.
- The aquatic VEC is used as a surrogate for measuring productive capacity of a waterbody and the associated riparian vegetation, which is important to people and wildlife.
- Surface water quality is considered within the aquatic VEC. Water quality is important to people, wildlife and terrestrial plants and ecosystems.
- Fish habitat is defined by numerous parameters as described below:
    - Biophysical parameters including: hydrology, channel and flow characteristics, substrate, cover, water and sediment quality, aquatic macrophytes, and periphyton and benthic invertebrate communities.
    - Water quality parameters including: temperature, dissolved oxygen, total suspended solids, turbidity and pH.

C.1.3 Terrestrial Environment

C.1.3.1 Terrestrial Plants and Habitats

Fragmentation and ecosystem diversity were the VECs selected to represent terrestrial ecosystems. Priority plants was the VEC selected to represent terrestrial plants. A stepwise screening process that focuses on Project-related ecosystem health issues that are of relatively high ecological and/or social concern is used to select the key topics, from which the VECs were selected. The VECs are selected from the key topic list using several criteria such as:

- Overall importance/value to people.
- Regulatory requirements.
- Potential for substantial Project effects.
- Key for ecosystem function.
- Umbrella indicator.

- Indicator species.
- Amenable to scientific study in terms of the analysis of existing and post-construction conditions.

C.1.3.2 Wildlife

Key issues to be addressed that are important to regulatory agencies and people who may be affected by the Keeyask Transmission Project are identified during this scoping step. VECs are selected to focus the assessment of the significance of adverse effects using species with the highest ecological or societal importance. The selection of wildlife VECs is based on the following criteria that were identified from *Canadian Environmental Assessment Act* (CEAA) guidelines, Manitoba scoping documents and environmental assessment reports. These criteria include (CEAA 1996; Manitoba Hydro 2010, 2011):

- Overall importance/value to people.
- Regulatory requirements.
- Potential for substantial Project effects.
- Key for ecosystem function.
- Umbrella indicator.
- Indicator species.
- Amenable to scientific study in terms of the analysis of existing and post-construction conditions.

The VECs selected for the different wildlife groups are listed under each environmental component discussed in the following sections.

Invertebrates, Amphibians and Reptiles

Invertebrates are typically not sampled or used as VECs in environmental assessments. For the Keeyask Transmission Project, there was no indication that unique species or habitat existed in the region and no field sampling occurred. As such, no VEC is being selected for invertebrates for the Keeyask Transmission Project. This EA Report provides general information on terrestrial invertebrate species and habitats and invertebrate species listed in the *Manitoba Endangered Species Act* (MESA), Committee on the Status of Endangered Wildlife in Canada (COSEWIC) or *Species at Risk Act* (SARA) (Schedule 1) that may occur in the Project Study Area.

While amphibians were sampled throughout the Project Study Area, their diversity is low and primarily includes wood frogs and boreal chorus frogs. Due to the widespread presence and low to moderate density in the Project Study Area for both species, the potential for significant Project-related effects was judged to be small. For this reason, the decision was made not to select an amphibian VEC, but rather to assess the group as a whole. The EA Report will provide general information on amphibians as it relates to the Project, including the following:

- Amphibian species populations and habitats.
- Important amphibian habitats.
- Amphibian species listed in the MESA, COSEWIC or SARA (Schedule 1).

Reptiles likely do not occur in the Project Study Area, which is well north of the documented range of any species that may occur in the region. Reptiles were not observed in the Project Study Area during field sampling programs for the Keeyask Transmission and Generation projects. For these reasons, amphibians and reptiles are not being proposed as VECs for the Project.

Birds

The birds that are selected and used as VECs to assess the effects of the Project include raptors, olive-sided flycatcher, common nighthawk and rusty blackbird. All bird species are considered to be important components of the environment as they all play important roles (*e.g.*, as seed disbursers, scavengers, food for other animals including humans) in maintaining healthy, functioning ecosystems. While about 178 species of birds could be affected by the Project, for many species the anticipated Project effects are expected to be very small and well within the range of natural variability. For this reason and because it is not practical to investigate and assess the possible effects of the Project on every bird species potentially inhabiting the study area, the assessment focused on the issues of concern or key topics.

The habitat traversed by the proposed Construction Power and Generation Outlet Transmission Line routes is generally wet black spruce muskeg interspersed with waterbodies. The alternative routes are mostly removed from waterbodies where shorebirds, waterbirds and bald eagles reside and travel. The species of birds that inhabit this study area are generally reflective of the habitat; these species were considered with respect to potential bird VECs.

While there are several potential bird indicator species, few meet the requirements as VEC species. The bird group potentially most appropriate to being viewed as important to stakeholders and/or being representative of other species and potentially experiencing a Project-related effect is raptors. Raptors such as owls and hawks generally nest within interior forested areas such as those that would be transected by the Keeyask transmission line.

Raptors also use cutlines and the related edge habitat as prime foraging sites and can be more susceptible to transmission line strikes.

Other species considered for use as a VEC are the common nighthawk, olive-sided flycatcher and rusty blackbird. Common nighthawk is listed as threatened by COSEWIC. It utilizes open areas in the boreal forest region, and would likely forage along the cutline. As well, the cutline may provide bare ground for nesting habitat. As it will use the cutline for foraging, there is the associated collision risk involved. Common nighthawks have been identified in the area during studies for other components of the Keeyask project.

The olive-sided flycatcher is a neotropical migrant songbird listed as threatened by SARA (Schedule 1) and COSEWIC. In Canada, this insect-eating songbird arrives in its breeding ground in mid-late May, or as soon as ambient air temperatures will support abundant insect prey. This species is associated with mature forest stands, with complex canopy structure. Preferred nest sites near forest edges, where a closed canopy lies adjacent to bogs or post-fire habitats, provide adults with tall trees for perching as well as forest openings, where flying insects are more abundant (Altman and Sallabanks 2000).

The rusty blackbird is comparable in body size to an American robin and is listed as a species of special concern by SARA (Schedule 1) and COSEWIC. Rusty blackbirds breeding in the Study Area return to their nesting grounds in Manitoba from the Mississippi Valley area in the central U.S.A. Rusty blackbirds build their nest in riparian vegetation near or above a body of water, and produce a clutch of three to six eggs.

The EA Report also provides available information on birds and bird habitat as it relates to the Project, including the following:

- Bird species including populations, habitat and seasonal-use patterns.
- Important ecological communities represented by key bird species.
- Critical habitats for key bird species.
- Seasonal use of wetlands by waterbirds for breeding and moulting, and spring and fall staging.
- Migratory bird populations including seasonal habitat usage and migratory routes.
- Bird species listed in the MESA, COSEWIC or SARA (Schedule 1).

Mammals

Moose and caribou are the VECs selected to assess and represent potential effects of the Project on mammals. The methods used to select the mammal VECs included the following processes:

- Review of pertinent literature and conduct desktop exercises to determine potential species occurrences in the Keeyask Transmission Project Study Area.
- Validate probable species occurrences based on field studies and local knowledge.
- Remove those species in the Keeyask Transmission Project Study Area that have been extirpated, where individual occurrences are likely temporary and/or accidental in nature, or where species are unlikely to persist over time due to habitat limitations.
- Rank species using selection criteria.
- Develop species-habitat associations.
- Select the highest-ranked mammal species that associate best with the least number of species-habitat linkages found in the Study Area.

To determine which of the mammal species present within the Keeyask Transmission Project Study Area should be treated as a VEC species, consideration was given to all 40 literature-based mammal species potentially present in the study area. Of these 37 mammal species known through field work or ATK to be present, a list of 33 candidate VEC mammal species were considered.

The selection criteria ranking which was applied to those mammal species included a subjective evaluation of the importance of each mammal species to people including First Nations. This initial evaluation was based on past projects and professional judgment and considered designated rare species and mammal species requiring legislation or policy for sustainable harvest management. Another selection criterion was the consideration of those species or habitats that had the potential for substantial Project effects, including positive or negative environmental impacts of the Keeyask Transmission Project on mammal species. By using the predetermined selection criteria, the three highest ranked species include caribou, moose and beaver (in descending rank order of abundance). Caribou and moose appear to be the most important species among the mammal species present in the Keeyask Transmission Project Study Area as they ranked highest among those species compared. Other species that had the next highest and similar-ranked scores but were not selected as VECs included gray wolf, red fox, black bear and American marten.

Due to their reliance on habitat and environmental conditions, and the relative importance placed on caribou and moose by the regulators and society, these two species are likely to

perform well as VECs to focus the assessment of the significance of adverse effects associated with the Keeyask Transmission Project.

C.1.5 Socio-economic Environment

Socio-economic valued components are aspects of the socio-economic environment that are valued by people. VECs for the Project were selected based on:

- A review of the Project description and a consideration of potential ways the Project might interact with the socio-economic environment.
- A review of recent environmental assessments for other linear projects in the region.
- A consideration of the VECs selected for the Keeyask Generation Station EIS[1].

Based on these considerations, the following socio-economic valued environmental components (VECs) were identified:

- Land and Resource Use.
- Population, Infrastructure and Services.
- Economy.
- Personal, Family and Community Life.

All heritage resources, by virtue of the *Manitoba Heritage Resources Act*, are considered to be a VEC and are protected by this legislation.

[1] These VECs were reviewed with Keeyask Cree Nation communities during workshops held in 2008 (Keeyask Hydropower Limited Partnership 2012).