

# Keeyask Valued Environmental Components and Supporting Topics

Manitoba Hydro Keeyask Generation Station Project

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Manitoba Wildlands – January 2014

## ABSTRACT

This document reviews the Valued Environmental Components and Supporting Topics used throughout the Keeyask Generation Station Environmental Impact Statement.



January 2014

## Disclaimer

This document was created with the goal of clarifying confusion around the Valued Environmental Components (VECs) and Supporting Topics identified in the Keeyask Generation Station EIS and Supporting Volumes. We also raise some concerns and questions that may be relevant to the Clean Environment Commission's report and recommendations. The aim is to provide a brief overview of certain weaknesses and inconsistencies pertaining to the VECs and Supporting Topics. The document does not aim to disprove with concrete scientific evidence the validity of the VECs and Supporting Topics, but rather raises concerns and questions relating to certain aspects of organization and presentation. In a volume of text as large and important as the Keeyask Project EIS and its Supporting Volumes, it is crucial that complex scientific information be presented in a comprehensive and consistent manner.

It must be noted this document in no way condones or agrees with the selection of the Valued Environmental Components and/or Supporting Topics presented in the EIS and Supporting Volumes. Manitoba Wildlands continues to express skepticism over the selection process of the VECs and Supporting Topics, and is not confident they appropriately represent and address the issues that would surface should the Keeyask Generation Station be licensed and built.

Please also see the Manitoba Wildlands report that reviews the EIS Study Areas, and our report regarding the Environmental Management Program.

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## Overview

Manitoba Wildlands (MWL) is providing the Clean Environment Commission (CEC) with a broad overview of the Valued Environmental Components and Supporting Topics with regards to the material covered in their respective Supporting Volumes (Terrestrial Environment, Aquatic Environment, Socio-Economic and Physical Environment).

Throughout the course of the CEC public hearings, numerous concerns were raised by participants and expert witnesses about which topics were VECs as opposed to Supporting Topics, the validity of the VEC selection process, as well as whether or not the process and procedures provided enough verifiable transparency to the public. It became apparent that subjects selected as VECs received the most attention from consultants, scientists, regulatory agencies, local community members and traditional knowledge holders.

It is essential that topics receiving such extensive EIS resources and funding reflect the true ecological and societal priorities for the region affected by the project. It is also vital that such important environmental and social components of the EIS be presented in a coherent, consistent and transparent way.

Failure to do so could cause unnecessary confusion and repetition while increasing risk to the VECs, supporting topics, and the viability of the Environmental Management Program, Environmental Monitoring Plans, ATK, and the MAC.

## Terrestrial Environment VECs and Supporting Topics

The Terrestrial Supporting Volume, in comparison to the other Supporting Volumes, contained the more complete materials with regard to presentation of VECs and Supporting Topics. Numerous tables were composed and presented showing several aspects of Terrestrial VECs and Supporting Topics as well as a relatively clear listing of VECs as opposed to Supporting Topics.

One such a listing is **Table 1-1: Valued Environmental Components (VECs) and Supporting topics Used for the Keeyask Terrestrial Environment Assessment** (displayed below), found in the Terrestrial Environment Supporting Volume.

# Keeyask Valued Environmental Components and Supporting Topics

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**Table 1-1: Valued Environmental Components (VECs) and Supporting topics Used for the Keeyask Terrestrial Environment Assessment**

<b>Key Topics</b>	<b>VEC</b>	<b>Supporting Topic</b>
<b>(Grouped by EIS Section Where they are Addressed)</b>		
<b>Section 2 – Terrestrial Ecosystems and Habitat</b>		
Intactness	✓	
Fire regime		✓
Terrestrial habitat		✓
Ecosystem diversity	✓	
Wetland function	✓	
Soil quantity and quality		✓
<b>Section 2 – Terrestrial Plants</b>		
Invasive plants		✓
Priority plants <sup>1</sup>	✓	
<b>Section 3 – Terrestrial Invertebrates</b>		
Invertebrate community		✓
<b>Section 4 – Amphibians and Reptiles</b>		
Priority amphibians <sup>2</sup>		✓
<b>Section 5 – Birds</b>		
Canada goose	✓	
Mallard	✓	
Bald eagle	✓	
Olive-sided flycatcher	✓	
Common nighthawk	✓	
Rusty blackbird	✓	
Other priority birds <sup>3</sup>		✓
<b>Section 6 – Mammals</b>		
Caribou	✓	
Moose	✓	
Beaver	✓	
Other priority mammals <sup>4</sup>		✓
<b>Section 7 – Mercury</b>		
Mercury in wildlife		✓

1. Priority plant species include those native species that are highly sensitive to human features, make high contributions to ecosystem function and/or are of particular interest to the KCNs. A species was considered to be highly sensitive to human features if it is globally, provincially or regionally rare, near a range limit, has low reproductive capacity, depends on rare environmental conditions and/or depends on the natural disturbance regime. Rare species that are endangered or threatened are of particularly high concern.

2. Includes Species at Risk.

3. Includes other Species at Risk, colonial waterbirds and species at the edge of their known breeding range.

4. Includes endangered, threatened, provincially rare and regionally rare species, small mammals and large carnivores as high contributors to ecosystem function and furbearers highly valued by local people.

**Source:** Keeyask Generation Station Environmental Impact Statement – Terrestrial Environment Supporting Volume, section 1, Table 1-1, page 1-14

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‘Section 7 – Mercury’ of the table above is comprised of a single Supporting Topic: ‘Mercury in Wildlife’. Mercury concentrations in wildlife should be of high importance, and it seems odd such an important environmental element is condensed into one subject. Even more significantly, ‘Mercury in Wildlife’ was not considered as a VEC, which would ensure more scientific research and monitoring but it was assigned as simply a Supporting Topic.

Additionally, in the Response to EIS Guidelines, there is a table outlining the VECs and Supporting Topics with respect to their numerous individual Study Zones. **Table 6-6: Study Zones Used as the Local and Regional Study Areas for each of the Valued Environmental Components and Supporting Topics is displayed below.**

One area of confusion with regards to Table 6-6 is the emboldened text “Soil Quantity and Quality” that appears to be a header for the table. Upon closer inspection, “Soil Quantity and Quality” is in fact a Supporting Topic for the Terrestrial Environment Supporting Volume. This mistake would be attributed to poor editing, and this carelessness contributes to confusion and conflicting information already prevalent in the EIS materials.

Please also see the Manitoba Wildlands Species Ranking Chart, and notation regarding species in the Keeyask region, including on the edge of their range.

Table 6-6: Study Zones from Map 1-1 That are Used as the Local and Regional Study Areas for each of the Valued Environmental Components and Supporting Topics.

EIS Section and Topic	Geographic Study Zone				
	Zone 2 <sup>1</sup>	Zone 3	Zone 4	Zone 5	Zone 6
<b>Section 2 – Terrestrial Ecosystems and Habitat VECs and Supporting Topics</b>					
Terrestrial habitat	LSA			RSA	
Fire Regime		LSA			RSA
<b>Ecosystem Diversity (VEC)</b>	LSA			RSA	
<b>Intactness (VEC)</b>		LSA		RSA	
Soil Quantity and Quality	LSA			RSA	
<b>Wetland Function (VEC)</b>	LSA			RSA	
<b>Section 2 – Terrestrial Invertebrates</b>					
Invertebrate community		LSA	RSA		
<b>Section 3 – Terrestrial Plants</b>					
<b>Priority Plants<sup>2</sup> (VEC)</b>	LSA			RSA	
Invasive Plants	LSA			RSA	
<b>Section 4 – Amphibians and Reptiles</b>					
Priority amphibians <sup>3</sup>		LSA	RSA		
<b>Section 5 - Birds</b>					
<b>Canada Goose (VEC)</b>		LSA		RSA	
<b>Mallard (VEC)</b>		LSA	RSA		
<b>Bald Eagle (VEC)</b>		LSA		RSA	
<b>Olive-sided flycatcher (VEC)</b>		LSA	RSA		
<b>Common Nighthawk (VEC)</b>		LSA	RSA		
<b>Rusty blackbird (VEC)</b>		LSA	RSA		
Other priority birds <sup>4,5</sup>	Not defined				

Section 6 - Mammals					
<b>Caribou (VEC)</b>			LSA		RSA
<b>Moose <sup>6</sup> (VEC)</b>		LSA		RSA	
<b>Beaver (VEC)</b>		LSA	RSA		
Other priority mammals <sup>5,7</sup>	Not defined				
Section 7 - Mercury					
Mercury in wildlife			LSA	RSA	
<ol style="list-style-type: none"> <li>1. Codes in the table indicate which study zones shown in Map 6-28 were used as the local Study Area (LSA) and Regional Study Area (RSA) for each VEC and Supporting Topic.</li> <li>2. Priority plant species include those native species that are highly sensitive to human features, make high contributions to ecosystem function and/or are favoured for use by local people. A species was considered to be highly sensitive to human features if it is globally, provincially or regionally rare, near a range limit, has low reproductive capacity, depends on rare environmental conditions and/or depends on the natural disturbance regime. Rare species that are endangered or threatened are of particularly high concern.</li> <li>3. Includes Species at Risk.</li> <li>4. Includes other Species at Risk, colonial waterbirds and species at the edge of their known breeding range.</li> <li>5. Study areas vary too greatly by species to generate in this table.</li> <li>6. The Moose LSA also includes the offset areas where individual moose are harvested (see the off-set harvest program description in the SE SV, Resource Use). Assumes that a moose population residing in an area approximating the size</li> <li>7. Includes endangered, threatened, provincially rare and regionally rare species, small mammals and large carnivores as high contributors to ecosystem function and furbearers highly valued by local people.</li> </ol>					

**Source:** Terrestrial Environment Supporting Volume, Section 6, Table 6-6, page 6-

## Aquatic Environmental VECs and Supporting Topics

Numerous shortcomings surfaced in the Aquatic Environment Keeyask Project EIS Supporting Volume with regards to VECs and Supporting Topics. An inconsistency that appeared many times was the terminology associated with the ‘Supporting Topics’ of the Aquatic Environment. The term ‘supporting topic’, consistently used throughout the rest of the EIS Volumes, was not once mentioned in the Aquatic Environment Supporting Volume. This could lead one to assume there are in fact no aquatic supporting topics. However, it was noted that instead, terms such as ‘supporting components’, ‘ecosystem components’ and ‘environmental components’ were used interchangeably. The use of such diverse terms would suggest alternative meanings, however, none of these terms were identified as having use different definition for a ‘supporting topic’.

This lack of clarity through use of these terms forces the reader to make assumptions based on their own interpretation of the text, which is not acceptable. Excerpts from the Aquatic Environment Supporting Volume that demonstrate the diversity of terms used:

*“Table 1-1 provides a list of ecosystem components that will be affected by the Project, incorporating components at various organizational levels within the ecosystem (Response to EIS Guidelines – Aquatic Environment Supporting Volume, section 1, pg. 1-7).”*

*“In general, the number and quantitative nature of indicators for VECs were greater than for supporting environmental components (Response to EIS Guidelines – Aquatic Environment Supporting Volume, section 1, pg. 1-11).”*

**Table 1-1: Criteria used to select aquatic ecosystem supporting and valued ecosystem components** (displayed below) displays aspects of confusion with relation to interchangeable use of terminology. Firstly, the Supporting Topics are referred to as ‘aquatic ecosystem supporting components’ in the title of the table, but they are then referred to as ‘supporting components’ in the table. Also the acronym ‘VEC’, which stands for ‘Valued Environmental Component’ in the EIS is in fact ‘Valued Ecosystem Component’ in this table.



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**Table 1-1: Criteria used to select aquatic ecosystem supporting and valued ecosystem components.**

	Potential Effects <sup>1</sup>	Data Collection Feasible <sup>2</sup>	Local Importance <sup>3</sup>	Regulatory Requirement <sup>4</sup>	Indicator <sup>5</sup>	Ecosystem Function <sup>6</sup>	Supporting Component	VEC
Biodiversity	✓	✓				✓	✓ <sup>7</sup>	
Water quality	✓	✓	✓	✓	✓	✓		✓
Detrital pathways	✓					✓		
Aquatic habitat	✓	✓		✓	✓	✓	✓	
Primary productivity	✓					✓		
Phytoplankton	✓	✓			✓		✓	
Rooted plants	✓	✓			✓		✓	
Secondary productivity	✓					✓		
Zooplankton	✓	✓					✓	
Benthic invertebrates	✓	✓			✓	✓	✓	
Fish community	✓	✓		✓		✓	✓	
Lake whitefish	✓	✓	✓	✓	✓			✓
Lake sturgeon	✓	✓	✓	✓	✓			✓
Walleye	✓	✓	✓	✓	✓			✓
Northern pike	✓	✓	✓	✓	✓			✓
Rainbow smelt	✓	✓		✓	✓	✓	✓ <sup>8</sup>	
White sucker	✓	✓		✓	✓		✓ <sup>8</sup>	
Mercury in fish	✓	✓	✓	✓			✓	

1. Component will be markedly affected by the Project.
2. Data collection is feasible within scope of typical environmental assessment.
3. Of particular importance to resource use by local people.
4. Specifically required by legislation (*e.g.*, rare or endangered species) or guidelines (*e.g.*, water quality).
5. Indicator of other changes in ecosystem (*e.g.*, top level predator).
6. Important to overall function of ecosystem or measure of overall ecosystem function.
7. Included with specific groups of biota.
8. Included in fish community.



**Source:** Response to EIS Guidelines – Aquatic Environment Supporting Volume, section 1, Table 1-1, pg. 1-25

## Socio-Economic Environment, Resource Use and Heritage Resources VECs and Supporting Topics

In the Socio-Economic Environment, Resource Use and Heritage Resources Keeyask Project EIS Supporting Volume, the structure, grouping and presentation of VECs and Supporting Topics could lead to confusion. The absence of a comprehensive and explanatory table containing all VECs and Supporting Topics is inconsistent with other Supporting Volumes. This table should have been included for the sake of clarity.

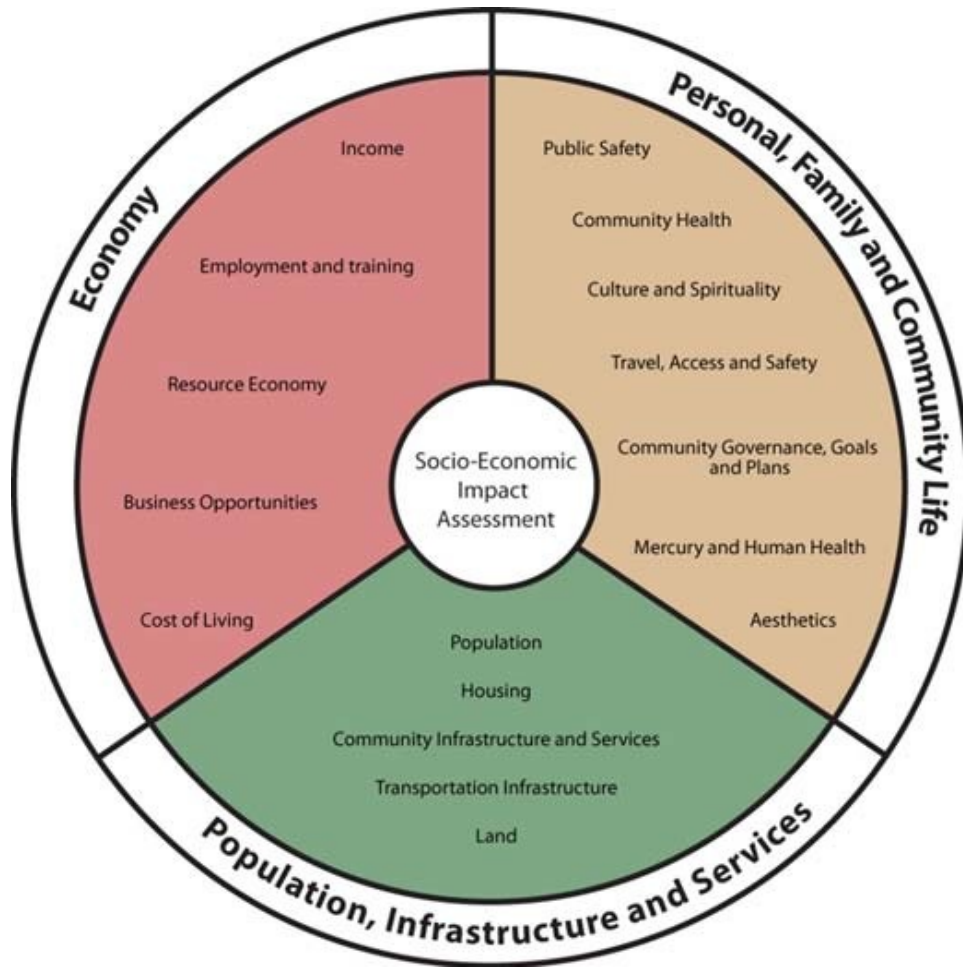
Only one Supporting Topic, Population, is identified in this volume. However, there are three overarching VEC topics: Economy; Personal, Family and Community Life; and Infrastructure and Services. These VEC topics contain five, four and seven subtopics, respectively.

- **Economy VECs:** Employment and training opportunities; business opportunities; income; cost of living; and resource economy;
- **Population:** Is a supporting topic as it is the driver of change related to infrastructure and services in the communities;
- **Infrastructure and Services VECs:** Housing; community infrastructure and services; land; and transportation infrastructure; and
- **Personal, Family and Community Life VECs:** Governance, goals and plans; community health; mercury and human health; public safety and worker interaction; travel, access and safety; culture and spirituality; and the way the landscape looks (or aesthetics).

**Source:** Response to EIS Guidelines, section 6, pg. 6-426

The structuring of the VECs leads to the reduction of the individual importance of each topic, which is in turn detrimental to the communities and could affect the measures taken to mitigate the negative effects of the project. Looking at the figure included above, for instance, would draw more attention to the Supporting Topic of Population than the sixteen VECs also listed. For example, 'mercury and human health', an important health concern, is nested inconspicuously among seven other 'Personal, Family and Community Life VECs'.

Some inconsistencies in presentation of the VECs and Supporting Topics in the Socio-Economic Environment, Resource Use and Heritage Resources EIS Supporting Volume lead to additional confusion. As shown in the figure below, there is no differentiation between Supporting Topics and VECs – population appears to be included in the list of VECs and no Supporting Topics are highlighted. This is inconsistent with the EIS and should be addressed to avoid further confusion.



**Source:** Response to EIS Guidelines – Socio-Economic, Resource Use and Heritage Resources Supporting Volume, section 1, pg. 1-11

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## Missing VECs and Supporting Topics

The Keyask Project Physical Environment EIS Supporting Volume contains no information on VECs and Supporting Topics other than this following excerpt:

*“For the Physical Environment assessment, valued environmental components were not identified. The effects of changes in the physical environment are identified and described for consideration of their associated effects on valued environmental components in the other supporting volumes. For example, the effects of changes in water level due to impoundment of the reservoir on aquatic valued environmental components are discussed in the Aquatic Environment Supporting Volume (AE SV) (Response to EIS Guidelines – Physical Environment Supporting Volume, section 1, pg. 1-5).”*

The absence of VECs specific to the physical environment is inconsistent with the other EIS Supporting Volumes and raises the question of why VECs were not identified. Association of physical environment effects with VECs in other EIS Supporting Volumes deflects attention from the true, potentially significant environmental effects and impacts from those physical environment components, had they been assessed individually. No rationale was provided explaining the justification behind this approach, and the information gap is a cause for concern.

## Conclusions

In conclusion, the structure and organization of VECs and Supporting Topics is so varied and inconsistent across the EIS Supporting Volumes that it leads to questions about the procedures for VEC selection. If there are guidelines, then how is it that the VECs are presented in such different and confusing ways? The structure of the EIS with respect to VECs and Supporting Topics clearly varied, as is demonstrated in the EIS Aquatic Environment Supporting Volume.

Manitoba Wildlands recommends an all-inclusive list or table of all VECs and Supporting Topics from each and all EIS Supporting Volumes would be highly useful for reference for participants, the CEC, potential business partners, as well as the general public.