

26	EC	R-ES Gdlines	6-343 6-349 6-351	Migratory Birds - Breeding season	<p>In this section the proponent indicates that clearing will be undertaken outside of "the sensitive breeding period (April 1-July 31)" to the extent practicable to minimize disturbance to breeding birds. The proponent also proposes to retain 100m vegetated buffers "wherever practicable" around lakes and creeks located adjacent to infrastructure sites to minimize loss of nesting habitat and limit noise-related disturbance to migratory birds (p. 6-341, 6-343).</p> <p>EC's mandate includes the protection of migratory birds and their habitat.</p> <p>EC reminds the proponent of the federal <i>Migratory Birds Convention Act</i> (MBCA) which protects migratory birds and their eggs and nests. Section 5(1) of the Regulations prohibits the hunting of a migratory bird except under authority of a permit. "hunt" means chase, pursue, worry, follow after or on the trail of, lie in wait for, or attempt in any manner to capture, kill, injure or harass a migratory bird, whether or not the migratory bird is captured, killed or injured. Section 5 of the regulations prohibits the disturbance, destruction, or taking of a nest, egg or nest shelter of a migratory bird. Possession of a migratory bird, nest or egg without lawful excuse is also prohibited. Section 5.1 of the MBCA prohibits the deposition of substances harmful to migratory birds in waters or areas frequented by migratory birds, or in a place from which the substance may enter such waters or such an area.</p> <p>EC's website on incidental Take (<a href="http://www.ec.gc.ca/gaom/hmh/default.asp?lang=eng&amp;nav=FAAC736-1">http://www.ec.gc.ca/gaom/hmh/default.asp?lang=eng&amp;nav=FAAC736-1</a>) contains additional information as well as a link to the MBCA and Regulations.</p>	<p>EC requests that the Proponent confirm that they will include the month of August in the habitat and wetland clearing/destruction avoidance period and to confirm that no greater than one hectare in size will be cleared/destroyed if limited habitat destruction must proceed during the migratory bird breeding season.</p> <p>EC also requests that the Proponent discuss their plans in regards to active nest surveys should limited habitat destruction proceed and their plans should an active nest be found in the habitat destruction area.</p>	
26.1					<p>26 (1) Cont...</p> <p>EC provides the following recommendations as general guidelines for industry to protect the great majority of migratory birds while realising the practicalities of development activities on the landscape. However the onus remains with the proponent to comply with the legislation.</p> <p>*To minimize disturbance to breeding migratory birds in the boreal ecotone of Manitoba, in areas where migratory birds may be nesting, EC recommends that habitat destruction activities (e.g. vegetation clearing and management, initial flooding/reclamation, etc.) for project areas greater than 50 hectares (such as this project) avoid at minimum the period between April 1 and August 31, to minimize population level effects to breeding birds.</p> <p>*If limited habitat destruction (e.g. vegetation clearing and management, reclamation, etc.) must proceed during the migratory bird breeding season (despite EC's recommendations for avoidance), the area to be cleared/destroyed should not exceed one hectare in size, as the effectiveness of finding nests is compromised in forested habitats. The lands to be cleared/destroyed should be surveyed for active nests by an avian biologist or rehabilitator with experience with migratory birds and migratory bird behaviours indicative of nesting (e.g. carrying nest sacs, nesting material or food, aggressive territorial behaviour, or distraction behaviour, etc.) within 7 days of destruction/clearing. Nest surveys should follow widely accepted protocols and be thorough and defensible. Some nest search protocols may require a permit. Therefore the proponent is advised to contact the regional permitting officer John Dunlop, at <a href="mailto:john.dunlop@ec.gc.ca">john.dunlop@ec.gc.ca</a> or at (506) 973-4090. Any nests found should be protected with a species appropriate buffer until the young have fledged and left the area.</p>		
26.2					<p>26 (2) cont...</p> <p>*If an individual has a prior knowledge of an active nest, at any time during the year, it must be protected with a suitable species-appropriate buffer until the young have fledged.</p> <p>*Wetlands attractive to breeding migratory birds (e.g. those containing water) should not be cleared/destroyed at minimum between April 1 and August 31. Canada geese and Mallards may nest early and broods of waterfowl and waterbird species are dependent upon wetlands throughout August and beyond.</p>		
27	EC	R-ES Gdlines	6-351	Migratory Birds - Blasting	<p>With respect to blasting, the proponent indicates that "over the course of construction, if there is a portion of scheduled construction activities that could affect the breeding colonies at still stages within the bird breeding period (April 1-July 31), measures will also be taken to avoid or minimize disturbance to active nesting colonies to the extent possible" (p. 6-351).</p> <p>Regarding blasting, EC recommends that the Proponent implement an appropriate blasting guidelines for the protection of migratory birds (e.g. buffer zone, scheduling) and design a monitoring program that allows for detection of potential adverse effects and implementation of timely adaptive management actions. EC recommends that the proponent avoid commencing blasting between April 1 and August 31, and within 1500m of active nesting colonies at any time during the year. Where local landscape features lessen blasting impacts, this distance may be reduced, to a minimum of 1000m.</p>	<p>EC requests that the Proponent:</p> <ul style="list-style-type: none"> <li>confirm that blasting will be avoided between April 1st and August 31st and will not be within 1000m of active nesting colonies, or within 1000m where local landscape features will lessen blasting effects, at any time during the year;</li> <li>discuss any blasting guidelines that will be developed to protect migratory birds; and</li> <li>confirm if a monitoring program will be in place that allows for the detection of potential adverse effects on migratory birds.</li> </ul>	

28	EC	R-EIS Guidelines	6-10Z	Invasive Species	<p>Invasive species spread readily along disturbance corridors and once established are virtually impossible to eradicate. This section mentions that "field studies detected all of the 13 invasive plants known to occur in the regional study area".</p> <p>The construction and operation of the project may provide additional opportunities for invasive species to establish and spread (through dispersal of weed seeds on equipment and vehicles, or in reclamation materials brought to the site, etc.), disrupting native plant communities.</p> <p>EC acknowledges the proponent's commitment on page 3-34 of TE SV to 1) clean construction equipment and machinery recently used more than 150km from the project area prior to transport to the project area regularly; 2) use seed mixtures containing only native species and/or non-invasive introduced plant species; 3) implement containment, eradication and/or control programs if monitoring identifies problems with invasive plants; and 4) educate contractors about the importance of cleaning their vehicles, equipment and footwear before travelling to the area.</p> <p>In addition to the proponent's commitments above, EC recommends that all vehicles and equipment are cleaned prior to entering the project areas. EC also recommends that any areas containing noxious weeds be clearly marked, so that equipment operators can easily recognize when passing through weed infested areas, and so that the spread of species from these areas can be monitored. EC further recommends that equipment and vehicles are thoroughly cleaned after passing through any such areas in order to avoid transporting seed to other areas.</p>	<p>EC requests that the Proponent discuss:</p> <ul style="list-style-type: none"> <li>• if all vehicles and equipment will be cleaned prior to entering the project areas;</li> <li>• if areas containing noxious weeds will be clearly marked, so that equipment operators can easily recognize when passing through weed infested areas;</li> <li>• if vehicles and equipment will be cleaned after passing through areas containing noxious weeds; and</li> <li>• if seed mixtures to be used contain only native species and/or non-invasive introduced plant species.</li> </ul>					
29	EC	R-EIS Guidelines	6-31B 6-319 6-320	Restoration	<p>This section notes on page 6-31B that a "rehabilitation plan will be developed that gives preference to rehabilitating the most affected priority habitat types using approaches that "go with nature" and on page 6-319 that "the rehabilitation plan developed and initiated during construction will extend into the operation phase, and continue until all necessary rehabilitation is completed." Lastly, on page 6-320 of this section it mentions that "Monitoring will include confirming that...rehabilitation to native broad habitat types was successful at locations identified in the rehabilitation plan".</p> <p>EC recommends that any disturbed areas that will not be flooded are restored, and are restored as quickly as possible once they are no longer in use. EC recommends that disturbed areas are restored to mimic native vegetation communities in the surrounding area, and to provide similar habitat to pre-construction conditions. EC also recommends that the restoration materials be of local provenance, and be certified and inspected to be free of both invasive and noxious weed materials. Finally, EC recommends long-term monitoring and adaptive management to ensure restoration.</p>	<p>EC requests that the Proponent:</p> <ul style="list-style-type: none"> <li>• confirm that disturbed areas that are no longer in use will be restored as quickly as possible;</li> <li>• confirm that disturbed areas will be restored to mimic native vegetation communities in the surrounding area, and provide similar habitat to pre-construction conditions;</li> <li>• discuss whether the restoration materials will be of local provenance; and be certified and inspected to be free of both invasive and noxious weed materials; and</li> <li>• discuss any long-term monitoring and adaptive management plans to ensure restoration.</li> </ul>					
30	EC	R-EIS Guidelines	6-325 6-326 6-327	Wetlands	<p>These sections outline the following:</p> <ol style="list-style-type: none"> <li>1) project construction is predicted to affect up to 7765 ha of wetlands, including 8-12 ha of off-system marsh (p. 6-325);</li> <li>2) mitigation to replace Nelson river wetlands is not proposed (p. 6-325); and</li> <li>3) "globally, nationally and/or provincially significant wetlands are not affected" (p. 6-327).</li> </ol> <p>Proposed mitigation includes:</p> <ol style="list-style-type: none"> <li>1) "measures to protect against erosion, siltation and hydrological alteration will be implemented in utilized construction areas that are within 50 m of any off-system marsh that is outside of the Project Footprint" (p. 6-325); and</li> <li>2) "12 ha of the off-system marsh wetland type will be developed within or near the local Study Area" (p. 6-326; p. 6-327).</li> </ol> <p>Wetlands provide important habitat for both migratory birds and species at Risk. EC promotes the maintenance of the functions and values derived from wetlands throughout Canada, enhancement and rehabilitation of wetlands in areas where continuing loss or degradation of wetlands have reached critical levels, no net loss of wetland functions for federal lands and waters, recognition of wetland functions in resource planning and economic decisions, and utilization of wetlands in a manner that enhances prospects for their sustained and productive use by future generations.</p>	<p>EC requests that the Proponent confirm the use of appropriate setbacks from wetlands and discuss, for those wetlands where avoidance is not possible, what mitigation and compensation measures will be implemented.</p>					
30					<p>30 Cont.</p> <p>EC recommends that the proponent take all reasonable measures to avoid wetlands, where feasible. Irrespective of whether they are wet or dry, and that buffers or setbacks originate from the one in one hundred year high water mark. One hundred meter setbacks should be utilized from the edge of the proposed development or associated feature (e.g., access route) where feasible.</p> <p>EC acknowledges that the proponent will develop 12 ha of off-system marsh habitat within or near the study area to compensate for the loss of 9-12 ha of off-system marsh.</p> <p>EC refers the Proponent to The Federal Policy on Wetland Conservation which promotes the wise use of wetlands and elevates concerns for wetland conservation to a national level. EC recommends that the Proponent review this document to provide further guidance on reducing impacts to wetlands.</p>						

31	EC	R-FIS Gadflies	6-117	Species at Risk	<p>The FIS lists the Common Nighthawk, Olive-sided Flycatcher, Hairy Woodpecker, Short-eared Owl, Peregrine Falcon, and Wolverine as species that have been identified in the project area. In addition Northern Leopard Frog, Yellow Rail, Red Knot, Horned Grebe, and White-browed Noddy also have the potential to occur within the project area.</p> <p>The federal Species at Risk Act (SARA) is directed towards preventing wildlife species from becoming extinct or lost from the wild, helping in the recovery of species that are at risk as a result of human activities, and promoting stewardship. The Act prohibits the killing, harming or harassing of listed species; the damage and destruction of their residences; and the destruction of critical habitat.</p>	<p>EC requests that the Proponent confirm whether they intend to have an environmental monitor on site during construction activities and the setbacks and timing restrictions that will be used to avoid the nests of species at risk in the project area.</p>
31					<p>31 Cont...          EC recommends that an Environmental Monitor, knowledgeable in the identification of all species at risk that may occur in the project area, be present on site during project construction activities.</p> <p>In the event that species at risk are expected or encountered, the primary mitigation measure should be avoidance. EC refers the proponent to the Petroleum Industry Activity Guidelines for Wildlife Species at Risk in the Prairie and Northern Region (attached). This document includes species-specific timing restrictions, setback distances and best management practices. Please note the following amendments not reflected in the document:</p> <ul style="list-style-type: none"> <li>-Common Nighthawk May 1 to August 31 200m</li> <li>-Horned Grebe April 1 to August 31 100m from the high water mark of the wetland or waterbody containing the nest</li> <li>-Olive-sided Flycatcher May 1 to August 31 300m</li> <li>-Hairy Woodpecker May 1 to July 31 300m</li> </ul>	
32	EC	R-FIS Gadflies	6-127 6-130	Caribou	<p>The FIS describes three groupings of caribou for the Regional Study area:</p> <ol style="list-style-type: none"> <li>1) barren-ground caribou from the Canajoharie herd;</li> <li>2) coastal caribou from the Cape-Churchill and Pen Island herds; and</li> <li>3) summer resident caribou" (which "could be coastal caribou, (boreal) woodland caribou, or a mixture of both"; p. 6-130).</li> </ol> <p>There are 6 geographically distinct populations of the forest-dwelling Woodland Caribou in Canada: Northern Mountain population, Southern Mountain population, boreal population, Forest-Tundra population, Atlantic Gaspeian population, and the Insular Newfoundland population. With the exception of the barren-ground caribou, EC considers the caribou in the project area to be part of the "forest-tundra" population, which are not SARA-listed and have not been assessed.</p> <p>EC notes that the project will result in the permanent loss of some primary calving and rearing complexes ("clusters of islands in lakes or islands of black spruce surrounded by expansive wetlands or treeless areas (pasture complexes)" (p. 6-131)) for the summer resident caribou (p. 6-367, 6-372), as well as 6825 ha of physical winter habitat for the Canajoharie, Cape-Churchill and Pen Island herds (p. 6-366). Additionally, sensory disturbances associated with construction and operation are expected to result in additional loss of effective habitat (p. 6-367, p. 6-372), and increased access to the project area could increase mortality due to predation (p. 6-368, 6-372).</p>	<p>EC requests that the Proponent discuss any plans to implement additional mitigation measures (e.g. mitigation of noise, light, smells, vibration, reduction of vehicle speeds, etc.) to minimize harassment of caribou in the project area, particularly from late winter to late spring and early summer.</p> <p>EC requests that the Proponent discuss any plans to reduce sight lines along access trails and discuss restoration plans for project-related cleared areas, temporary transmission right of ways, trails, etc.</p> <p>EC also requests the Proponent discuss their plans to consult with the province.</p>
32					<p>Cont...          EC encourages the proponent to consult with Manitoba Conservation to identify any plans to manage undisturbed caribou habitat in the project area.</p> <p>EC acknowledges the proponent plans to implement mitigation measures including:</p> <ul style="list-style-type: none"> <li>-minimizing blasting from May 15 to June 30 (p. 6-370);</li> <li>-implementing an access management plan, including locked gates at the north and south dykes from May 15 to June 30, as well as during other sensitive times determined through monitoring (p. 6-371);</li> <li>-rehabilitating temporarily cleared and excavated materials placement areas to native habitat;</li> <li>-scheduling and reorganizing project-related activities and trails within 100m of the project footprint (p. 6-374); and</li> <li>-long term monitoring of caribou and predators in the project area (p. 8-23, 8-26).</li> </ul> <p>In addition to these measures, EC recommends the reduction of sight lines along the access trails, and the continual restoration of project-related cleared areas, culverts, trails, etc. as they are no longer in use. EC also recommends that the proponent consider additional mitigation measures (e.g., mitigation of noise, light, smells, vibrations; reduction of vehicle speeds, etc.) to minimize harassment of caribou in the project area, particularly from late winter to late spring and early summer, as this will be a stressful period for all of the caribou in the project area.</p>	

33	EC	R-EIS Guidelines	Monitoring and Follow-up Plans	EC notes the proponent's plans to implement monitoring and follow-up plans regarding the effects of the project on colonial waterbirds, species at risk, caribou, wetlands, invasive plants, and ecosystem diversity, and the success of planned mitigation with EC.	EC requests confirmation from the Proponent that the monitoring reports collected will be shared with EC.		
1	NRCan	R-EIS Guidelines-04 Project Description	Physical Environment	The proponent plans to construct and utilize 3 landfill sites to dispose of waste. Details on the location and construction of the landfill sites are not provided. Therefore the potential effect on groundwater quality cannot be assessed. Information on the placement and construction of landfills provided in a hydrogeological context allows for the assessment of whether groundwater may become contaminated from such a facility.	Information on geographic location and depth of the landfill is requested. Discuss the type of liner to be used (natural, engineered). Discuss which hydrogeological units (and the characteristic properties of the units) are expected to be in contact with the waste.	NRCan-0001	Proponent response addresses information request.
2	NRCan	R-EIS Guidelines-04 Project Description	Physical Environment	The proponent plans to drill a potable water well for use during the construction phase of the project. Details on the location, construction and future usage of this well are not provided.	Provide details on the location, construction, and future usage of the potable well to be drilled and utilized during the project construction phase.	NRCan-0002	Proponent response addresses information request.
3	NRCan	R-EIS Guidelines-04 Project Description 41	Physical Environment	The proponent plans to drill a potable water well for use during the construction phase of the project. It is not clear if this well will be used beyond the construction phase or if it will be decommissioned following the construction phase. Decommissioning of wells no longer needed is required in order to protect groundwater. Abandoned wells can provide a conduit for groundwater contamination.	Clarify if the potable well to be drilled and utilized during project construction will be used beyond this phase or decommissioned. Provide details on the future decommissioning of this well.	NRCan-0003	Proponent response addresses information request.
4	NRCan	R-EIS Guidelines-05 Environmental Effects Assessment	Physical Environment	The proponent acknowledges an inconsistent relationship between water levels in groundwater and adjacent lakes. This assessment is based on only 8 monitoring wells drilled on site. In order to better understand the relationship between groundwater and surface water, data collection from additional monitoring wells is recommended.	NRCan recommends that the proponent construct and monitor additional monitoring wells for a better understanding of the baseline groundwater-surface water relationships.	NRCan-0004	Proponent response addresses information request.
5	NRCan	R-EIS Guidelines-06 Environmental Effects Assessment	Physical Environment	The proponent discusses baseline groundwater quality based on references to the literature. They also mention that on-site groundwater analyses confirm this and discuss elevated zinc concentrations. However, there is no information provided with respect to on-site sampling. It is unclear how many on-site samples were collected and what parameters they were analyzed for. The analytical results are not presented. The absence of this information makes it impossible to assess if baseline conditions of groundwater quality have been adequately determined.	Provide the location of on-site groundwater monitoring well sampling sites. Provide information on the frequency of groundwater sampling from these sites. Provide information on sampling and laboratory methodologies, including a discussion of quality assurance and quality control. Present the analytical results of all field-derived and laboratory analyses. Provide a direct comparison, by means of a table, of groundwater quality determined from on-site measurements versus groundwater quality gleaned from the literature. It is recommended the following physical and chemical parameters be tested for in groundwater: alkalinity, temperature, pH, Eh, electrical conductivity (EC), major ions, nutrients, minor and trace constituents, and metals (including methyl mercury).	NRCan-0005	The proponent mentions that two groundwater sampling trips were conducted: one for the camp well investigation and one for the groundwater investigation. Are the results presented in the Keyask Response to R? Just for the groundwater investigation? Please clarify. If camp well data has not been presented, please do so. Also, on May 8.2.2 of the Physical Environment Supporting Volume Groundwater, there are 5 other wells (G-4555, G-5086, G-0561, 03-042, 03-045). Please clarify if these wells were sampled and provide any data for these wells.
6	NRCan	R-EIS Guidelines-06 Environmental Effects Assessment	Physical Environment	The proponent considers the possibility of groundwater contamination as a result of accidental spills and claims that with proper protection measures no residual quality effects are predicted. However, they do not assess any other sources of possible contamination. These could include contamination resulting from the landfill (see NRCan comment 1) or contamination of groundwater caused by project-induced changes to the hydrogeological regime that result in potentially contaminated surface water flowing into the groundwater system. Modeled groundwater flow directions (post project) indicate that flow along the Nelson River is generally from groundwater towards the river. However, this may not be the case in the vicinity of the generator/dams. For example, groundwater on the south side of Gull Lake will decrease in velocity or flow away from the flooded zone (p. 6-219).	Discuss the possibility of flow from the Nelson River to groundwater in the vicinity of the generator/dams during the construction and operation phases of the project. Discuss the possibility of groundwater contamination from potentially contaminated surface water, including possible methyl mercury contamination. Discuss measures taken to avoid groundwater contamination in this area.	NRCan-0006	Proponent response addresses information request.
7	NRCan	R-EIS Guidelines-06 Environmental Effects Assessment	Physical Environment	The proponent states that future monitoring of groundwater levels in the project vicinity is not proposed. Monitoring of groundwater levels is an important means for validating the numerical groundwater model which is used to predict project-related effects to groundwater. Given that there were only 8 on-site groundwater monitoring wells, additional monitoring wells (see NRCan comment 4) and future monitoring of those wells is recommended.	NRCan recommends that future monitoring (pre-construction, construction, and operation phases) of groundwater levels continue in order to validate model predictions.	NRCan-0007	Proponent response addresses information request.
8	NRCan	PE SV, Section 8 Groundwater	Physical Environment	There is no mention of other possible groundwater users in this area. It is essential to know if there are any groundwater users within the defined study area, particularly those who may use the water as drinking water. Groundwater may become contaminated as a result of project activities and any existing groundwater wells may become contaminated as a result.	Clarify if there are any present or reasonably foreseeable future groundwater users in the groundwater study area (defined in Section 8.2.2). If there are, provide the location of the wells, well completion details, the existing water quality in the wells, and discuss whether the wells are used for drinking water.	NRCan-0008	Proponent response addresses information request.
9	NRCan	PE SV, Section 8 Groundwater	Physical Environment	The proponent acknowledges that potential changes to future groundwater quality resulting from the proposed project are assessed only in a qualitative manner. It is unclear why these potential changes were not assessed quantitatively, using the numerical groundwater model.	Provide justification for the absence of a quantitative assessment of changes to future groundwater quality.	NRCan-0009	Proponent response addresses information request.

10	NRCan PE SV- Section 8 Groundwater	p. 8-7	Physical Environment	The hydraulic conductivity range is given as 1x10 <sup>-4</sup> m/s to 1x10 <sup>-8</sup> m/s. This must be a typo (should be 1x10 <sup>-9</sup> ), as this range is unrealistic.	Correct typo on page.	NRCan-0010	Proponent response addresses information request.
11	NRCan PE SV- Section 8 Groundwater	p. 8-12	Physical Environment	No reference is provided for this table of hydraulic conductivity values. It is unclear if these values are derived from the literature or from on-site data.	Clarify the source of the hydraulic conductivity data in Table a.3.1.	NRCan-0011	Proponent response addresses information request.
12	NRCan PE SV- Section 8 Groundwater	p. 8-31	Physical Environment	The number and distribution of groundwater wells is insufficient to provide a good basis for numerical modeling. Only a one-site groundwater monitoring wells were used. Only 3 wells are provided to the proposed generator/dam. As this is an area where the groundwater-surface water relationship is more complex and groundwater flow reversals could occur, a greater well density is warranted. Additionally, there is only 1 well west of Caribou Island. This is a very low number of wells considering that this area represents at least half of the area to be inundated by the reservoir.	To provide greater confidence in the numerical groundwater model it is recommended that additional groundwater monitoring wells be installed to monitor water levels. It is recommended that multi-level wells be installed in some locations in order to delineate vertical groundwater flow gradients.	NRCan-0012	Proponent response addresses information request.
13	NRCan PE SV- Section 8 Groundwater	Entire Appendix	Physical Environment	There is no mention of model verification or model validation for the numerical groundwater model. Verification is used to establish greater confidence in the model by using the set of calibrated parameter values and stresses to reproduce a second set of field data (above and beyond model calibration). Model validation is completed years after modeling is completed in order to determine if the model's prediction was accurate. This is particularly important for this project as there is considerable uncertainty in model predictions due to the lack of on-site data.	Provide details on model verification if it was conducted and plans for future model validation.	NRCan-0013	Proponent response addresses information request.
14	NRCan 04-Supporting Volume, Responses to EIS Guidelines - Environmental Effects Assessment, Seismic activity, Physiography	p. 6-583, p. 6- 28 to 6-29	Physical Environment	NRCan expert reviewed the information related to the seismic activity. Although the expert concurs that the known earthquake activity in the area is very low and that the potential for significant reservoir-triggered seismicity is also extremely low, the following sentence needs to be changed. "It is evident from the historical records since the 1600s and relatively recent seismic monitoring, which presents the distribution of magnitude 3 and greater earthquakes in Canada since 1637 (Natural Resources Canada 2008), that no major earthquakes, and hence no important earthquake generating fault movements, have occurred in Manitoba (Map 5-6)."	This sentence suggests that the earthquake reporting is complete in Manitoba for magnitude 3 and larger since 1927 based on an NRCan map that displays the known earthquakes between 1627 and 2008. This is not so. Potentially damaging earthquakes in this area of the Precambrian Shield could only be known since the late 19th century at the earliest when written reports from Manitoba started to be available. The earthquake detection in the area is about M 5.5 approximately 1940 and M 5.3 and larger since about 1900 (extrapolated from Southern Saskatchewan in Barham et al., 1979). M 3 and larger could be detected only since the 1990s. Other studies may have looked at the detection completeness of this part of the Canadian Shield. Also, the proposed link between an absence of major earthquakes in recent times and no fault movements is incorrectly presented. Earthquake-induced surface ruptures could have been produced prior to earthquake reporting or detection by human beings. Pre-19th century fault movements could only be known from special geological studies, not deduced from our time-limited earthquake coverage. One must note, however, that even if the text is changed along the lines we present therein, it will not modify the conclusions of the report, i.e. that the design should use the accepted values of seismic hazard for this area of the Canadian shield. The expert, however, would like the text to better reflect the seismological knowledge of Manitoba to minimize the risk of a false perception.	NRCan-0014	In the column specific department comment / request for additional information - in the third line a correction should be made. It should be "since 1627 and not since 1927".
15	NRCan SEE-RU-HR SV	p. 5-14	Physical Environment	Description of local assembly does not consider completeness of earthquake catalog.	See comment 14	NRCan-0015	For NRCan 14-15, the proponent response is that additional information will be duly noted in the errata report. Please ensure that the information is included in the errata report.
16	NRCan Supporting Volume/Physiogra phy	5-5 to 5-6	Physical Environment	The nature of underlying bedrock (and overlying material) is an important component, even in projects such as Keeyask where it provides not only the solid ground on which the generating station rests but also it may contain trace elements that may affect groundwater and surface water quality.	The Precambrian bedrock is described as consisting of gneisses, granite gneisses and granites. What are gneiss/gneisses? Please provide a more detailed description of regional and local bedrock that includes information such as: local fracture/joint density, orientation, etc.	NRCan-0016	Review of response outstanding and will be provided at a later date.
17	NRCan R-EIS Gallies-04 Project Description	4-34	Reservoir Preparation	The proponent indicates that standing woody material, including dead and living trees and shrubs 1.5 m tall or taller, as well as fallen trees will be removed from the areas to be flooded. Reservoir clearing addresses boating safety issues and aesthetic issues and is also intended to reduce the production of methymercury in the future reservoir.	The reduction of methymercury production would be more effective if reservoir clearing included the removal of labile organic materials such as shrub foliage. Labile organic matter from flooded foliage is one of the main factors favoring the algal bloom that occurs in the first years after impoundment, and this in turn favours the methylation of mercury and its uptake in the reservoir foodweb. NRCan recommends consider whether this strategy could be applied for the Keeyask project.	NRCan-0017	The proponent states that the production of MeHg is predominantly associated with the decomposition of peat and other organic soils and that the decomposition of shrub foliage is not expected to reduce significantly the mobilization of MeHg in the reservoir foodwebs. The EIS however, contains no information on the nature (labile/non labile) of organic matter in soils (including peat) or vegetation of the region. The terrains that will be flooded consist of a mosaic of vegetation and soil cover that have not been characterized with respect to their MeHg mobilization potential. Characterize the variable nature and concentration of C and Hg in vegetation and soils.

18	NRCan R-EIS Guidelines - 05 Environmental Effects Assessment	6-288 to 6-291	Mercury mitigation in aquatic environments	The proponent expects a significant increase of mercury concentrations in large piscivorous species, such as walleye and northern pike and to a lesser extent in lake whitefish. This increase is expected to peak within 3 to 5 years after flooding and to decrease gradually in the following 25 to 30 years. Peak concentrations on the order of 0.8 to 1.4 ppm (Table 6-18), well above the 0.2 ppm guideline for commercial marketing, are expected for walleye and northern pike. Given the magnitude of the mercury residual effect, monitoring of Hg concentrations in fish muscle tissue will take place until concentrations return to long-term stable levels.	The main measure proposed to mitigate the mercury issue in reservoir biota are (1) the clearing of trees and large shrubs prior to flooding and (2) the monitoring of Hg concentrations in large fish and (3) the ensuing publication of consumption advisories. In an effort to reduce as much as possible the increase of mercury concentrations, NRCan recommends that the proponent consider extending the reservoir clearing activities to areas expected to be affected by peatland disintegration (cf. section 6.3.7), one possible effect of which may be to stretch beyond 30 years the period of strong mercury contamination in the Kenogawabik reservoir. This consideration should be discussed with relevant federal departments (e.g. Environment Canada) and provincial ministries.	NRCan-0019 NRCan-0019a and NRCan-0019b	In the proponent's view, the model has the ability to fully integrate all the factors that lead to MeHg contamination and that there is no need to characterize the organic C and Hg burden of the vegetation and soil in terrains that will be flooded by the reservoir. It is NRCan's view that fish MeHg concentrations in some boreal reservoirs, such as Gouin or Baskerville, have yet to return to acceptable levels after more than 20 years of impoundment. The proponent should consider all measures that may help to mitigate the expected Hg increase in the reservoir foodweb, especially in view of the continued 'breakdown of shorelines' some 30 years after impoundment.
19	NRCan EIS - Supporting volumes - 04 Aquatic Environment	7-1 to 7-75	Mercury in fish	This section presents a well documented and fairly comprehensive account of the mercury issue in boreal hydroelectric reservoirs, and more specifically in the Kenogawabik reservoir and nearby water bodies. It presents in a single document much of the information which is otherwise scattered in various other EIS documents.	However, this document presents no information on the variability of Hg concentrations in soils (particularly in organic horizons) that will be affected by reservoir flooding, whether immediately following impoundment or much later as a result of peatland disintegration. In NRCan's view, this information, and its links with vegetation cover and wildlife history, are critical in the development of strategies to reduce the remobilization of mercury and to reduce methylation rates in flooded terrain. Moreover, the EIS documents contain no information on forest fire history, as had been requested in the Guidelines (section 6.1.3). NRCan recommends that this information be included in the EIS.	NRCan-0019a and NRCan-0019b	As stated by the proponent, the magnitude and timing of the Hg responses are not only related to mercury concentrations in soils and vegetation but also to factors such as controls on methylation, seasonality of MeHg to the food web or trophic transfer to the food web. For these reasons, NRCan proposes that the proponent characterize the variable nature and concentration of C and Hg in vegetation and soil. As the proponent recognizes, the algal bloom that follows flooding plays a key, perhaps determining, role in transferring MeHg to the reservoir food web and thus must be attenuated as much as possible by the removal of labile organic matter prior to flooding. It is NRCan's understanding that the proponent has not utilized information on soil mercury content, as this data was not included in the EIS. Without quality information on both Hg and C characteristics in flooded terrain, there are no grounds to compare or assess MeHg predictions in the future reservoir. The region that will be flooded has combined terrain characteristics (thick peaty soils, permafrost) that have yet to be fully assessed in the context of potential Hg contamination. NRCan suggests that the proponent carry out a characterization study in this rather unique terrain and discuss results and mitigation measures (as appropriate) with federal departments and provincial ministries.
20	NRCan Sedimentation - Physical Environment, Supporting Volume	p. 7-16 - 7-41	Bedload transport	Quality of conclusions from limited data	The general lack of bedload through the Local Study Area is not surprising given that the Spill and Clark lakes are immediately upstream and represent sediment traps. Also, the general low rates of bank erosion, lack of alluvial bars, and the coarse character of the channel bed are all consistent with a very limited transport and supply of bedload materials.	NRCan-0020	Proponent response addresses information request.
21	NRCan Sedimentation - Physical Environment, Supporting Volume	p. 7-39 - 7-43	Summary of sedimentation residual effects	Content of summary assessments of the sedimentation resulting from the project	NRCan has no issues with the summary assessments of the sedimentation effects resulting from the project.	NRCan-0021	Proponent response addresses information request.
22	NRCan Shoreline Erosion Processes - Physical Environment, Supporting Volume	p. 7-43	Environmental monitoring	Monitoring actual post-project effects contributes to improving the modelling of impacts from future projects	NRCan strongly encourages the monitoring of the changes in sedimentation resulting from the project. NRCan recommends that the proponent should consider undertaking a regular and detailed suspended sediment sampling program for different discharges, particularly in the first 10 years of the project, when change is most likely to be significant.	NRCan-0022	Proponent response addresses information request.