

#	Pg#	Ref.	MNR Comment	Proponent's Response	MNR Review of Proponents Response	
		3.1.10.4 & 4.3.9.7.	Terrestrial wildlife habitat linkage and corridors normally describe intact habitat such as areas of connective forest cover or areas that connect one habitat type to another to meet a species life history requirements. Hydro right of way and ATV trails for example should not be described as wildlife corridors although they may be used by some species.	Acknowledged	Acknowledged. Will changes be made and where?	The extensive forest cover, wetlands and natural connections along valleys and watercourses are used by wildlife to move across the landscape. Incidental observations in manmade habitats included some use of trails by wildlife, in particular moose and bear were observed along the main road, recent cuts and ATV trails and for bear in paths leading to the dump.
	109	Sec. 4.3.7.8:	Suggestions are that increasing head pond depth and maintaining low flow will benefit species and diversity. I wouldn't call a riverine system stochastic in nature as it follows predictable flow and level patterns throughout the year. Ecosystems have adapted to these conditions. Also headpond fluctuations will likely impact wetland structure and function and the colonization of riparian areas by terrestrial and wetland vegetation. Please include some text addressing head pond level fluctuation with respect to habitats and wetlands.	<p>The fluctuation of water levels in the headpond will be controlled within a specific range (233.0-233.6 masl). The magnitude, duration and frequency of that range will change seasonally and be dependent on watershed runoff upstream. The creek and wetlands below R-1 will be within the new headpond and the 233.6 dam elevation. The lakes above R-1 will not be flooded or inundated as a result of the dam.</p> <p>These comments are related to the new wetland areas that will establish below R-1 in low lying areas, post-inundation.</p> <p>Wetlands are dynamic with species adapted to seasonal fluctuations. The colonization of wetland and upland species within the new shoreline will be dependent on a number of factors. Currently the beaver ponds and fluctuating levels have created bare open rock and mud along the shorelines of Lizard Creek in varying widths. This is seasonal but also affected by the state of the beaver dams (abandoned, active or leaking) and weather.</p> <p>Post-construction the new water line of the headpond will inundate upland habitats and result in a changeover to riparian vegetation. The headpond will fluctuate daily and seasonally in elevation but over a narrow range. This will allow wetland species to occupy the near shore and littoral habitats and shrubs to develop on the shoreline. Based on the current mix of grasses, emergent wetland plants, shoreline shrubs,</p>	<p>Operations up to 233.6 masl would suggest that the lakes above R-1 will be used as part of the headpond, and that these lake levels will fluctuate during operations.</p> <p>Wetlands have adapted to seasonal fluctuations, but the operations as stated will provide for daily/weekly fluctuations.</p> <p>"The inundation of the headpond will allow the seed bank in the current wetlands to float into the new shorelines, germinate there and establish wetland communities within a short time period (1-3 years)." Is this speculation or based on existing literature? Please clarify and provide discussion.</p>	The area above R-1 is part of the ZOI due to the fact the water levels will fluctuate slightly depending on inflow to the watershed of Lillie Lake. The upper lakes currently fluctuate from 233.1 to 234.3 based on measured data. The levels are also affected by the rock outcrop at R-1 with a bottom elevation of 233.1. As such the wetlands are currently subjected to wide variations in water levels from flooding in spring to drier conditions in summer when the lakes drop below 233.1. This was evident by water marks on the rock outcrops and tree trunks above R-1. It should be noted that thru the period of observation from 2005-2012 the low water level has fluctuated between 233.0 and 233.4 due to manipulation by beaver activity just above R-1. The wetlands were predominantly floating mats of moss with cranberry, sedges, grasses and shrubs such as sweetgale. Those types of wetland have adapted to the conditions in the upper lakes. The proposed development will not change the levels in the lakes, except the 25-50 mm daily drawdown when the turbine is operating. Normal spring flooding

				<p>sedges and tree species recorded in the existing wetlands, there is a high diversity of plants present that can occupy the new wetland areas, shorelines and littoral zones. The inundation of the headpond will allow the seed bank in the current wetlands to float into the new shorelines, germinate there and establish wetland communities within a short time period (1-3 years). Observations within the existing wetlands found the plants were subjected to periods of beaver flooding, changes to water levels seasonally and through beaver dams breaking and low flow periods. As such the plants were established in zonal bands based on elevation, slope, moisture, soil and sunlight aspect.</p> <p>Once the headpond is inundated the fluctuations will be a maximum of 60 cm from season to season and only 50 mm or less on a daily basis, these fluctuations typical of the natural occurrences. The small daily change will not impact on the success of the wetland species to establish or their success</p>		<p>and natural fluctuations over the seasons due to rain events will still occur in the wetlands on the lakes above R-1. No change in the species composition, wetland health or wetland types will occur as a result of the hydro development, even though the upper lakes above R-1 are included as part of the ZOI.</p> <p>The attached table outlines the wetlands found within the upper lakes with specific mitigation measures and predicted effects.</p> <p>The flooding of the existing wetlands below R-1 (lower lizard lake and lizard creek to control structure) will result in a loss of those marshes, open water marshes and swamps. In some cases the water level will be several metres higher but some of the wetland areas extend up to the new water line already and will present at a higher elevation post inundation.</p> <p>The regeneration of new wetlands along the shoreline and in existing low lying areas will occur post-inundation.</p> <p>We are reviewing the post-construction mapping to determine the existing conditions and vegetation cover within the potential wetland areas. Creation of wetlands will include a combination of site preparation activities, such as clearing trees or brushing those areas and ensuring grades permit spring flooding. The exact area of the wetland created by the existing slopes will be determined once flooding occurs to the headpond elevation. Specific measures will be designed to create conditions favourable for wetland development. Where necessary additional measures such as plantings, seeding, grading and organic soil introduction may also be completed as part of the post-construction monitoring of the new shoreline.</p> <p>Natural regeneration is preferred as a</p>
--	--	--	--	---	--	---

						restoration method but creating the conditions for that to occur will require some use of heavy equipment or manipulation and access. Seeding of areas with seed collected from wetlands in the area, cuttings or organic soil with the seed bank intact will be considered for areas where natural seed dispersal does not occur. Flooding of areas post-construction will be seasonal and limited due to the control structure elevation. The typical areas where wetlands occur in reservoirs is new shoreline with shallow slopes, low lying edge habitat and through mats of moss and vegetation invading edge habitats or floating swamps, where sunlight, nutrients and soil conditions are favourable. The attached figures estimate where shallow conditions may create new wetland habitat post-construction. The attached table shows the existing wetlands and the potential new wetlands.
		Throughout document, there are a few places where (i.e. Table 4-3), mitigation is provided, however these items are not mitigation. For example – Species may benefit from new roads and hydro corridors as it may present new habitat for milkweed propagation. This is not mitigation.	Milkweed will occupy disturbed soils along the new roads as seen in the current snowmobile trail and hydro corridor. Mitigation will include similar measures as per turtles with speed restrictions that will reduce mortality, dust suppression, maintenance of existing habitats, monitoring of roads and new wetlands for milkweed species, limiting weed control measures and use of herbicides.	What is meant by maintenance of existing habitats? Monitoring of roads and new wetlands for milkweed species is not mitigation.	Mitigation for milkweed plants to provide habitat for monarch butterflies can be conducted in several ways. Common milkweed is a noxious weed in most municipalities and displaces native species, planting of milkweed is not one of our mitigation measures. However milkweed does occur on site, especially along the access road and hydro corridor where repeated disturbance and introduction of seed from vehicles and wind occurs. Those milkweed stands will continue to be present post construction and other disturbances will be created, such as in laydown areas. All of these areas will create conditions favourable for common milkweed to grow. Mitigation will include not using herbicides on the roadsides and disturbed areas under LCPI control, not mowing those areas or removing milkweed plants and if necessary maintaining early successional habitat by trimming saplings every few years if they start to grow in milkweed plant communities.	
114		Wetlands – Site-specific impacts and proposed	The existing wetlands on site are shown on the attached figure	Each wetland needs to be discussed separately	The attached map shows the existing	

			mitigation and monitoring should be provided here for input. Would also like to see mapping of current wetlands (3 ha) and potential new wetland habitats (2 ha).	UL1 (Lizard Creek wetlands-upper lakes-NEA July 2012). Impacts and mitigation are outlined in comment #95. The need for monitoring and the parameters to be examined will be determined at the permitting stage also see impacts Table UL1	in terms of impacts and mitigation since each wetland will be impacted differently based on its attributes/values. Response to comment #95 doesn't address this. If you expect new wetlands to establish post-inundation, than please provide some detail around the location of these habitats, size/extent, wetland type, and how you reached these conclusions. A map depicting these habitats should be provided.	wetland areas and predicted new wetland areas post-inundation. The attached table shows the wetlands by number and the impact on the existing wetlands and predictions on the type of wetland and areal coverage.
	114		Sediment traps for wetland re-establishment—please confirm their use, numbers and locations.	Locations to be determined through analysis of topographic mapping.	This information should be provided prior to permitting and approvals. Analysis of topographic maps may not provide the necessary level of detail. Please consider ground truthing.	The use of sediment traps to create wetland habitat will be determined based on existing data and site knowledge, field notes and photographs. Extending the spring flooding by creating berms to act as sediment traps will be examined and maps of specific areas where this method can be used.
	116				Mitigation for Sensitive Species: post-construction monitoring to ensure species have found sufficient habitat in remaining areas. How will this be accomplished?	Habitat for sensitive species within the area to be inundated will be flooded out. As such there is no specific mitigation measures to address this loss. The areas will not be cleared during the peak breeding bird season (May 9-July 31 st).