



13 March 2014

Stephanie Hodson
Stakeholders Relations Manager
Xeneca Power Development Inc.
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Re: Marter Township GS Environmental Report, Blanche River

Dear Ms. Hodson:

Ontario Rivers Alliance (ORA) is a Not-for-Profit grassroots organization acting as a voice for the French River Delta Association, CPAWS-OV, Council of Canadians, Kiishik Community Association, Food & Water First, Whitewater Ontario, Vermilion River Stewardship, Mississippi Riverwatchers, French River Stewardship, as well as many other stewardships, associations, and private and First Nations citizens who have come together to protect, conserve and restore healthy river ecosystems all across Ontario.

ORA was very pleased that Xeneca provided a fully searchable and user friendly Environmental Report and supporting documentation. This was very refreshing and helpful, and we appreciate this big step towards accommodation and cooperation. However, even with this significant advancement, it has been impossible to fully review the entire ER and all its supporting documents and provide meaningful and thorough input within the 32 day comment period.

ORA is pleased to submit our comments and questions on the Marter Township GS Environmental Report as follows:

1. Operating Strategy

The ER states, "*Modified run-of-river projects typically have less environmental impact than such peaking hydroelectric projects.*"¹ This is a judgement that is misleading and has no scientific basis or merit.

Xeneca states, "*the Minimum flow targets for the modified operations at the Marter site seeks to maintain a minimum flow value of at least 2.3 cms...*" and "*modified operations*

¹ Marter Final ER, Table 25, Identified Issues and Management Strategies, P171



at Misema, include occurrences where water is held back for time periods in excess of 24 hours. During these events Marter would operate based upon inflow conditions at the Marter site while ensuring downstream flow and level commitments are satisfied."² This was all very confusing and unclear with reports of providing 2.3 cms and 0.5 cms of environmental flow. It was only on closer examination that it became apparent that Xeneca only proposes 0.5 cms of environmental flow during intermittent operations throughout all seasons. It was only when reading the actual Operating Strategy in Annex 1 that it became clear that Xeneca was referring to the combined minimum environmental flow during intermittent operation downstream of the Misema River confluence that it would reach 2.3 cms. This is a very complex and confusing operating strategy, and one wonders how effective it would be.

The ER states that, "*due to the general lack of suitable habitat within the bedrock-dominated bypass reach, no compensatory flow releases (Q_{COMP}) were previously proposed in the Draft ER. To facilitate larval drift for sturgeon larvae in the pool at the confluence between the Marter Township GS tailrace and the bypass reach, a Q_{COMP} of $0.5\text{ m}^3/\text{s}$ is now proposed to be released during the spring; and further, when flows at Misema GS are below $1.8\text{ m}^3/\text{s}$ then Marter GS will release water to attain a total flow of $2.3\text{ m}^3/\text{s}$ past the confluence with Misema River.*"³ ORA submits that this "bedrock dominated" reach has been home to many forms of aquatic life, and Xeneca must provide a minimum flow to sustain it throughout all seasons.

Question:

1. How does Xeneca justify removing compensatory flow during summer, fall and winter months?
2. How will 0.5 cms of environmental flow aid larval drift?

It was very disturbing to read the HEC-RAS Environmental Flow Comparison⁴ which was focused on setting an "appropriate Environmental Flow", and compared (QEA) of 1.0 cms to 0.5 cms. It is a stretch to refer to this as "appropriate", when certainly it is not appropriate or adequate for the riverine ecosystem. This was merely an exercise to see how low the operation could go to best advantage their project – and ultimately profits, and had nothing to do with environmental integrity of the riverine ecosystem. This is all to generate 2.1 MW (Installed Capacity) which, if lucky, might generate 1 MW of actual power. Rather ironic that it is referred to as 'clean', 'green' or 'renewable' energy.

Xeneca is also reporting that it could hold back water at the same time as the Misema facility is holding, which would result in a significant decrease in flow and levels below the Misema confluence if both facilities are only releasing their minimum flows at the same time. This is totally unacceptable, especially since Xeneca also reports it would be prolonging the low flow conditions in their attempts to 'harmonize' with the Misema site.

Question:

1. How will aquatic life in the Blanche River be adequately sustained on 2.3 cms of flow over any prolonged length of time?
2. Why were water quality and erosion baseline studies not completed below the Blanche/Misema confluence?

² Annex 1, Part 1 of 4, P12

³ Marter Twp. GS ER, P204

⁴ Annex 1, Part 1 of 4, 28 November 2013, Canadian Projects Limited to Xeneca – P325 (pdf)



MNR also inquired as to whether *"the headponds of Misema and Marter similar and if drainage, snowmelt, rain events etc. could leave one headpond full while the other is dry."* Xeneca avoided answering this question when it responded, *"Xeneca has committed that over a 24 hour period the total volume of water entering the headpond will be equal to the total quantity of water leaving the facility. The headponds of the two facilities are not hydrologically linked."*⁵ However, Xeneca has proposed to link the two facilities through a 'harmonized' operating strategy, so understanding the Misema operation and its hydrology, headponds, flow and other capabilities is key.

Question: Has Xeneca studied the Misema hydrology and headpond to ascertain whether it can provide a reliable supply of flow to harmonize your two operations?

MNR also expressed concern in another key area, *"do not agree there is only a 20 cm difference in head from Krugerdorf to Misema - 60 cm alteration due to Misema? Want to put transducer in to see what actual change is over time. Need to be sure as entire OP is based on this small area. Need to confirm gradient."* Again, Xeneca avoided the question when it responded, *"Xeneca believes that the model results are accurate and defensible. The reach between the Marter and Misema confluence was assessed for both level fluctuations and geomorphology (see Annex I for related reports.) Xeneca has placed additional water level monitors between the Marter site and Englehart. Data will be collected in an ongoing basis and if any discrepancy is found between the monitored data and the model outputs, the data will be used to refine operations to stay within projected and proposed operating levels."*⁶

Question: Did Xeneca follow-up on the MNR request to confirm the difference in gradient?

Xeneca minimizes the impacts of its modified run-of-river operation by stating, *"in this mode of operation, the amount of water passed through the facility over a period of 24 hours is equal to the natural run of the river flows. However, on a short term basis, flows are reduced (i.e. modified) to allow more electricity to be produced when electricity demand is high."*⁷ This is very misleading to the public as it does not impart the serious impacts that holding water back and then releasing it for daily peaking will have on channel morphology, erosion, water quality, and sediment transport in the Blanche River below the proposed dam site.

The ER also minimizes the amount of time intermittent operation would occur when it states, *"intermittent operation would only occur during low flows"*⁸, when in actual fact it would occur 37% of the year, as well as the Modified run-of-river which would occur 42% of the year – making a total of 79%⁹ of the time where flows would be held back from downstream flow.

When the "Summary Discussion on Operations" reports, *"consideration of existing waterpower facilities is incorporated into this operating plan in such a manner as to limit the cumulative effect from the Marter generating station. Downstream impacts from the Marter project should therefore be considered in the context of the existing condition on*

⁵ Appendix C, Part 3 of 3, P116 pdf

⁶ Appendix C, Part 3 of 3, P118 pdf

⁷ Annex 1, Part 1 of 4, Section 8, P28

⁸ Annex 1, Part 1 of 4, 5.3 Public Safety and Civil Structures, P13

⁹ Annex 1, Part 1 of 4, Table 3 Operating Mode Occurrence by Season, P17



this section of river" and it goes on to say that the key consideration "of the run-of-river operations of the Marter project is to limit downstream effects through harmonized operation with the Misema generation station"¹⁰. Even the word harmonize is deceiving as it glosses over the operating objectives and parameters to minimize and downplay the serious negative impacts this operation would have on the riverine ecosystem, navigation, and public safety. This is very typical of the persuasive and minimizing approach taken in all aspects of Xeneca's project assessment, reporting and planning.

The statement that, *"most of the year, the facility will operate continuously; however, when natural flows fall below the minimum turbine capacity, operation becomes intermittent."*¹¹ Xeneca's use of the description of "modified run-of-river" as 'continuous' is in itself very deceiving because it is anything but continuous, and it gives the impression to the public of more of a run-of-river operation – which is also described as 'continuous' in this ER.

2. Erosion & Sedimentation

There is a fundamental problem with the Parish Geomorphic Study in that the field assessment only included, *"approximately 3.2 km of the Blanche River, from a short set of rapids 1.4 km upstream of the proposed dam site (Reach 5, R5) to the confluence of the Misema River (Reach 8, R8), 1.8 km downstream."*¹² However, the ER reports *"the affected area is known as the inundation area; the High Dam Option would result in upstream inundation extending approximately 2.4 km upstream of the dam; the Low Dam Option would result in upstream inundation extending approximately 1.7 km from the water control structure."¹³*

This study reported that *"fluctuation in daily water levels upstream can increase the amount of shoreline erosion that would occur without modified operation", and that "continual wetting and drying of the clays in the banks, as well as an elevated water table upstream of the proposed dam, could break down some of the clay structure, allowing for more bank erosion, and further possible destabilization of slopes. The clay content in river banks complicates bank erosion analyses."*¹⁴

Question:

1. Why wasn't the entire Zone of Influence and headpond studied?
2. Why were Reaches 1 to 4 not included in this study?

MNR expressed concern that dams are built with a 50 to 100 year lifespan in mind and that Xeneca should think in those timescales when cautioning that *"large scale failures are likely to happen somewhere in this vicinity of the Blanche River every 30 to 40 years at least."* Xeneca responded that air photos from 1959 displayed a locally braided form, suggesting a slump and the river re-working the sediment.¹⁵ Whereas the Parish study reported, Reach 7 *"the valley walls feature prominent slope failure scars"*; Reach 8, *"a few erosion scars and active slumping were observed along the valley walls"*; and that

¹⁰ Annex 1, Part 1 of 4, Section 8, P28

¹¹ Annex 1, Part 1 of 4, Section 8, Summary Discussion on Operations, P28

¹² Annex 1 – Part 4 of 4, Parish Geomorphic Assessment, P129 (pdf)

¹³ Marter GS ER, Summary, Pvi

¹⁴ Annex 1 – Part 4 of 4, Parish Geomorphic Assessment, P33 (P150 pdf)

¹⁵ Appendix C, Part 3 of 3 – P-114



the "existing conditions model indicates that if erosion is going to occur, it will occur primarily in reaches R1, R3, R6 and R8, and subsequent deposition will occur in R4, R5, and R7."¹⁶

MNR also commented on the obvious, that "the high amount of fallen trees and LWD in the channel are likely due to saturation of the high clay and silt content in the river banks which cannot support trees leading to eventual failure into the channel."¹⁷

The Parish study reported that "constructing the Marter Township Hydroelectric Generation Station along the Blanche River will likely only exacerbate what already occurs in the study reaches." In addition, "some bank locations might be destabilized when the dam is operating" and "the slope failures observed along the channel should be evaluated in more detail; and "a geotechnical investigation may be warranted to better understand this activity."¹⁸

MNR asked, "what would happen if there was a large-scale slope failure at the GS site", and Xeneca's response was, "...operation of the project is not expected to exacerbate the existing slope failure risk in the area."¹⁹ However, as noted above, the Parish report states the very opposite when it suggested the operation would likely only exacerbate what already occurs, and recommended further geotechnical investigation.

This report reflects much uncertainty, both in the stability of natural clay and sand soils, and in the impacts of the modified peaking operation, and recommends further evaluation and a geotechnical investigation.

Question: Was further evaluation and a geotechnical investigation completed?

The fact that Xeneca has omitted Reaches 1 through to 4 in this study, even though it is within the headpond and Zone of Influence, and glosses over and ignores many of the obvious signs of bank failure in its ER, has undermined any confidence or trust in the contents of this ER. This lack of complete and accurate reporting was also displayed in the proposed Wabagishik Rapids GS.

MNR suggested, "Section 5 analyses describes the erosion of bed material (both sand and clay). Fairly low discharges are able to erode the fine and medium sized sand material (0.2 mm). Given this, we do not agree with the statement "so while lesser flows may push the sands around, the overall channel shouldn't experience much change with the proposed change in the hydrograph". With the proposed daily peaking cycles, this sand erosion threshold will be exceeded on a daily basis, providing a daily opportunity to move this material downstream, especially in Reaches 7 & 8, and downstream of the confluence with the Misema River. It looks like the depositional fate of this sediment is questionable and the magnitude, frequency, and timing of this transport could use further thought."²⁰

Question: How did Xeneca address this concern in its erosion study, and ER?

¹⁶ Annex 1 – Part 4 of 4 – Parish Geomorphic Assessment, P30 (P147 pdf)

¹⁷ Appendix C, Part 3 of 3, P114 pdf

¹⁸ Annex 1 – Part 4 of 4, Parish Geomorphic Assessment, P37 (pdf 154)

¹⁹ Appendix C, Part 3 of 3, P119 pdf

²⁰ Appendix C, Part 3 of 3, P115 pdf



3. Water Quality & Methylmercury

Hutchinson Environmental Solutions Limited (HESL) reported that "concentrations of total aluminum, chromium, cobalt, copper, iron and vanadium exceeded Ontario Provincial Water Quality Objectives (PWQOs), the regulatory surface water quality objectives that apply to water at the proposed facility."²¹ Also, "pre-development sampling results indicate that the Blanche River in the project area has water quality typical of a Canadian river overlying a clay plain; the river contains elevated concentrations of metals, total phosphorus, turbidity and total suspended solids (TSS) in the spring, with metals and nutrient concentrations increasing during times of increased river flow and suspended sediment load. The concentrations of these parameters is due in large part to the prevalence of clay in the study area but other sources may include stormwater inputs from Kirkland Lake and Swastika, agricultural runoff, and wastewater treatment plant effluent from the Kirkland Lake Wastewater Treatment Plant. Methyl mercury concentrations were relatively constant through the year with a slight increase during the summer, which may be a result of greater methylating bacterial production in the summer." Hutchinson also reports Round Lake, approximately 20 km upstream is "eutrophic" because of untreated sewage inputs from Swastika and Kirkland Lake.²²

Question: How will residence time in the headpond impact on water quality with all the cumulative pressures of the already high nutrient and metal saturated waters, especially throughout the low flow and hot summer season?

Hutchinson also cautioned that sediment accumulating in the impoundment area "could increase during peak flows, and concentrations of metals and nutrients absorbed to sediment would also increase..."; and "mercury concentrations could increase independently of suspended sediment as a result of water impoundment alone but mercury transport out of the impoundment would be markedly higher with increased suspended sediment, as mercury – like other metals – absorbs to sediment; and water temperature in the impoundment will warm from increased surface area which may result in lower dissolved oxygen..."²³

Hutchinson also reported that "mercury in most large fish did not exceed the majority of the MOE and Health Canada fish consumption guidelines....", however, "three White Sucker did contain mercury concentrations that exceeded the most stringent MOE fish consumption guidelines, and all fish contained total mercury concentrations greater than CCME's guidelines for the protection of wildlife that consume aquatic biota."

Yet, the ER downplayed this when reporting, "assessment of water quality did not identify significant changes except a possible transient effect on methyl mercury common to all new inundations."²⁴

The production of methyl mercury in reservoir systems is largely governed by the amount and type of organic matter inundated. The ultimate concentration of mercury in aquatic organisms within these environments depend on a number of factors including biological and chemical characteristics of the water body and sediment-water interface,

²¹ Annex IV – Part 2 of 3, Hutchinson Report, P8 pdf

²² Annex IV – Part 2 of 3, Hutchinson Report, P109 pdf

²³ Annex IV – Part 2 of 3, Hutchinson Report, P79 pdf

²⁴ Marter GS ER, P139



including pH, dissolved oxygen, oxidation-redox potential, sulphate concentrations, etc., which affect the potential for and rate of bacterial decomposition and methylmercury generation and transfer from sediments to the overlying water. All these factors must be taken into account within a study.

The size of the headpond would be 13.1 hectares, however, there was no indication in the ER of whether any wetlands would be impacted.

Question: Will any wetlands be inundated by the headpond?

A report resulting from the Experimental Lakes Area Reservoir Project (ELARP), entitled *“Impacts of Reservoir Flooding 1991 to Present, states, “This study demonstrated dramatic increases (10X to 20X) in both methyl mercury and greenhouse gases (carbon dioxide and methane) production in response to flooding of wetland vegetation. Clearly, the microbial breakdown of dead plants and organic soils resulted in the methylation of mercury already present in the system, and the production of significant quantities of carbon dioxide and methane.”*

Another ELA study indicated, “In summary, our study confirmed the results of previous studies that flooding of terrestrial catchments invariably results in large increases in MeHg concentrations in zooplankton. Although initial increases in MeHg concentrations in zooplankton were not correlated with the amount of flooded terrestrial C in each catchment, the duration of elevated MeHg increased with C stores. The magnitude and duration of changes in zooplankton MeHg were most strongly determined by changes in MeHg in unfiltered water but were also modified by changes in water chemistry, especially DOC.”²⁵

The potential for methylmercury production in the headpond, and any resulting elevations of mercury levels in fish tissue, or increased fish consumption restrictions, has not been properly assessed in this ER. Xeneca’s approach is pre and post construction monitoring – this would be too late. Since mercury levels in fish tissue are already elevated, it is imperative that a full mercury projection study be performed.

Question: What scientific basis does Xeneca use to make the statement in the ER, *“mercury methylation can be minimized by limiting the amount of flow manipulation. For the Marter Township GS, holdbacks of water are proposed to be relatively small and of short duration (< 24 hours), which will restrict the conditions under which methyl mercury formation generally occurs”?*

4. Fisheries

The ER reported *“with the hydro dam at Misema currently operational under a Run of River Operating Plan, it is presumed that flows at this site during the spawning season replicate natural conditions, and that there is no impact to fisheries values at this location.”²⁶* Yet, on page 23 of this same report it also indicates, *“all habitat between the Misema and Englehart convergences currently experiences flow fluctuations due to modified run-of-river operations at the Misema GS.”*

²⁵ Changes in methyl mercury concentrations in zooplankton from four experimental reservoirs with differing amounts of carbon in the flooded catchments, Britt D. Hall, Katharine A. Cherewyk, Michael J. Paterson, and R. (Drew) A. Bodaly

²⁶ Annex III, Part 3 of 3, 2012-2013 10 December 2013 Mitigation and Recommendation Summary Report, P63 (P222 pdf)



Question: Which statement is correct – is Misema a run-of-river, or modified run-of-river operation?

5. Lake Sturgeon

In regards to Lake Sturgeon, fish spawning, and habitat impacts, Xeneca states that the precautionary approach will be applied.

Question: What exactly does the precautionary approach entail in Xeneca's management plan, and how would this protect Lake Sturgeon and habitat?

6. Downstream Zone of Influence (DZOI)

Xeneca divides the DZOI into 3 segments, i) Marter to Misema confluence, ii) Misema confluence to Englehart confluence, and iii) downstream of the Englehart confluence. Xeneca claims "*the area between the Misema confluence and Englehart confluence will largely operate within existing conditions except for a marginal increase in the number of operational days*", and that "*this marginal increase in operational days is not expected to impact sediment transport; hence no further study is required in this reach*".²⁷

Question: What clear and traceable scientific basis was used to reach this conclusion?

The Executive Summary reports that "*very few signs of channel instability were observed during the field reconnaissance...*", and yet MNR rebutted that observation many times, indicating "*some very large scale channel and valley instability within this 1.7 km stretch*"²⁸. This type of minimizing of affects is very disturbing, especially when modified peaking facilities are known to be highly likely to increase erosion impacts.

It was very disturbing to read a letter from Uwe Roeper to Ms. Rosanna White, Environmental Planner/EA Coordinator, Ministry of Environment, dated 26 November 2013,²⁹ in response to her request for more information on five key issues related to the hydrologic DSZOI. Xeneca's response letter took issue with every single request for additional supporting information, and either did not agree, or found the comment to be troubling or incorrect. However, there is a reference to another letter from Ms. White in Appendix C, Part 1 that did not appear in the ER and supporting documentation.

I have been in contact with Ms. White who indicated that there was an additional letter from her dated 29 January 2014.

Question: Why was this letter not included in the ER?

Note: Please provide this letter immediately as it is a key consideration in this ER.

²⁷ Appendix C, Part 3 of 3, P111

²⁸ Appendix C, Part 3 of 3, P111

²⁹ Appendix C, Part 1 of 3, P163 pdf



7. Cumulative Effects

The ER states that, "due to concerns regarding potential cumulative impacts of two modified run-of-river facilities affecting flows in the Blanche River, Xeneca is currently proposing to 'harmonize' operations at the Marter Township GS with those of the Misema GS on the Misema River."³⁰

Xeneca proposes "*to operate the Marter project around Misema GS operations. The proposed Marter project will operate within existing conditions downstream of the Misema confluence. Consequently, additional sediment study is not required downstream of the Misema confluence. The reach between the proposed Marter site and the Misema confluence has been assessed as part of the geomorphology report in Annex 1*".³¹ Consequently Xeneca neglected to ensure erosion studies were completed within the entire Zone of Influence.

Xeneca also dismisses and at the same time justifies and downplays any cumulative impacts it could have downstream of the Misema GS when it states, "*the Marter Township facility has effects on upstream water levels and downstream flows. Downstream effects beyond the confluence of the Misema river will be influenced by the existing Misema Generating Station which operates as a modified run-of-river facility for most of the year.*"³² Even with Xeneca's 'harmonizing' effect there will be times when Xeneca is holding back at the same time as the Misema is holding back water – this reduces the flows far below what they would have been before the Marter facility would come into the picture. This alone would necessitate a study of the potential cumulative effects that could impact many kilometers of riverine ecosystem below the Blanche and Misema confluence. It is difficult to imagine how any harmonizing of two modified peaking operations in such close proximity could be effective.

Question:

1. How does this relieve Xeneca of performing the fluvial geomorphology work within the defined Zone of Influence, especially considering your plans to operate additional days and to remove a large amount of water from the downstream flow for hours at a time?
2. How will harmonizing operations reduce the potential cumulative impacts of both facilities operating in such close proximity?
3. If harmonizing is achievable, what would be the cumulative effects of two facilities operating in a modified peaking mode in such close proximity to one another have on bank stability, water quality, habitat, fisheries and the riverine ecosystem?
4. Has there been any formal agreement between the two facilities?
5. Was there any consideration for the high nutrient content resulting from upstream wastewater and stormwater influences in Xeneca's cumulative affects assessment?

ORA has not had time to fully review the fishery, habitat, and endangered species sections of the ER, however, we will continue as time permits.

³⁰ Marter Township GS ER, P204

³¹ Appendix C, Part 3 of 3, P110

³² Annex 1, Part 1 of 4, Section 8, Summary Discussion on Operations, P28



ORA looks forward to your response.

In Conservation,

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