



13 May 2014

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Dear Stephanie:

**Re: The Chute & Third Falls Waterpower Projects - Ivanhoe River**

Ontario Rivers Alliance (ORA) is a Not-for-Profit grassroots organization acting as a voice for the French River Delta Association, CPAWS-Ottawa Valley, Kiishik Community Association, Food & Water First, Whitewater Ontario, Vermilion River Stewardship, Friends of Grassy River, 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.

First of all ORA would like to thank Xeneca staff for ensuring that the Environmental Report (ER) and supporting documents were fully searchable, and user-friendly. This is always appreciated, and is especially important for public and First nation participation on such a large ER, and within such a short comment period.

Please note that all underlined text contained in this letter is ORA's emphasis, used strictly to draw the reader's attention.

**1. First Nation Consultation**

**A Lack of Credibility and Trust in the Relationship:**

At a 27 January 2011 meeting with Chapleau Cree First Nation, Chief Corston "*indicated that they would only support a "run-of-river" dam that captured the current waterflow and had as little impact as possible in terms of impacting the river system.*" In response, "*Dean and Arnold made it clear that we were only in the preliminary stages of the project and that no decisions had been made about any particular operational design. Arnold noted that the decisions about what kind of structures and the operational nature of the dam structures would require broad consultation with the Crown agencies, First Nation communities and the public at large."<sup>1</sup>*

The Ivanhoe River ER was issued just 6 months after this meeting, so it is unlikely that the operating strategy was not already determined to be "modified run-of-river", especially since there were extensive headponds illustrated in Display Panels from earlier consultation

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<sup>1</sup> Appendix M – Aboriginal Consultation, 27 January 2011, Meeting with Chapleau Cree First Nation, P-193



sessions. The Project Description isn't dated, but it would have been generated early on in the development of the project, and it reported that the project was "modified run-of-river"<sup>2</sup>. Therefore, it was very misleading to inform Chief Corston that the operational design and nature of the dam structures were not known at that time. Xeneca did not communicate this information in a transparent manner with Chief Corston, and this raises the concern of what other crucial elements of this development have not been made clear to First Nations.

The Chief later made a comment to Bob Johnston that *"some responses he received for his questions were either evasive or Xeneca did not know what the full project vision was at that time", and that "this has caused a lack of credibility and trust in the relationship"*.<sup>3</sup> It was also mentioned in a message from Arnold Chan to Dean Assinewe, dated 12 November 2013, reporting on a recent meeting with Chief Corston of Chapleau Cree First Nation, that the Chief relayed his concern that there was still *"insufficient detail about what Xeneca was proposing to build"*.<sup>4</sup> It is unacceptable that only 6 months before the final ER was issued that the Chief still did not feel he had sufficient detail regarding the project.

In another message where Arnold Chan was relaying his conversation with Chief Joseph Buckell, Michipicoten First Nation, it was reported that the Chief said, *"going forward, the only sites that would be built were run-of-the-river. I indicated to him that this was not the proposed operation for all of Xeneca's sites but that we would be considering intermittent operations, but that water would pass within 24 hours."*<sup>5</sup> Instead of just answering directly that they proposed to build a "modified run-of-river" project, the term "intermittent operations" was used without explaining what that meant. Xeneca knows that if the type of operation was fully explained to the First Nation communities at that time that there would be little chance of gaining support or a signed MOU.

### **Insufficient Consultation Open to All Community Members:**

At a 20 February 2014 "meeting" with Mattagami First Nation, Arnold Chan was just addressing the topic of *"how the community wishes to be consulted"*. This is rather late in the consultation process to be trying to determine methods of Aboriginal consultation. It appears as though it was a meeting between Xeneca and key First Nation members, and it was only by chance that *"members of the community mingled with the Xeneca team and reviewed the information panels"*, and when *"additional youth walked into the room during the presentation"* that any information about the project was explained to anyone other than those in attendance at the meeting.<sup>6</sup> It is unclear from the documentation what type of community consultation took place, or if in fact any ever did take place. It appears as though the primary objective was to secure a business to business deal.

It is very backwards and irregular to address a business to business deal without having first opening consultation to the entire community. Many First Nations place the spirit of water ahead of financial gain, and they may have wanted to have input into any decision to support the project, or at least have input into the planning and mitigation of these projects. This was evident when *"Jason went on to note that on the issue of consultation – it is impossible for the communities to move forward without a Memorandum of Understanding (MOU) in place. The communities indicated that they were not interested in Information*

<sup>2</sup> Project Description, The Chute, (Ivanhoe River) Hydroelectric Generation Station – 2011 ER P-15

<sup>3</sup> Appendix M – Aboriginal Consultation, 27 March 2012, Meeting with Chapleau Cree First Nation, P-198

<sup>4</sup> Appendix M – Aboriginal Consultation, 12 November 2013, Meeting with Chapleau Cree First Nation, P-209

<sup>5</sup> Appendix M – Aboriginal Consultation, 9 May 2013, Email from Arnold Chan, Re: Michipicoten P-396

<sup>6</sup> Appendix M - Aboriginal Consultation, 20 February 2014 Meeting with Mattagami First Nation & Xeneca P-335



*Centres until a business to business MOU that sets up the principles of the partnership between the communities and Xeneca has been formalized.*"<sup>7</sup> There is no evidence that a full community presentation and consultation ever took place. It was up to Xeneca to refuse any business to business deal until all community members had an opportunity to be consulted.

Taykwa Tagamou Nation (TTN) "asserted the need for Xeneca to have a face to face meeting with the Chief and Community to ensure their concerns are heard and addressed."<sup>8</sup> There is no documentation stating that this ever happened. Also, Arnold Chan assured the TTN that "*the information communicated today will be communicated to all communities associated with the project and will make information available to all communities at the same time and keep them updated of the process and stage in the project.*" We saw nothing in the ER that demonstrates that the TTN community was every consulted.

The ER asserts that, "*TTN indicated that they do not feel that the Ivanhoe project falls within the scope of their traditional territories.*"<sup>9</sup> However, there is no documentation in the ER that supports this assertion, and there is no evidence that the people living within the community were ever consulted.

It is also noted that Chief Linda Job's term expired on 29 September 2013, and upon checking, it was noted that a new Chief and Council have been voted in.

**a. Has the new Chief and Council been consulted?**

A presentation was made by Xeneca to the Wabun Tribal Council and the Chapleau Cree First Nation on 16 September 2013, at the Mnjikaning Arena Sports Ki on 6147 Rama Road; however, this was regarding the business to business arrangements. Xeneca lists no consultation with the actual people living within each of the communities so that they could be fully aware of the proposed project, its impacts to the river ecosystem, or to voice any concerns. This ER does not meet the duty to consult as set out in the Class EA for Waterpower.

**b. What Information Centres did Xeneca provide that were open to all community members within the First Nation communities that would be impacted by this Project and were included in the business to business deal?**

The ER states, "*The objective of the Aboriginal Communities consultation process is to identify and address Community concerns and issues and to provide the Aboriginal Communities with an opportunity to receive information about and make meaningful input into the project review and development. Additionally, Xeneca wishes to foster and sustain a mutually respectful relationship with its neighbors outside of the need to provide voluntary support to the Crown.*"<sup>10</sup> This says absolutely nothing about the protection of cultural or heritage resources or values, or about any mitigation efforts. It simply states that the consultation process will identify and address concerns, and that is where it stops. This is a fundamental flaw.

<sup>7</sup> Appendix M - Aboriginal Consultation, 17 February 2011 Meeting with Wabun Tribal Council & Xeneca P-547

<sup>8</sup> Appendix M - Aboriginal Consultation, 10 May 2011 (should read 2012) Teleconference Meeting with Taykwa Tagamou Nation & Xeneca P-529

<sup>9</sup> Ivanhoe River GS ER – 17.4.11 Taykwa Tagamou Nation P-642

<sup>10</sup> Appendix M – Aboriginal Consultation, Aboriginal Consultation Plan, May 2011, 1.5 Objectives of Aboriginal Cons., P-10



The ER also states, "*Xeneca is coordinating field visits with Aboriginal Communities during and after the EA Report and Archeological studies to seek Community input and address issues and concerns.*"<sup>11</sup> The plan says it will consult with communities and coordinate field visits, but there is no evidence that this was done.

ORA is very concerned with the manner in which Xeneca consulted with First Nation communities. All the information contained in the ER demonstrates that the main focus was to have a signed deal, and that no Information Centres ever took place to inform or consult with the inhabitants of these communities, and they were never given the opportunity to contribute and inform decisions relating to the project. This clearly indicates that proper consultation was not completed or done in a meaningful way; and consequently does not comply with Section 4.1.3 of the Class EA for Waterpower.

### **First Nation Traditional Knowledge:**

It is unacceptable that First Nation Traditional Knowledge is not a major part of this ER. This was noted, "Concerned with the approach of the proponent, paying consultants to gather information which can lead to misrepresentation of the river system/ecosystem and the impacts/benefits of a water power facility (CC)"<sup>12</sup>. ORA is concerned that Traditional Knowledge has not been a component of this consultation. Traditional Knowledge is essential to determine the extent of environmental and cultural impacts on affected First Nation communities.

### **Documentation Lacking:**

It is unacceptable that there are literally no First Nation letters that pertain to this Project contained within this ER, in order for the public to understand how important and crucial issues and concerns were handled. Xeneca claims that all First Nation correspondence concerned the Business to Business deal that was made; however, it is essential that Ontarians have the right to know how their tax dollars in the way of grants and/or loans are being utilized in carrying out the Green Energy portfolio.

- c. Please provide all correspondence from any and all dealings with First Nations.

## **2. Public Consultation**

No public consultation ever took place in Timmins, even though meetings were advertised in the Timmins Daily Press, and several requests for Public Information Centres (PICs) to be held in Timmins were made by Larry Robichaud, Brian Daly, Mark Clement, Tony Godin, Hugh Currie, and George Simmonds. Even the MNR recommended a PIC be held in Timmins, where several users of the Ivanhoe River reside. However, the ER reported there was very little interest among Timmins residents. Yet, in the same paragraph it is admitted that there was an interest group there.<sup>13</sup>

Even though several engaged citizens clearly petitioned for a Public Information Centre (PIC) to be held in Timmins, it was pointed out at one of the PICS in Chapleau that "*there*

<sup>11</sup> Appendix M – Aboriginal Consultation, Aboriginal Consultation Plan, May 2011, 2.9 Field Visits, P-13

<sup>12</sup> Appendix M – Aboriginal Consultation, Summary of SIPs, TTK, P-32

<sup>13</sup> Ivanhoe ER, 17.3.4 Public Information Centres and Focus Groups Meetings, P-595



were only 2 people that showed up".<sup>14</sup> The proponent offered to meet the requesters individually; however, this is not the same as opening consultation up to everyone in the Timmins area.

- a. Please explain why a PIC was never held in Timmins when there was clearly a need for one.

### 3. Operating Strategy

The FIT Contract for The Chute was 3.6 MW; whereas the new proposed installed capacity is 2.9 MW; and the FIT Contract for Third Falls was 5.1 MW, whereas the new installed capacity is 3.8 MW – a reduction of 2 MW in total.

- a. Since the original FIT Contracts cannot now be fulfilled, is an amendment required to reflect the new commitments?

Xeneca quotes that power production for both sites combined would be approximately 30,000 MWh annually.<sup>15</sup> Due to the extreme daily, weekly and monthly variations in flow at these sites, it is more likely that actual power generated would be 20,000 MWh or less if the promised goals of environmental protection are to be kept.

- b. Where is the analysis that shows exactly how the Annual Output was derived?
- c. Please show how 30,000 MWh is attainable within the proposed operating plan?

### 4. Zone of Influence

Any simple and straight forward description of the Zone of Influence (ZOI) is not to be found anywhere in the ER; however, the ER states that "*The Chute and the Third Falls headpond reaches make up the entire upstream ZOI.*"<sup>16</sup> This makes absolutely no sense; however, by pulling bits and pieces together from several areas in the ER, it appears that the upstream headpond extends 6.5 km, there is a 44.2 km headpond section downstream, between The Chute and Third Falls, and below Third Falls the downstream ZOI is defined as the very short section of river from the Third Falls dam to the boundary of the Northern Claybelt Forest Conservation Reserve (CR) which is less than 100 meters downstream.<sup>17</sup> The proponent appears to want to refer to the entire 44.2km section and the 6.5km sections as one upstream headpond. It is crucial that the ER and language is simple and straight forward so it can be easily understood.

Yet another description is "*The two facilities are proposed to be operated together and are hydrologically linked – the headpond for the Third Falls site will extend upstream into the downstream zone of influence of the Chute facility. The ZOI includes the full extent of the Ivanhoe River and its tributaries extending from 6.4km upstream of The Chute facility to the tailrace of the Third Falls facility. The Third Falls project is proposed as a run-of-river facility, operating to moderate and re-naturalize the effects of The Chute facility (e.g. incoming flows*

<sup>14</sup> Appendix L – Public Consultation – P16

<sup>15</sup> Ivanhoe River Project Class EA – ER, 1.0 Introduction and Purpose of Project, P-47

<sup>16</sup> Ivanhoe River Project Class EA – ER, 3.4.3 Upstream ZOI, P-59

<sup>17</sup> Ivanhoe River Project Class EA – ER, 3.4.4 Downstream ZOI, P-60



*to the headpond of The Chute and outflows from the Third Falls tailrace will be monitored to ensure natural flows continue to pass downstream of Third Falls into the Conservation Reserve.*"<sup>18</sup>

The proponent claims there will be no flow alteration beyond the identified downstream ZOI (100m), *"any alteration of temperature, water quality and sediment is expected to be minimal. The result is that there will be no significant temperature, water quality or sediment alteration beyond the downstream ZOI in the Northern Claybelt Forest Conservation Reserve. Based on these conclusions no physical, chemical or biological alteration is expected beyond the downstream ZOI."*<sup>19</sup> The proponent provides no clear and traceable references or basis for making these statements. There is still much uncertainty around how the re-naturalization will work, or if it will work – see our comments in No. 5 below.

The proponent downplays and minimizes the potential impacts; however, ORA has great concern that the ecological objective for the CR has not been adequately addressed. It is inconceivable that a major hydroelectric development which involves 50 km of headponds, two dams, two generating stations and associated infrastructure would have no influence beyond 100 m below the lower dam. Any realistic ZOI would include a substantial section of the river below Third Falls (i.e. within the CR).

- a. ORA request that a realistic ZOI be identified and include a significant length of the river below Third Falls.
- b. Where is the data that backs up the proponent's assumption of "minimal" alterations to temperature, water quality and sediment?

## 5. Re-Naturalization at Third Falls

PGL reports that the Chute facility would operate as a modified run-of-river during low and moderate inflows, where it would modify natural flow in the river by storing part of the flow during the nighttime and increasing flow during the daytime. In order to minimize the environmental impacts, the daily flow fluctuations will be constrained such that the variability in flows and the fluctuation in levels are limited. There will be a maximum 1m level fluctuation in the headpond and peaking facility.

The Third Falls facility is proposed to be a run-of-river project and would be operated so that flows are "re-naturalized". The Third Falls headpond would buffer inflows that are either above or below natural inflow rates, and would provide a flow regime downstream that is consistent with the current hydrological record. The upstream operating parameters at the Third Falls headpond involve a maximum 0.3m fluctuation in water level. Operation of Third Falls as a run-of-river facility to re-naturalize river flows will restrict the downstream zone-of-influence to an area in the vicinity of the tailrace and prevent it from extending into the boundaries of the downstream Northern Claybelt Forest Complex Conservation Reserve (CR).<sup>20</sup>

The ER reports that *"minor flow alteration can occur during powerhouse start up or shut down"*.<sup>21</sup> Also, *"Third Falls, the downstream site, provides a constant generation rate*

<sup>18</sup> Appendix E- Erosion and Sedimentation – Third Falls HGS Geomorphic Assessment, May 2013, P-127

<sup>19</sup> Ivanhoe River Project Class EA – ER, 3.4.5 Beyond Downstream ZOI, P-62

<sup>20</sup> Appendix E- Erosion and Sedimentation – Third Falls HGS Geomorphic Assessment, May 2013 P-65

<sup>21</sup> Ivanhoe River Project Class EA – ER, Effects with Downstream ZOI, P-61



*corresponding to natural upstream inflow rates. To accomplish this task the portion of the inflow which is above the natural rate is stored within the Third Falls headpond and released from the headpond (within 24hrs) at a rate corresponding to the quantity of inflow which is less than the natural rate. This mode of operation results in fluctuating headpond water levels of less than 0.25 m.*<sup>22</sup> This operation at Third Falls is a modified run-of-river facility – not run-of-river as claimed.

Natural Resources Canada's RETScreen textbook states, "Run-of-river" refers to a mode of operation in which the hydro plant uses only the water that is available in the natural flow of the river, as depicted in Figure 6. "Run-of-river" implies that there is no water storage and that power fluctuates with the stream flow."<sup>23</sup>

Figure 6



- a. If the facility at Third Falls is manipulating flows to achieve "re-naturalization", then how can it be called a run-of-river operation?

MNR expressed concerns about the feasibility of the re-naturalization operations when referring to an example where "Flows at the Ivanhoe River in Foleyet (04LC003) decreased from  $9.4 \text{ m}^3 \text{ s}^{-1}$  to  $6.3 \text{ m}^3 \text{ s}^{-1}$  non-linearly, with a negative exponential decay type function. Taking into account the difference in drainage basin areas, flows released from Third Falls would have to decline from about  $18.5 \text{ m}^3 \text{ s}^{-1}$  to  $12.4 \text{ m}^3 \text{ s}^{-1}$  to re-naturalize the river discharge. Would this necessarily mean a run-of-river operation at Third Falls? This is unknown and not discussed in any detail in this report."<sup>24</sup> Further, "MNR believes that flows could be re-naturalized at Third Falls but it would take some complex modelling that would have to take into account i) natural flows into The Chutes headpond, ii) regulated flows released by The Chutes, iii) Third Falls headpond / reservoir travel time, and iv) tributary inputs and drainage basin differences, among potential other factors."<sup>25</sup>

- b. How will Xeneca undertake effectiveness/compliance monitoring to demonstrate that the flow re-naturalization objective has been achieved?

<sup>22</sup> Ivanhoe River Project Class EA – ER, 5.3.1 Operation, P-90

<sup>23</sup> RETScreen International – Clean Energy Project Analysis: RETScreen Engineering & Cases Textbook, Small Hydro Project Analysis – Natural Resources Canada, P-11

<sup>24</sup> Appendix N – Agency Consultation – 6 May 2013, P-95

<sup>25</sup> Appendix N – Agency Consultation – 6 May 2013, P-96



- c. How can Xeneca ensure that flow re-naturalization at Third Falls will work as proposed?
- d. How will operations be tailored or adjusted if flow re-naturalization objectives are not achieved?
- e. If Xeneca cannot achieve re-naturalization at Third Falls, then what will be the impact on the CR?

## 6. Clay Belt Conservation Reserve (CR)

The Provincial Parks and Conservation Reserves Act (PPCRA) mandates that maintenance of ecological integrity shall be the first priority in protected areas, a condition in which the abundance of native species and communities and ecosystems processes are unimpeded.<sup>26</sup> Ecological integrity is defined as, “a condition in which biotic and abiotic components of ecosystems and the composition and abundance of native species and biological communities are characteristic of their natural regions and rates of change and ecosystem processes are unimpeded.”<sup>27</sup> “One of the most significant potential effects of waterpower projects is alteration of natural flow regimes that maintain the composition, structure and function of aquatic ecosystems. Proposals located upstream from a protected area should be planned to maintain natural daily flow regimes to avoid negative impacts to ecological integrity.”<sup>28</sup>

- a. What assurances do we have that the Project will not negatively impact on the CR?
- b. How would Xeneca compensate and/or change its operations if the CR is damaged?

## 7. Erosion

Parish Geomorphic Limited (PGL) was retained by the proponent to conduct a reach-based Rapid Geomorphic Assessment to collect detailed cross section and sediment data and assess potential sediment transport and bank erosion issues for the hydroelectric corridor.

PGL reports “It is recognized that the zone of influence for this project is extensive - the headpond upstream of The Chute will inundate new area 6.5 km upstream of the facility, while there will be a variable flow reach between The Chute and the Third Falls facility. The zone of influence downstream of the Third Falls site will be restricted to an area near the tailrace.”<sup>29</sup>

PGL admits that “The geomorphic study would most certainly benefit from further field investigations in which additional data could be collected throughout the zone of influence to compile a more complete collection of river characteristics.”<sup>30</sup>

- a. Xeneca has had several years to complete thorough studies and reporting, so why were further field investigations not completed?

“BC says in clay belt areas such as Third Fall, wetting and drying of riverbanks can cause

<sup>26</sup> Appendix N – Agency Consultation - 1 March 2013, P-84

<sup>27</sup> Appendix N – Agency Consultation - 1 March 2013, P-85

<sup>28</sup> Appendix N – Agency Consultation - 1 March 2013, P-85

<sup>29</sup> Appendix E – Erosion and Sedimentation – Third Falls HGS Geomorphic Assessment, May 2013, P-75

<sup>30</sup> Appendix E- Erosion and Sedimentation – Third Falls HGS Geomorphic Assessment, May 2013 P-75



erosion as well as changes in Co loading in peat areas."<sup>31</sup> Subsequent to the March 1, 2013 meeting between Xeneca, MNR, MOE and DFO, Xeneca committed to running Third Falls GS under a run-of-river regime. However, should study results indicate operation effects were within acceptable ranges, that they would take steps to amend permits to allow for an operating regime at the Third Falls site.<sup>32</sup>

- b. Will the public be consulted if the proponent decides to amend permits for a different operating regime at the Third Falls site?

The study area for The Chute site involved approximately 3.8 km of the Ivanhoe River, from a point 2 km upstream of the Chute site (Reach 2, IC-2) to 1.8 km downstream of the site (Reach 6, IC-6). The Third Falls site included approximately 3.9 km of the Ivanhoe River, from 2.6 km upstream of the proposed Third Falls dam site (Reach 2, ITF-2) to 1.3 km downstream of the site (Reach 7, ITF-7).

Also, The map in Figure 3.4 shows an ITF-8 as well, however, the Report gives no further information on this.

- c. Why was ITF-8 not included in the erosion study area?

Third Falls is 44 km downstream of The Chute, and the entire Zone of Influence (ZOI) includes the full extent of the Ivanhoe River and its tributaries extending from 6.4 km upstream of The Chute facility to the tailrace of the Third Falls facility – a total of 50.4 km. Of this 50.4 km, only 7.7 km was included in the Geomorphic Erosion study.

The PGL report indicated that Reach 1 (IC-1) and Reach 1 (ITF-1) were not investigated during the October 2012 field outing.<sup>33</sup> Tables 4.2 and 4.3 make it obvious that these two Reaches were not studied, as IC-1 and ITF-1 were not included in the Study Reach results. It appears that IC-1 and ITF-1 were not included in the field assessment at all – nor was the stretch of river between the bottom most extent of the Chute field assessment area to the upper portion of Third Falls field assessment area.

This MNR comment expresses ORA's concerns very well, "*Section 4 - Field Assessment states that PGL evaluated the river from 2 km upstream of the proposed Chute site to 1.8 km downstream. And, from 2.6 km upstream of the proposed 3rd Falls site to 1.3 km downstream. Yet, we have been told that the Chute headpond will inundate new area 6.5 km upstream, and previous reports from CPL that looked at level fluctuations downstream of Third Falls showed significant fluctuations at 3, 5, 10+ km downstream based on peaking operations. It seems clear that the scope of work for the Geomorphic Assessment does not coincide with the approximate zone of influence for the project. In the headpond area for the Chute there will be extensive clearing of trees in the area to be flooded. There is no discussion about the new inundation area (above the current river channel) and how erosion processes may affect existing upland forest soil structure.*"<sup>34</sup>

"13 Section 4.4 - Sediment Characteristics: This section explains that detailed geomorphological data collection (cross sections) was undertaken in IC6 and ITF2/6. Why

<sup>31</sup> Appendix N – Agency Consultation, Ivanhoe Projects Agency Meeting, 1 March 2013, P-441

<sup>32</sup> Appendix N – Agency Consultation, 1 March 2013, P-83

<sup>33</sup> Appendix E- Erosion and Sedimentation – Third Falls HGS Geomorphic Assessment, May 2013, P-76 & P-79

<sup>34</sup> Appendix N – Agency Consultation, 8 March 2013, P-88



*were detailed cross sections only done in those “reaches”? What methodology was used to determine where detailed transects should be located? Does Xeneca/Parish feel that these limited cross sections accurately represent the sediment characteristics in approx. 70km of river or more (headpond of chute to confluence of Groundhog+)?”<sup>35</sup>*

- d. Why was the entire ZOI not included in the study area?
- e. How can vital decisions regarding erosion potential as a result of peaking operations be made when only 7.7 km of a 50.4 km ZOI was studied?
- f. How will peaking affect existing erosion processes or change existing sediment regime conditions within the river channel?
- g. How can the form and function of the river be understood from only looking at a few kilometres of river and only a few detailed cross sections?
- h. How could natural morphology change post-development?
- i. How does Xeneca plan to monitor erosion impacts throughout the entire 50.4 km ZOI?

MNR cautioned, *“Consider that the shorelines above and below a G.S. facility might undergo a wet/dry cycling 5-10 or 10-20 times a year naturally, but with headpond fluctuations some shoreline levels would have to endure this cycling perhaps 200 times per year.”<sup>36</sup>*

MNR expressed concerns that *“continual wetting and drying of the clay banks, as well as an elevated water table upstream of the proposed dams, could break down some of the soil structure, allowing for more bank erosion, and further possible destabilization of slopes.”<sup>37</sup>*

- j. How would Xeneca modify operations if adverse erosion impacts occurred as a result of its peaking and re-naturalization?
- k. If Xeneca has not studied the entire ZOI, then how can MNR know whether the impacts are related to the operation?

If adverse erosion issues do arise, and it becomes necessary to reduce flow velocity, ORA is concerned that project viability issues may severely limit Xeneca's ability to alter operations once the facility is built.

- l. Will this Project still be economically feasible if operations are required to be ramped down due to erosion or operations issues?
- m. If erosion issues caused by peaking are identified and operational changes are not possible, how will Xeneca mitigate the problem?

## 8. Headponds

*“The proposed facilities will be hydraulically linked: the impoundment of Third Falls will extend 44 km upstream to the Chute at its maximum extent, and the impoundment of the Chute will extend an additional 6.4 km upstream at its maximum.”<sup>38</sup>* Accordingly, the headponds will extend for approximately 50 km. According to the ER, the upstream

<sup>35</sup> Appendix N – Agency Consultation, 8 March 2013, P-89

<sup>36</sup> Appendix N – Agency Consultation – 6 May 2013, P-101

<sup>37</sup> Appendix N – Agency Consultation, 8 March 2013, P-90

<sup>38</sup> Surface Water Quality & Temperature, P-86



headpond will cover approximately 59 ha; and the headpond associated with Third Falls will have an overall surface area of 265 ha, with the upstream limit of inundation to extend approximately 44 km upstream of the tailrace area of The Chute GS. It is unclear if the 265 ha includes the entire 44 km stretch of headpond between the two GSs.

ORA agrees with MNR's concern that *"the main issue that is identified by the report is residence time. Under normal flow conditions, residence time in the head pond ranges from 7 to 17 hours. Once the facility is constructed, this residence time is going to increase by five hours to five days dependant on the inflows. The longer that water sits exposed to solar and environmental radiation (i.e. midsummer heating), the more heat it can absorb and the warmer that it is going to get."*<sup>39</sup> The ER confirms that *"the changes of open water area, residence time and stratification arising from the new headpond areas could generate potential water temperature effect to the river, and could affect the water temperature of cold-water tributaries within the Zone of Influence."*<sup>40</sup>

*"For example, the conversion of rivers to lake-like ecosystems upstream of dams can alter the thermal regime upwards of 930 km downstream (Olden and Naiman 2010). Depending on the design of the dam, downstream water temperatures may decrease if water is drawn from the cold hypolimnion or increase if water is drawn from the warm epilimnion. Such fundamental changes to the thermal regime and their potential consequence on aquatic ecosystems, are frequently overlooked, yet are some of the more easily mitigated issues when considering new and, in some cases, existing development. Residence time in the headponds will impact on water quality and methylmercury increase in fish tissue."*<sup>41</sup>

- a. Does the entire 44 km headpond total 265 ha?
- b. How will Xeneca mitigate residence time and warming in the headpond?
- c. What will be the total extent of each of the headponds in hectares?
- d. How many hectares of newly inundated land will make up the full extent of the two headponds?

## 9. Greenhouse Gas Emissions

The ER claims positive environmental effects associated with the Project are "the creation of reliable and secure green energy for the province and reduced Greenhouse Gas Emissions. It also claims the production of 30,000 NWWh of renewable energy represents the equivalent of "the displacement of 20,170 metric tons of carbon dioxide equivalent, or the annual greenhouse gas emissions from 4,410 passenger vehicles, or the sequestering of carbon from nearly 17,350 hectares of pine or fir forests."<sup>42</sup>

Flooding land for water reservoir creation has many environmental impacts, including the production of greenhouse gases (GHG), carbon dioxide (CO<sub>2</sub>) and methane (CH<sub>4</sub>). Recent studies have further shown that, during the first several years after reservoir creation, hydro GHG emissions may be higher than annual emissions for some fossil fuel sources.

<sup>39</sup> Appendix N – Agency Consultation, MNR, 17 May 2013 – P-106

<sup>40</sup> Ivanhoe Class EA Final ER, Table 12: Potential Effects Identification Matrix, P-112

<sup>41</sup> Aquatic Ecosystems for Rivers, Robert Metcalfe, P-15

<sup>42</sup> Ivanhoe Class EA Final – 1.0 Introduction – P-48



In listing the sources of GHG, Xeneca failed to list "headponds" as a source. In fact, flooding can convert a wetland from a small greenhouse gas sink to a relatively large source of GHG to the atmosphere. The Experimental Lakes Area has studied the impacts of flooding on the production of GHG emissions in the ELA Reservoir Project (ELARP)<sup>43</sup>, and the study demonstrated dramatic increases of 10 to 20 times in methylmercury and GHG (carbon dioxide and methane) production in response to flooding of wetland vegetation. Also, the Flooded Upland Dynamics Experiment (FLUDEX)<sup>44</sup> study on flooded upland soils reported a similar increase in CO<sub>2</sub>, with CH<sub>4</sub> production increasing year after; however, overall GHG emissions dissipated more quickly than in wetland systems.

- a. When preparing this list of equivalent reduced emissions, did Xeneca take into account the 50.4 km of headponds associated with this Project?
- b. Did Xeneca take into account the findings of the ELARP and FLUDEX studies when making claims about displacing other sources of GHG emissions?

## 10. Water Quality

The parameters that exceeded their respective PWQOs for samples collected during the summer sampling event (July 23, 2010) include copper (33.6 ug/L) and lead (1.9 ug/L) for SW1 and zinc (62.6 ug/L) for SW3. The source of the elevated metal concentrations is unknown. For reference, the PWQOs for copper, lead and zinc are 5 ug/L, 1 ug/L, and 30 ug/L respectively.<sup>45</sup>

Dissolved oxygen, total suspended solids (TSS), turbidity, dissolved organic carbon (DOC), total phosphorus, aluminum, iron and mercury were all elevated during the spring freshet, decreased during the summer low flow, and increased again in the fall.<sup>46</sup>

The ER also cautions that water quality parameters could be affected by the development "*if appreciable sediment accumulates in the inundated areas, turbidity and TSS could increase during peak flows as sediment flushes. The concentrations of metals and nutrients absorbed to sediment would also increase, possibly resulting in reduced water quality.*" Also, "Discharge from the facility should not induce additional erosion or sedimentation in the river channel as the increased sediment may increase the concentration of metals and nutrients in the water above PWQOs during periods of the year when they are not naturally elevated."<sup>47</sup>

ORA suggests that a modified run-of-river and a re-naturalization operating strategy will create turbidity in the 44 km headpond stretch, and has great potential to stir up sediments that could be contaminated with heavy metals, phosphorus and other nutrients.

- a. ORA requests that a sediment core sample be taken to determine what heavy metals and nutrients are in the sediment and might be stirred up and released into the water column as a result of the planned operating strategy.

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<sup>43</sup> Experimental Lakes Area Reservoir Project (ELARP) [Kelly et al., 1997; St.Louis et al., 2004]

<sup>44</sup> Flooded Upland Dynamics Experiment (FLUDEX) [Bodaly et al., 2004]

<sup>45</sup> Surface Water Quality & Temperature, P-44

<sup>46</sup> Surface Water Quality & Temperature, P-87

<sup>47</sup> Surface Water Quality & Temperature, P-87



## 11. Methylmercury

Mercury Consumption Restrictions are already in effect for Ivanhoe Lake, and in the Surface Water Quality report, mercury concentrations in many large fish exceeded the MOE guidelines for women of child bearing age and children under 15, and all large fish contained mercury concentrations above the CCME guidelines for protection of wildlife that consumes aquatic biota.

*It is reported that "Methyl mercury concentrations were slightly higher in the summer than in the spring and fall, which is inverse to the total mercury trend and not expected given that methyl mercury sorbs to DOC and suspended solids which are less abundant in the summer. The methyl mercury trend may be a result of increased methylating bacteria activity, which are stimulated when dissolved oxygen is low, a condition that may exist at night in the summers when aquatic plants are respiring. The effects of diurnal oxygen fluctuations on methylating bacteria may be more pronounced in quiescent back eddies and ponds adjoining the river where the river's turbulent flow does not physically introduce oxygen."<sup>48</sup>*

ORA submits that the modified run-of-river and re-naturalization operating strategies would increase turbidity, as well as increasing retention time in the Third Falls headpond. This could create the quiescent back eddy and pond affect, where oxygen is reduced, making the methylating bacteria more pronounced.

The ER reports an expected increase in methylmercury concentrations in fish tissue; however dismisses this as "insignificant" because "*fish consumption appears to be largely recreational and supplemental, reducing the potential effect directly related to human health.*" This may not be "insignificant" for those businesses and local residences/camps that rely on healthy fish for their recreation and tourism businesses, or for sustenance. Again, this ER downplays impacts as being "insignificant" but provides no reasonable basis for this determination.

ORA suggests that 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, 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.

With approximately 50.4 km of new headponds introduced into this project area, ORA suggest that all of the above factors within the project area must be taken into consideration – not just a quick desktop calculation.

- a. ORA requests a complete and comprehensive methylmercury study that will examine all of the above identified factors existing within the proposed headpond area, including soil and sediment, to provide a quantitative analysis and a projected post-construction estimate of increased mercury levels in fish tissue.

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<sup>48</sup> Appendix G – Surface Water, Ivanhoe River Pre-development Water Quality and Fish Report, P-87



## 12. Flow Rates

The Hatch report states, "Daily Flows at each site have been prorated from the synthesized 24-year 04LC003 flow series by ratios of LTAF values, i.e. 30.2 cubic metres/sec and 36.4 cubic metres/s at The Chute and Third Falls respectively."

These desk top synthetic flows exceed actual readings at Foleyet substantially. Hatch reports 17.8 cubic metres/s over a six year period. The Ortech Report (charts 2a, 2b, 3a and 3b) reduce the LTAF slightly.

- a. Why were the flow rates recorded at 04LC002 (Ivanhoe Lake Dam) not considered and reported, as this site controls approximately 50% of the watershed?
- b. Are the adjusted LTAF numbers based on Xeneca's results from their installed transducers at The Chute and Third Falls?

## 13. Public Safety

At the Ontario Waterpower Association's 13th Annual Power Of Water Conference, October 20-22, 2013, Hatch presented a Risk Assessment Tool for Dams. The Risk Assessment Example chosen was the Ivanhoe Lake Dam. Hatch concluded and reported for this dam the following deficiencies:

- spill capacity did not meet standard
- concrete dam stability did not meet standard

There was no mention or planning for the possibility of upstream dam failure anywhere within the construction or operating plan and design, or an emergency response plan that acknowledged this problem to protect the public's safety in the event of dam failure.

- a. Does The Chute and Third Falls' spillway design incorporate the potential extreme flow that could be created by an Ivanhoe Lake dam failure?
- b. Has the potential for upstream dam failure been incorporated into this project's construction and engineering plans?

## 14. Economic Impacts

There is no financial data or analysis to evaluate the economic impacts of this project to local recreation and tourism. A quantitative financial impact analysis is required in order to evaluate the effects of the Project on the local economy.

There was also no mention in the ER that Ivanhoe Lake already has fish consumption restrictions.

- a. With the considerable area that will be newly inundated for the 50 km of proposed headponds, how will this increase mercury levels in fish?
- b. What is the socio-economic impact of increased fish consumption restrictions?

The ER states that the power is required by Ontario, particularly in times of hot and or cold weather. However, ORA submits that it is during these high demand times that the ability of



these two projects to supply power will be restricted due to low flows. Power generation will be greatly restricted 80% of the time, when during the months of January, February, March, July, August and September flow is reduced significantly, when the power is needed the most.

The ER also states that provincially, the project would return approximately \$4.34 million (\$108,500 annually) in tax revenues during the 40 year OPA contract.

- c. Please explain in detail how the \$4.34 million dollar figure was derived, considering the actual power generation potential of this Project.
- d. What is the actual projection in financial losses to tourism operators over the next 40 years?
- e. What is the exponential recreation and tourism loss to the region and province over the next 40 years?
- f. What is the economic feasibility of this Project?

#### 14. Cumulative Effects

The ER reports that, "*As a result of substantial concern on the part of public and agencies regarding impacts to the upstream Ivanhoe Lake Dam and the downstream Northern Claybelt Forest Complex Conservation Reserve, the Project has been re-designed to eliminate upstream and downstream impacts. As well, the Project's Environmental Assessment is itself a Cumulative Effects Assessment of the previously-separate The Chute and Third Falls projects. Therefore, the vast majority of potential cumulative impacts have already been addressed through the process to date."<sup>49</sup> In fact, Xeneca has completed no cumulative effects assessment, nor have any valid considerations been made for them anywhere within this ER.*

Xeneca only mentions potential forestry impacts; however, what of the other impacts within the watershed, such as the upstream effluent from the wastewater treatment facility, and the rail yard in Foleyet, any history of the pulp and paper industry, and/or mining within the watershed, and the upstream water control dam at the outlet of Ivanhoe Lake - to name a few?

- a. What is Xeneca's definition of cumulative effects?
- b. Does Xeneca seriously believe upstream and downstream impacts have been eliminated?
- c. What are the potential cumulative effects of all past, present and future human impacts on the Ivanhoe River system?

#### 15. Brook Trout

It was noted that brook trout were found between the Chute and Third Falls, but because the main river stem was not suitable habitat, that it was not known where they were coming from. It was believed there was suitable habitat in the tributaries and the trout were moving from tributaries into the Ivanhoe. MNR felt there was a need to assess inundation areas within these tributaries to identify any suitable brook trout habitat that may be affected. MNR "was

<sup>49</sup> Ivanhoe Class EA Final – 13.0 Cumulative Effects Assessment, P-544



*concerned that, if more of water is in the tributaries, it may affect the ability to sustain brook trout. Also expressed strong concern that the proposed inundation extends far beyond the area studied (by circa 20x). This presents a large data gap that cannot be filled by a desktop study."<sup>50</sup>*

Concerns for brook trout are the summer low flow with potential change from cold water habitat to cool or warm water habitat.

*"With respect to the Chutes site, MNR's main concern is loss of fast water features flooded out by Third Fall head pond and through construction of the facility. This has the potential for strong negative effects on values. Want to see fast water habitat remaining in The Chute tailrace perpetuated by maintaining wetted width in the bypass channel that is conducive to spawning activity and other ecological function. Within the Third Falls headpond, MNR stated strong concern of fast water riffle habitat being lost in the stretch being inundated. Namely, those features close to the Third Falls facility that are likely heavily contributing to the walleye population by the provision of spawning habitat. MNR is concerned that the functionality of these features will be negatively impacted by inundation."<sup>51</sup>*

- a. How will Xeneca compensate for the major loss of fast water habitat?
- b. How will Xeneca protect the Brook Trout population?

## 16. Archaeology

Ministry of Tourism recommended that a Marine Archaeological Assessment be completed in comments from September 12, 2011, and again in their 4 November 2013 comments asked for the rationale for why this assessment had not undertaken.<sup>52</sup> It is common knowledge that areas where there are falls and rapids are prime candidates for archaeological exploration. It is inexcusable that Xeneca did not follow Transport Canada's recommendation.

- a. Did Xeneca complete a Marine Archaeological Assessment?

ORA looks forward to your response.

Respectfully,

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<sup>50</sup> Appendix N – Agency Consultation, MNR, 1 March 2013 P-82

<sup>51</sup> Appendix N – Agency Consultation, MNR, 1 March 2013 P-82

<sup>52</sup> Appendix N – Agency Consultation, Transport Canada – 4 November 2013 – P-162