Jeff Molenhuis

From: Jeff Graham <jeffgraham@gssengineering.ca>
Sent: November 4, 2016 10:42 AM
To: Jeff Molenhuis
Subject: FW: Interim Update on Howson Dam Class EA

Dear Mr. Molenhuis

We provide the summary report on the Howson Dam Class EA in advance of the November 7, 2016 Council Meeting. If you are in agreement, I would recommend you attach this report (and attachments) to your staff report for this meeting.

I summarize key issues to date

First Public Information Center (PIC 1)

The first PIC was held in Council chambers on the evening of September 29, 2016. The meeting was well attended. Our sign in sheets indicate approximately 115 members of the public attended the meeting.

The following information was presented with display boards and through the presentation by myself.

- Photos of the existing dam and bridge
- A description of the Class EA process
- Aerial photos of the dam site
- A copy of the Problem and Opportunity Statement
- A display board providing background technical information on the dam
- A display board on the 2013 Asset Management Plan and the Dam reserve fund
- A display board showing property ownership (public or private) around the dam and headpond area.

A presentation was provided by the undersigned that summarized the above information and reiterated the five preliminary alternatives proposed for evaluation.

The five options alternatives are :

Alternative 1 – Rebuild dam and bridge structure and restore dam headpond to former level.

Alternative 2 – Rehabilitate the existing dam and bridge. Maintain water levels in headpond at current (lower) level.

Alternative 3 – Rehabilitate the existing dam and bridge. Restore water levels in headpond to original (higher) level.

Alternative 4 – Decommission (remove) the dam.

Alternative 5 – Do nothing. Leave dam as is.

Overall, the first PIC was meant to be an introductory meeting to outline current conditions and summarize past investigations and reports.

Approximately 127 comments were received by way of comment sheets, emails and letters (including 22 names on a petition form). To summarize, 121 of the responding individuals expressed a preference to repair the existing dam and, in most cases, also restore water levels to historic levels. Approximately 5 persons did not express a firm preference and only one person indicated support to remove the dam.

Most respondents indicated the bridge over the dam was not of value (though some persons wished it to retained for a walking bridge only). Repairing and retaining the headpond was top priority. There was minimal support – it would appear – to build a new dam to restore the headpond level if this was determined to be necessary, given the assumed, underlying understanding by the respondents that the existing dam can be repaired at a relatively low cost.

There also appears to be minimal support to "do nothing". We assume from the comments received that the dam has remained in a deteriorated state for long enough.

Therefore – the alternatives that would likely be recommended for further evaluation at this time are:

- Repair the dam and restore historic water levels but retain the bridge – if possible – for a pedestrian bridge only.

- Repair the dam and restore historic water levels but remove the bridge due to advanced deterioration of the bridge

- If repair of the dam is not cost effective, or feasible, or will not be approved by MNRF, then remove the dam and return the upstream area to a natural river condition with adjacent parklands

Numerous persons at the first PIC questioned why there would be any effort to repair/retain the bridge. But the heavy weight of the bridge on top of the dam may be important to the structural stability of the dam. This issue is further discussed below.

<u>MNRF and LRIA Work Permit Correspondence and Discussions</u>

Before the EA started, significant correspondence had been received from various sources but I attach two key pieces of correspondence from MNRF (January 21, 2016) and BM Ross (January 21, 2016) that would indicate the following:

- The MNRF would indicate that the repair work proposed for the dam (as detailed by BM Ross in March 2015) would not be considered minor works and would therefore require an application for approval under the Lakes and Rivers Improvement Act (LRIA) to obtain a Work Permit before such repairs could be completed.

- The January 2016 correspondence from BM Ross indicates that "removal of the bridge from the Howson Dam will remove gravity loads that will be significantly contributing to the stability of the dam. Whether or not the LRIA criteria cover this situation or not, it is our opinion that a stability analysis must prove that the factors of safety are adequate if the mass of the bridge is removed"

The above MNRF and BM Ross letters are attached.

The LRIA Work Permit application process is quite involved. Key steps are summarized as follows:

> Hazard Potential Classification (HPC) analysis. The HPC analysis is first competed to rate the hazard level of the dam failing. The four rating levels of hazard are low, moderate, high or very high. The hazard rating evaluates the impact of a dam failure on potential loss of life, downstream property damage, including

estimated value of such damages, impacts on the environment and impacts on cultural and built heritage sites.

Once the HPC is completed, the Inflow Design Flood (IDF) is determined. The Inflow Design Flood is lower for low hazard dams and increases for moderate, high and very high classifications. For low hazard dams, the design flood is the 25 to 100 year return flood, for moderate the 100 year to regional flood, and for high and very high risk dams, for the 100 year to 1000 year return flood and up the Probable Maximum Flood.

Once the IDF is determined, a Dam Safety Analysis is completed, using the selected Inflow Design Flood. The Dam Safety Analysis includes a structural stability analysis. The analysis also requires an analysis that the dam can safely pass the design flood.

The MNR would require the above analysis to be completed and submitted as part of the application submission. They would review the application and only issue the LRIA Work Permit to repair the dam if they accept and agree with the above analysis.

We have subsequently discussed the LRIA process with MNRF staff and have received correspondence from them clarifying various aspects of the LRIA application process as it applies to dams in general.

Environmental Inventory and SAR species.

Our subconsultant (NRSI) obtained a scientific collectors permit from Guelph MNRF to complete electroshocking of the Howson dam pond, and the river area immediately below the dam. NRSI completed this work on September 21 and 22, 2016 as part of their environmental inventory of the dam area.

I attach their email of September 26, 2016 where they report the collection of black redhorse sucker, which has been identified as a Species at Risk (SAR). The identification of this fish species has been subsequently confirmed by DFO and the Royal Ontario Museum.

The black redhorse is considered “Endangered” by both the Federal and Provincial governments.

This species of fish was recovered above and below the dam. As noted in the email from NRSI, dead and dying individual black redhorse suckers were observed below the dam during their work period. This “fish kill” was reported to MNRF Guelph by NRSI in accordance with terms of the scientific collectors permit. Our understanding is that the fish kill has been referred to MOECC by MNRF.

MOECC Discussion

As you are aware, we had a teleconference with staff of the Environmental Assessment staff of the London MOECC office on Tuesday, November 1, 2016. Two main issues discussed were 1) the impact of the SAR species on the Class EA process and 2) what flexibility there is in the Class EA process to suspend the EA (if we decide to do so) and then reactivate the Class EA at a later date.

This discussion indicated the Class EA can be suspended by the proponent if they wish to do so. However, MOECC did not have any clear comment on how the presence of the black redhorse would affect the Class EA or a LRIA application. I recommend we contact MNRF further on the black redhorse issue.

Next Steps

As you are aware, I have suggested that North Huron consider suspending the Class EA process at this time and complete the first steps of the LRIA application process for the existing dam.

The benefits of completing the first steps of the LRIA process are:

- At this point, we do not know if MNRF would issue a Work Permit to complete repairs to the existing dam. We also do not know if the dam is structurally stable with the bridge remaining, or with the bridge removed. We also do not know if the dam structure has sufficient flood flow capacity.

- The LRIA application analysis, and specifically the stability analysis, would better determine the true cost of repairing the dam. Possibly, the true costs to repair the dam, to MNRF permit requirements, could be considerably higher than previously estimated by BM Ross (approximately $458,000 as per their letter to Pat Newson dated March 13, 2015).

- Until the above analysis is complete, it is very difficult to accurately compare the long term cost to repair and maintain the dam, versus removal of the dam.

Given the strong support received to date to repair and maintain the dam, we would recommend completing the LRIA application ***analysis*** at this time. Our costs to continue the Class EA would temporarily end, and the Class EA would be completed in an expedited manner once the LRIA analysis was completed.

Depending on the results of the LRIA analysis, the decision could then be made by Council whether to take the next step and submit the LRIA application (with supporting analysis) to MNRF.

It would also be our recommendation that North Huron retain an independent and qualified engineering firm to complete the LRIA analysis and application. Such an engineering firm should likely be selected by North Huron issuing an RFP process to receive engineering proposals for this work.

If there are any questions, please contact the undersigned.

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