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File No. BR476B

July 20, 2018

Sean McGhee, Director of Public Works
Township of North Huron
274 Josephine Street, Box 90
Wingham, ON N0G 2W0

Dear Sir:

Re: Repairs to Howson Dam

At your request, we have recently reviewed our design of proposed repairs to the Howson Dam in 2015 and our design report dated March 30, 2015. The report suggested construction budgets of $185,000 for the work represented on the drawing and $68,300 for secondary repairs in ***each*** of the 4 bays of the dam. These costs do not include any studies that may be required for approvals: Heritage Impact Assessment, Biology, Species-at-Risk, Design Intake Flow, Dam Break Analysis, Stability, Fluvial Geomorphology.

Since 2015, the costs would be affected by inflation on two ends:

1) Fiscal inflation: While the cost-of-living allowance has been about 2% annually in this time, we find that structural construction work like this has had an inflation closer to 5% annually, probably because of high volume of demand for this work.

2) Deterioration inflation: The areas and depth of concrete deterioration increases exponentially with time. The volumes of concrete repair and surfaces requiring forming will have increased considerably with 3 more winters of freeze-thaw action.

In addition, we understand that another engineer has determined the bridge to be unsafe for any public use and it has been closed. The repairs outlined in our design and report of 2015 only dealt with the lowest 2 m of the piers, as they were considered important elements of the dam. No costs were shown for the piers above this level or for any other part of the bridge. If the bridge has been deteriorated to such a point that there is a risk of the bridge collapsing or pieces of concrete falling in the work area, the cost of repairs will be much higher to secure the area for the safety of workers.

The dead weight of the bridge is an important part of the stability of the dam. If the bridge is removed or even deteriorated to the point of losing mass, it could render the dam unstable.

Our 2015 design was for a repair, not a rehabilitation. We define "repair" as work to address acute current problems on a short term. We define "rehabilitation" as work to restore the structure back close to its original capacity or strength with a renewed service life. With the repair proposed, there would be a series of further repairs required to deal with deteriorated components that may be rated as "fair" at this time. The repair program proposed would provide a hard shell of concrete over a soft core, which would extend the life of some of the structural components. It would not restore the original strength of the dam. In our opinion, this structure is in too poor a condition for a rehabilitation program.

Yours very truly

B. M. ROSS AND ASSOCIATES LIMITED

Per _____
A.I. Ross, P. Eng.

AIR:hv