



Luleå, October 2nd, 2018

Hon. Siobhan Coady, Minister, Department of Natural Resources
7th Floor, Natural Resources Building, 50 Elizabeth Ave., P.O. Box 8700, St. John's, NL A1B 4J6
Telephone: 1-709-729-2920; Email: NRMinister@gov.nl.ca

Dear Hon. Siobhan Coady,

Investigation of the Safety of the North Spur

During the last couple of years, Dr. Stig Bernander has studied the stability of the North Spur and found that there is a risk for a dam breach and for part of the Spur sliding into the Lower Churchill River 70 m deep pool downstream of Muskrat Falls. The results of his studies have been brought to the attention of Nalcor/Lavalin, who recognized it was significant enough to warrant a peer review. Subsequently Muskrat Falls Corporation appointed a Geotechnical Peer Review Panel, GPRP, to scrutinize his work.

The review panel, however, did not make use of any recent R&D methods, as Dr. Bernander had advised. Instead it only re-examined the old data and methods provided by Nalcor/Lavalin, which not even considered basic geotechnical principles regarding deformations and inclinations. Methods, based on recent R&D, which are now available, are vital for a proper calculation of the risk of the dam's failure. In the failure of the Mount Polley Dam in BC in 2014, it was for instance found that the traditional methods were not able to predict the failure.

Using up-to-date methods, data from reports by Nalcor/Lavalin and probable deformation properties of the varying strain softening soils in the North Spur, indicate a conceivable risk for a progressive downwards failure along inclined sliding surfaces into the river downstream of the Muskrat Falls.

We recommend you to appoint an independent committee of experts to investigate this problem before impoundment and – if necessary – to propose appropriate mitigation measures to prevent a dam failure. The costs for such an investigation will be minor compared to the catastrophe a dam failure would give.

We include links to two of our reports and to a video presentation. They summarize our concerns and our criticism of the Geotechnical Peer Review Panel Report.

Sincerely yours,

Two handwritten signatures in black ink are shown. The signature on the left is for Stig Bernander, and the signature on the right is for Lennart Elfgren. Below each signature is the name of the signatory in a small, black, sans-serif font.

Stig Bernander Lennart Elfgren

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Links to reports and to video presentation:

Bernander-Elfgren (2018). *Dam Bank Stability in loosely layered silty sands and lean silty sandy clays. Comments on the risk of failure in the North Spur at Muskrat Falls in the Churchill River Valley, Labrador, Newfoundland*, 150 pp. <http://ltu.diva-portal.org/smash/get/diva2:1180147/FULLTEXT01.pdf>

Bernander-Elfgren (2018). *Response to and Comments on "Geotechnical Peer Review of Dr. S. Bernander's Reports and Analysis of the North Spur"*, 31 pp. <http://ltu.diva-portal.org/smash/get/diva2:1233686/FULLTEXT06.pdf>
Video presentation, 24 minutes, <https://www.youtube.com/watch?v=RXs5v0U275g>