

Project FERC No. 1892-026
O. Ross McIntyre 5/12/17

To: Federal Energy Regulatory Commission
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ORIGINAL

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FEDERAL ENERGY
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Re: Wilder Project (FERC No. 1892-026)
Bellows Falls Project (FERC No. 1855-045)
Vernon Hydroelectric (FERC No. 1904-073)

**Great River Hydro [TransCanada Hydro Northeast Inc.]
Consolidated Report Study 2/3: Riverbank Transect and Riverbank
Erosion Study**

Date May 10, 2017

**Contents: Amended Landowner's Comments and Recommendations on the Final
Report of Consolidated Studies 2/3**

These comments concern one objective of Combined Studies 2 and 3: *To study project related effects on erosion.*

Summary: This submission updates comments concerning hydraulic gradient and water transit velocity submitted by O. Ross McIntyre to FERC on February 18. He has now carefully examined the peer-review report on these studies for stakeholders that was prepared by Princeton Hydro. Princeton Hydro states "no ground water data, and thereby no hydraulic gradient data for the streambank, was collected or analyzed for the review of how operational WSE fluctuations potentially effect stream-bank stability. The revised Study 2 and 3 states that "even small WSE fluctuations could still contribute to bank instabilities" (page 138), but then discounts this potential without any data; basing their assumption on the magnitude of the assumed hydraulic gradient. Princeton Hydro follows with "recommend that TransCanada calculate the hydraulic gradients specific to the full range of

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operational WSE fluctuations including both normal operational WSE fluctuations, and periodic operational drawdowns.”

I, and now others, feel that the study report is wrong when it concludes that a change of up to two feet Water Surface Elevation (WSE) is unlikely to cause significant seeping erosion because the hydraulic gradients are “likely small.”

In the absence of measurements of hydraulic gradients and rate of water movement in soils adjacent to the impoundment during changes in WSE, the applicant’s unsubstantiated opinion should be rejected by FERC. The study methods invoked by TransCanada and its contractors were indirect, inferential, and lack peer review. The applicant states that measurements of hydraulic gradients in project soils was “beyond the scope of the study.”

Comment:

It is worth considering why, after months of extensive and expensive studies, we lack information about whether project operations that raise and lower the WSE cause erosion. It would have been relatively simple to obtain data about water-loading of soils during changes in WSE, including that caused by project operation. A study plan submitted to FERC in 2013 by O.Ross McIntyre, the Town of Lyme and City of Lebanon would have provided measurements of hydraulic gradients and rate of water transport into soils adjacent to the project. This study was rejected for reasons unknown to those submitting this study plan.

One has to surmise that the choices of various erosion components in studies 2 and 3 were to demonstrate the desire of the applicant to show a serious interest in erosion occurring in the project *but not to get near a mechanism of erosion that could be attributed to project operation.* We have acres of riverbank photos and maps, many descriptors of river bank collapse, lots of mention of velocity, “undercutting” and motor-boat waves but no mention (until the very last study report) of a mechanism that is most likely working as a result of project operation – and then this mechanism is dismissed as “unlikely” despite a growing body of evidence that this mechanism is important in exactly the circumstances encountered in project operation.

Certainly all reviewers of the erosion studies conducted by TransCanada agree that erosion found in the project area has multiple causes, and this fact is stated in the study results that are reported. However, from the outset of the license renewal process, the applicant’s representatives have been careful to avoid mention of or to downplay the possible role that seepage erosion is playing in erosive activity. One likely reason for this is that TransCanada/Great River Hydro management has to consider its fiduciary responsibility to its investors. Supporting a study that suggests that project operations cause substantial risk or expense to the company is not in the best interest of its investors. The FERC requirement that the company pay for a study that might show that daily small changes in WSE cause erosion is huge hurdle for the company to get over. In my opinion,

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this is why all sorts of effort has been devoted to erosion studies that cannot possibly impugne project operation and that the studies cited above, have not been done.

Now after more than 60 years of project operation, erosion has resulted in significant infrastructure damage, particularly on River Road in Lyme. This historic road has been used for over 200 years but has been closed for over two years because of the need for repairs. The first of these repairs cost over \$600,000 and the second is estimated at \$1.5 million. Several other parts of the road are failing and will also need repairs/rebuilding soon.

If damage to Lyme's River road goes to litigation, the case might well be based upon the amount of erosion that would occur if there were no dam. In that case the water level would much lower - the way it was in the first 150 years of the road's existence. Then the river was much farther away from the road than it is today and the threat of erosion was greatly reduced if not entirely eliminated. If the dam were removed eroded farm land in Lyme would remain but the river would lie in its old channel, a considerable distance from most sites of recent erosion.

Recommendation:

Multiple processes act to cause erosion in areas of project operation. Changes in WSE are believed by some to be a significant cause of erosion, but there are differing opinions on this subject. No measurements of hydraulic gradients or rate of water transport in soils have been performed, so the importance of seepage erosion and its relation to WSE changes is lacking. It is unreasonable to expect that TransCanada/Great River Hydro will perform studies that would confirm that its operation causes infrastructure damage and significant financial risk to the company. FERC should find ways to support the study seepage erosion that avoids this conflict of interest.

In the absence of such a study, FERC should anticipate at least two courses of action by the parties involved. The amount of damage from erosion could be compensated by a mitigation fund to be set up as a requirement for relicensing of the dam, or it could be determined by litigation initiated by the damaged entities. Of these two choices I much favor mitigation, and recommend that FERC require as part of granting a renewal license for project operation that such a fund be created by TransCanada/Great River Hydro. Because the need for such a fund is generated by the presence of the dam, 100% of the cost of road repairs, bank armoring, and other measures should be paid for by the fund.

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