

**Enbridge Pipeline Inc., Rouge River Pipeline Exposure  
Rouge River Watershed, City of Toronto; Scarborough**

Item	TRCA Comments August 31, 2011	Enbridge Responses	TRCA Comments February 29, 2012	Stantec Responses
5.	With your detailed design submission, please provide a clear estimate of the area of disturbance as well as a construction staging/drawing that explains the proposed construction sequencing and how the works will be phased out. It should also show construction access points for each work area. Ensure that the sequencing/phasing plan/drawing detail all activities from pre-construction works through to post restoration works.	See Enbridge Submission dated December 14, 2011 for more details.	Please include the exact details (nature) of the proposed east access route on the plan.	See attached access route Figure A.
6.	Please note that TRCA owns some property close to the site. Please ensure that all access points and construction staging locations on TRCA property are identified on the plans. Permission to use TRCA lands must be obtained. TRCA will also need authorization from other nearby land owners whose lands will be affected prior to issuing our permit.	See Enbridge Submission dated December 14, 2011 for more details.	<p>Staff notes that access to the site will involve both east and west access routes. For the most part, the east access route as presented in Drawing # 101 will run through the farmer's field and hydro corridor.</p> <p>Please show on the map the east access from Little's Road, our preference is to ensure that only the City of Toronto right of way is used – similar to access route used in 2009.</p> <p>There is a proposed lay down area within the farmer's field. Please note that although these lands are owned by TRCA, they are currently leased out to local farmers for farming purposes. As such, the site may contain cultivated crops that could be impacted by the access route and laydown area works. Similar to the commitments made in 2009 for the emergency repair works, TRCA will need a commitment letter signed by Enbridge indicating that they will provide compensation to the farmer for the destruction of farm crops as well as restore the access route to current conditions or better once the construction is completed. TRCA staff will discuss access and permission to use the site with the farmer and will get back to Enbridge regarding the exact amount of compensation required at a later date and once the full amount of crop damage is known.</p> <p>In your cover letter dated December 14, 2011, staff notes that the response given by Stantec regarding Enbridge access protocol with land owners associated with the west access route, as such, a landowner authorization letter was not included in the submission.</p> <p>Please note that TRCA will need documentation indicating the City of Toronto, Trans-Northern and Hydro One are aware of the proposed works and or access through their lands. This could be in a form of an email indicating that these landowners agree to the use of their lands or some existing access agreement between Hydro One, Trans-Northern and Enbridge. This requirement is to confirm to TRCA that Enbridge has undertaken the necessary due diligence with affected land owners and to ensure the validity of the drawings/plans that TRCA staff will approve.</p>	<p>Please refer to attached access route Figure A and Drawing No. 101 for the proposed eastern access route and eastern laydown areas.</p> <p>Enbridge letter committing to provide crop damage compensation and restore the access route is provided in this response package under separate cover.</p> <p>Also included in this response package please find a copy of the TNPI permit to undertake the remedial works within the TNPI easement. Also find copies of landowner authorization from HydroOne and the City of Toronto.</p> <p>Enbridge requests TRCA permission the access and use TRCA lands for proposed remedial works construction purposes as per the attached revised drawing set and drawing from the first TRCA submission.</p> <p>Enbridge also requests that TRCA notify the tenant farmer that Enbridge intends to commence construction activities with one week of issuance of the TRCA permit.</p>

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9.	Furthermore, it should be clearly stated in the report what type of monitoring would be completed by Enbridge. We do understand that Enbridge undertakes regular monitoring of its pipelines. However, similar to comments made in the letter, staff will require some yearly post-construction monitoring at the site level specific to the status of the live cribwall, until such time as the pipe is removed from its current location.	See Enbridge Submission dated December 14, 2011 for more details.	<p>From the Stantec monitoring report, it appears that Enbridge is proposing to undertake four levels of monitoring including baseline monitoring, as built monitoring, post construction monitoring (a year after construction) and annual monitoring for three years following construction.</p> <p>Although TRCA does not object to Stantec undertaking the proposed 3 year monitoring of the site or Enbridge's commitment to undertake long-term maintenance of the remedial works over the course of its lifecycle, additional long-term monitoring by TRCA is required as indicated in comments # 2 and 3 of this letter.</p> <p>TRCA will require a monitoring commitment letter from Enbridge and signed by an Enbridge employee on behalf of Enbridge. Please note that monitoring report and letter of commitment will be included in the approved plans to ensure they are binding. As such, please update the monitoring plan and ensure that is consistent with the commitments outlined in the response letter (Appendix B), particularly regarding the commitment by Enbridge to long term inspection and maintenance of the remedial works as well as the need to consult TRCA and obtain the necessary permits to undertake and future remedial works.</p>	Please refer to the Enbridge response letter (under separate cover) to comments #2 and #3 of the TRCA comment cover letter outlining long-term monitoring, inspection and maintenance of the remedial works and reporting to TRCA and the Rouge Park.
10.	Please ensure that detailed design drawings/plans are stamped and signed by a qualified fluvial geomorphologist and or equivalent professional.	See Enbridge Submission dated December 14, 2011 for more details.	Please ensure the next submission is signed by the appropriate professional.	Drawings are signed and sealed by Tim Gallagher Water Resources Engineer, Ron Howieson Geotechnical Engineer and Sheldon Smith Fluvial Geomorphologist.
11.	Please ensure that the appropriate and detailed/phased Erosion and Sediment Control (ESC) measures are incorporated into the design drawings to be submitted to TRCA for review. Please ensure that the ESC measures used confirms with the specifications provided in the GTA CA's Erosion & Sediment Control Guidelines from Urban Construction (2006) which can be downloaded for free from TRCA's Sustainable Technologies Evaluation Programs website <a href="http://www.sustainabletechnologies.ca">www.sustainabletechnologies.ca</a>	See Enbridge Submission dated December 14, 2011 for more details.	There appears to be a discrepancy on Drawing #201 and #205 – regarding the temporary channel crossing detail. Please confirm whether the detail shown on Drawing 205 is actually the temporary channel crossing or not as it is listed as “temporary culvert crossing”.	Detail on Drawing #205 revised to be labeled as temporary channel crossing detail.
12.	We recommend that the project aim towards achieving ecological net gain and that restoration net gain and the restoration and compensation measures are designed bearing in mind the existing conditions and the fact that the site is located within the Rouge Park. Please note that TRCA typically recommends vegetation restoration/replacement at a 3:1 ratio; meaning for any tree or shrub removed, 3 trees or shrubs are planted. We also recommend the planting of only native and non-invasive vegetation species. We recommend that Rouge Park staff be consulted regarding site restoration activities.	See Enbridge Submission dated December 14, 2011 for more details.	Staff notes that Tree Assessment and Inventory document identifies the approximately tree loss at 37 trees on the west banks and 6 trees on the east banks of the Rouge River. Staff notes that at the replacement ratio of 3:1 (approximately 114 shrubs and 54 trees) which includes tree count associated with the cribwall vegetation. Please note that the cribwall planting forms part of the remedial structure (a requirement for the function of the structure) and therefore is not considered compensation for removals. As indicated in the email from Rouge Park staff (Attached email from Maria Papoulias of February 24m 2012) please ensure that appropriate compensation is based on the Rouge Park recommendations of a ratio of 10:1. Please contact Rouge Park staff for more details on the compensation plan.	See attached emails between Sheldon Smith of Stantec and Maria Papoulias of Rouge Park with revised compensation planting sheet dated April 5, 2012.

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15.	Please ensure that design of the cribwall has substantial reinforcement of the slope toe as well as upper slope reconfiguration and protection to ensure successful natural adjustment.	See Enbridge Submission dated December 14, 2011 for more details.	<p>On Drawing #204, on the Typical Cross-Section of the Live Crib Wall (left over corner of the sheet), staff notes a design component labeled "River Stone Toe, 600 mm Wide, 600 mm Deep". Thus it appears from the sketch that this 600 mm x 600 mm toe protection was actually composed of smaller river-stone sizes. There is no specification of the size range for those river-stone pieces. Moreover, it appears that this element is overall undersized and staff is not sure if this element will provide to sufficiently key in the river bed.</p> <p>Please note that TRCA staff is not satisfied with the design of the toe protection. Staff is concerned that if the river stone size used are too small in size, there is likelihood that this toe protection element will be comprised in the near future through storm activities and river flow. Please assess the proposed and provide a design that considers the role of the toe protection in the design and ensure that the weight of the riverstone is significant enough as well as the way it is embedded into the bed is secured.</p>	Riverstone toe protection revised to be "300-400mm riverstone toe protection to be installed @ 2:1 up to bankfull elevation and tied in with the base of the wall as shown on "Typical Cross-Section Live Crib Wall" on drawing #204.
17.	<p>Staff notes that two boreholes were drilled near the western top-of-bank near both existing underground Trans-Northern and Enbridge pipelines, The stratigraphic logs indicated approximately 4m of gravelly sand overlying a very dense silty sand till. It appears that the Enbridge pipeline is situated within the glacial till deposits based on the approximate 6m elevation difference between the borehole site and the Rouge River and as shown in the photographs of the river bank at the exposed pipeline location.</p> <p>Additionally, staff notes that the water levels measured within monitoring standpipes (on September 21, 2009) were about 4.8m below grade and situated within till zone but estimated to be above river level. Based on the existing site conditions and the documentation provided, staff does not anticipate any significant groundwater concerns related to the proposed bank stabilization works,</p>	See Enbridge Submission dated December 14, 2011 for more details.	<p>Also on Drawings #201 and 202, please include the approximate elevations of the Enbridge pipeline on the cross-section details to facilitate easy reading and understanding of the plans.</p> <p>Please provide information about the amount of fill to be removed on both banks of the Rouge River to accommodate the cribwall construction and slope re-grading.</p>	<p>Pipeline elevations are shown in sections on drawings #202, #203 and #204.</p> <p>East bank cut and west bank fill volumes are shown in incremental cut fill tables on both Drawings #201 and #202.</p>
19.	Please include the following TRCA Standard Notes pertaining to Erosion and Sediment Control measures to the drawings/plans.	See Enbridge Submission dated December 14, 2011 for more details.	Please note that TRCA Enforcement Officer Pat Doody (416-660-6600 ext. 5264) is the main TRCA point of contact during the installation of the Erosion and Sediment Control measures and during construction.	TRCA contact info added to general notes on Drawing #204.