

Comment	Section	Page	Table	Figure	Comment	Response
1	General				Overall, a good technical document to help guide an important piece of mitigation for wetlands. Its good that they also took into consideration cumulative impacts and tried to balance current development with future development to ensure those last to develop aren't impeded by those first to develop.	We appreciate the comment.
2	2	4	1		First row, last column: "Feature limits are delineated early in the planning process in consultation with the CA and/or MNR" – this should also include "and/or municipal staff"	We have revised the document to indicate that municipal staff may be involved in the delineation of feature limits. It should be noted that feature limits of a PSW are generally delineated by MNR
3	2	5	1		Fourth row, last column: as above – should include municipal staff as a potential source of information for ELC communities	We have revised the document to indicate that municipal staff may also be able to provide ELC data.
4		6			Last paragraph, 9th line: as above, please include consultation with CA staff and/or municipal staff.	We have revised the document to indicate explicitly that municipal staff may request to be consulted in the determination of which wetlands require an evaluation, should they so choose.
5		11			i) vegetation community and ii) fauna species and iii) flora species: the first sections mentions CA planners and ecologists and the second and third sections mentions CA planning ecologists. Are these one and the same or different roles at TRCA?	The text has been changed to clarify that it is TRCA <i>ecologists</i> who ranked the species and communities. Technically, the roles of ecologists and planning ecologists are different at TRCA.
6		27-44			Appendices 2 and 3 – column headings should be carried over onto each page for ease of	Headings have been carried over onto each page.

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7	1	1-3			We see that this document has the following foci: a) This document focuses on 'natural' wetlands, not stormwater management, treatment wetlands; b) this document focuses on "greenfield applications" and appears to have limited applicability to a mature City like Toronto. The initial pages of the document do not clearly articulate these foci.	We note that the determination of whether the wetland can be retained on the landscape will be made through the EA and planning process prior to any application of the Risk Evaluation. We do not specifically limit the document's applicability to greenfield applications, as we anticipate that the Risk Evaluation may apply to situations where there is some level of existing development within the catchment, or where there is a mix of greenfield and infill development. For heavily urbanized areas such as the City of Toronto, we recognize that a feature-based water balance analysis may not be the optimal way to achieve wetland protection, and that in these instances a "best efforts" approach should be followed. Note that the Risk Evaluation excludes riverine wetlands associated with larger rivers (Strahler order ≥ 4 or
8	Appendix 1				The risk evaluation methodology appears to permit an evaluation of a natural wetland within a mature city, where infilling may have an impact. However, the examples in the Appendix are not ideal for such an application.	We have included additional examples in Appendix 1 to address infill type development scenarios. We note that the Risk Evaluation does not automatically lead to a medium or high risk outcome within built urban areas, requiring an expanded scope of analysis, as some commentators have implied. Rather, changes within the portion of the catchment controlled by each individual landowner are evaluated relative to the total development area within the catchment (Cdev) according to Equation 1; see

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9	General				We concur with your assertion that this document has addressed the main comments that were provided at the ESC workshop. For example, you have significantly modified the methodology to be proponent specific - allow each proponent to consider their development separate from other proponents, while also requiring consideration of the total effect of ultimate development on a wetland.	Noted. We appreciate the comment.
10					<p>In regards to cumulative effects, Appendix 1 paragraph 2 argues that the methodology anticipates the effects of "total impervious cover within the catchment".</p> <p>We suggest that, within this document or separately, each example evaluate "total impervious cover within the catchment" at full build out, to demonstrate how the methodology should consider "cumulative effects" of "total impervious cover within the catchment".</p>	We have included additional examples in Appendix 1 to address infill type development scenarios. We note that changes within the portion of the catchment controlled by each individual landowner are evaluated relative to the total development area within the catchment (Cdev) according to Equation 1. This is not the same as total impervious cover within the catchment, but is an alternative approach to addressing the issues posed by cumulative effects. See additional examples provided in Appendix 1.
11					In terms of wetland sensitivity, your wetland classification system (e.g. "isolated, etc.") makes sense. In addition, we suggest a provision for bog and fen as additional wetland types, which are quite sensitive, albeit they do not occur that frequently on the TRCA landscape.	The Risk Evaluation is intended to be a tool that can be applied to any and all wetland types. We agree that Bogs and Fens are sensitive wetland types, however, if a proposed development is unlikely to change the water balance then the ecological function of the wetland is unlikely to change. Bogs and Fens are rare wetland types in TRCA jurisdiction and the vast majority of occur on the Oak Ridges Moraine or in other areas where there is significant protection in place. For TRCA, a bog and fen exception is unlikely to be applied. If the Risk Evaluation is adopted by other CAs, those

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12	2.4	17			<p>Page 17, paragraph 2 - there is uncertainty associated with the effectiveness of a Mitigation Plan, especially related to the effectiveness of mitigation measures such as Lot scale LIDs. Further, it is not clear how uncertainty is accounted for in the "risk evaluation" deliberations.</p>	<p>The Risk Evaluation evaluates the risk that a proposal will degrade the capacity of a wetland to provide ecological and hydrological services within a watershed <i>in the absence of</i> a well designed mitigation strategy. The evaluation of risks related to the performance of the mitigation strategy is not within the scope of the document. This is partially addressed by the requirement for interim mitigation plans, when requested, for proposals with extended time gaps between initiation of construction and implementation of mitigation design. TRCA would generally prefer SWM / mitigation designs incorporate some degree of flexibility to allow for post-implementation adjustment of flows, but such designs are at the leading edge of current practice and not enough</p>

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13	1	1			<p>We recommend that two sections be added to the document, before "Section 1 Introduction". Namely;</p> <p>a) Foredefinition ward; b) Summary or Executive Summary;</p> <p>a) The forward section could reference this Wetland Water Balance Risk Evaluation document, the Wetland Water Balance Monitoring Protocol document, Appendix D of the Stormwater Document, and other related documents as appropriate. It could also include a precis of each of these documents, how they will be used, and be one to two page in length. The included Figure 1 generically provides the overall picture, but is not sufficient by itself.</p> <p>b) The Summary or Executive Summary could include text similar to the following: The <i>Wetland Water Balance Risk Evaluation</i> is a technical guideline intended to provide direction specific to aiding proponents of development or infrastructure propoals in determining the level of risk to the ecological integrity of a wetland through changes to its hydrology. The level of risk assigned to a particular proosal determines whether pre-development hydrological monitoring of the wetland is required and the scope of the feature-based water balance analysis that is required. The document should be used for evaluating risk to wetlands that have</p>	<p>Text has been added to the first paragraph that more explicitly outlines the relationship between the Risk Evaluation and the SWM Guideline. We believe that Sections 1.1 and 1.2 (Purpose and Applicability) already fulfil the role of the proposed Executive Summary."</p>

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14	General				<p>Applicability to Fully Urbanized City Areas in the 905 and the City of Toronto: This document is primarily geared to greenfield development in the suburbs and is not that relevant to previously urbanized areas. It appears to have very limited applicability within the City of Toronto. This being said, there may be an occasional natural wetland within the City where specific projects may have an effect. Such projects may include:</p> <ul style="list-style-type: none"> i) Where the City is building additional stormwater infrastructure and outfalls to assist in basement flooding relief projects, ii) Where the City or private property proponents undertake works to provide water quality treatment (e.g. new SWM ponds, green infrastructure, etc.), iii) Where existing storm sewer outlets discharge to areas where wetlands currently exist, particularly in stream valleys, and; iv) Where the City would be looking to use a portion of the existing wetland as an opportunity for water quality improvement. <p>We would appreciate receiving feedback from TRCA and CVC on whether consideration has been given to the hydrological sensitivity of all known wetlands within the City of Toronto and whether the Risk Evaluation document would have applicability to them or not.</p>	<p>We note that the determination of whether the wetland can be retained on the landscape will be made through the EA and planning process prior to any application of the Risk Evaluation. We do not specifically limit the document's applicability to greenfield applications, as we anticipate that the Risk Evaluation may apply to situations where there is some level of existing development within the catchment, or where there is a mix of greenfield and infill development. For heavily urbanized areas such as the City of Toronto, we recognize that a feature-based water balance analysis may not be the optimal way to achieve wetland protection, and that in these instances a "best efforts" approach should be followed. Note that the Risk Evaluation excludes riverine wetlands associated with larger rivers (Strahler order ≥ 4 or drainage area >2500 ha), and that this would likely exclude many of the wetlands associated with major rivers within the City. Coastal wetlands are also excluded. TRCA has not conducted a screening exercise to specifically evaluate the hydrological sensitivity of all wetlands within the City of Toronto.</p>

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15	General				Applicability to Fully Urbanized City Areas in the 905 and the City of Toronto: How does document relate to existing developed areas, where restoring or creating wetlands as elements of green ravine infrastructure may be needed to improve ecosystem health?	The Risk Evaluation pertains to the potential for development or infrastructure projects to disturb existing natural wetlands via hydrological alteration, and TRCA would not require proponents to apply the Risk Evaluation to undertakings involving restoration or construction
16	2.4				Moderate risk to wetland requires a calibrated EPA SWMM model. This requirement should be relaxed and limited to the use of EPA SWMM model as pre-development monitoring data will not be available for calibration. Given that there is no requirement to collect pre-development monitoring data in case of moderate risk, therefore, model cannot be calibrated.	We note that pre-development monitoring is required for proposals deemed to have a risk outcome of "medium" or "high", and that this data is to be used to calibrate the hydrological model for these proposals. We also note that EPA SWMM is provided as an example of an acceptable continuous model, but that other models may also be acceptable. TRCA will be providing additional detail around modeling requirements in a forthcoming wetland modeling guidance document. Until that guidance is available a
17	2.4				Groundwater modelling for Moderate risk may not be required as the groundwater impacts can be assessed on regional scale rather than local scale. The size of development for Moderate risk may trigger the requirement of groundwater modelling.	We note that modeling of groundwater processes for medium risk applications would not typically be required, except in cases where the impact of groundwater withdrawal is anticipated to be significant and also cannot be represented using simplifying assumptions or approximation methods within standard continuous hydrological (surface water) models. TRCA will be providing additional detail around modeling best practices in

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18	2.4				MIKE SHE / GSFLOW programs are pricy and small to medium consulting engineering firms may not have expertise in using these softwares. It will be challenging to implement this requirement. Other alternatives may be considered for this purpose.	We agree that there is a high cost associated with these programs, but qualified TRCA staff and other members of the External Stakeholder Committee feel that there is no viable alternative to evaluate the impact of a proposal deemed High Risk on a wetland that has significant interaction with groundwater. TRCA would not request the use of such a model in every High Risk proposal, only those in which an integrated model would provide
19	1				Where in the development review process will the Wetland Water Balance Risk Evaluation be requested. At MESP level or site plan/draft plan or both?	TRCA would indicate the need for a Risk Evaluation to be completed at the earliest stage at which TRCA receives the application, regardless of what stage this happens to be. The Risk Evaluation is best applied earlier in the planning process, such as at the MESP stage, because it may be too late to identify the need for and establish a pre-development hydrology monitoring program by the draft plan stage. Hydrological models developed without hydrology monitoring data to
20	General - Process				Is the Wetland Water Balance Risk Evaluation included in a SWM report? or as a separate report?	The Risk Evaluation can be included as part of a SWM report, as an appendix to the report, or as a separate report. We note that there needs to be integration of SWM information with ecological and hydrogeological data within the report.
21	General - Process				Do City Engineers review Wetland Water Balance Risk Evaluation reports? If so, do we include in the PAC application form? If not, this needs to be included as part of TRCA's technical responsibilities.	TRCA suggests that the Risk Evaluation should be something that municipalities, in consultation with TRCA staff, consider when assessing whether an application is deemed complete, along with other TRCA technical studies.

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22	3				Section 3. Ecosystem Services and Additional Considerations – Will the study quantify the potential threat of wetland impacts via ecosystems services and rate them from low to high? The data collected will assist staff in making decisions on wetland feature retention or removals. This data would also assist in creating quantitative data that can be used for the further development of TRCA's compensation protocol. As the TRCA regulates wetlands, the City can use this information to guide and quantify the wetland restoration opportunities in the City (feature replacements).	The determination of whether or not the wetland will remain on the landscape will already have been made prior to any application of this Risk Evaluation. The data collected to support this determination may and should be used to fulfill the data requirements of the Risk Evaluation. TRCA would not require proponents to include a formal assessment of the impact to ecosystem services through the Risk Evaluation / SWM Criteria process, but, where collected, this information could inform the discussion around the adequacy of efforts to mitigate the projected impacts of the proposal.
23	1.2	1			[50,000 L/day threshold defining groundwater impacts] Why was this value chosen? Could water takings below the PTTW limit also not have dramatic changes to wetlands, especially if they are small?	The value for water takings was chosen based on the information that is likely to be available to proponents at the early stages of the planning process. TRCA technical staff believe that proponents would be likely to have an idea of whether or not dewatering of a magnitude requiring registration with MOECC would be required by the time this screening tool is applied. We acknowledge that impacts are possible with water taking below this threshold, but suggest that potential impacts and mitigation measures could be addressed through mechanisms other than a

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24	1.2	1			[Impact to wetland water balance occurs when changes to SW / GW are anticipated on a property that contains or is adjacent to a wetland determined to be protected] Do we need to define adjacent (i.e. within 120 area of influence?)	We have modified the text to indicate that only anticipated groundwater withdrawals or associated discharges within the wetland catchment are of concern in the Risk Evaluation. Adjacency was determined to be too difficult a criterion to apply, as the aquifer conditions, zone of influence, and rate and location of pumping would dictate the magnitude of impact moreso than any set distance threshold. Water taking within the wetland catchment would have a high
25	1.2	1			CVC has concerns that not all lacustrine and large riverine wetlands are dependent on the water from these features therefore, by excluding these wetlands from evaluation may result impacts to wetlands without any analysis (i.e. overland drainage is the driver vs the river or Lake for portions of the watercourse	We appreciate the concern of CVC in this regard, and we note that wetlands in the vicinity of a large river system that are determined to be fed primarily or exclusively from local runoff, as opposed to contributions from the river system, would not be excluded from the Risk Evaluation. TRCA believes it is important to strike a balance between the protection of the wetland and the degree of effort required to complete a Risk Evaluation for wetlands with very large catchments; the effort required to evaluate proposals within large catchments may be high relative to the proposal's projected impact. CA staff will review the results of the Risk Evaluation and if a wetland is not assessed because it is lacustrine or riverine and CA staff does not agree

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26	1.2	1			<p>[Exclusion of wetlands on stream segments of Strahler order ≥ 4 or with catchments >2500 ha]</p> <p>What is the rationale/ research basis for these exclusions?</p>	<p>The specific threshold values used here were chosen on the basis of pragmatic considerations around application of the Risk Evaluation, rather than on the basis of specific thresholds identified in the literature. TRCA staff believe that riverine wetlands associated with large river systems will be more tolerant to changes in hydrology than more hydrologically isolated wetlands, and that the risk of impact associated with any individual proposal on these riverine wetlands would be very small relative to the effort required to evaluate this risk. The criteria [Strahler order ≥ 4 or with catchments >2500 ha] provided a geographic distribution of applicability that satisfied the</p>
27	1.3	2			<p>This document does not include any discussion on impacts on groundwater from urban development. Need to provide the rationale why we don't monitor groundwater</p>	<p>Groundwater impact consideration is triggered by the water takings associated with a proposal above a given threshold of magnitude. TRCA acknowledges that other groundwater-related impacts are possible, but it may not be possible to address all of these within the scope of the Risk Evaluation as some geotechnical data and detailed site design considerations would not be available</p>
28	1.3	2			<p>If small changes can have an impact, are the models noted in section 4 refined enough to detect these changes?</p>	<p>The accuracy of the models is largely determined by the quality and resolution of the data that is used to define the model parameters and calibrate the model, and therefore TRCA emphasizes the collection of high quality baseline data. The Wetland Water Balance Monitoring Protocol details appropriate techniques and methods to collect baseline data. Models may not be able to detect thresholds of ecological change in all cases,</p>

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29	2	4	1		[Under normal circumstances {wetland feature limits} should be based on staked and surveyed feature limits] Define "normal circumstances". Is this spring survey for high water level? If it is a wet year can you not survey the wetland boundary?	The delineation of feature boundaries is beyond the scope of the Risk Evaluation, as these boundaries are required as input data into the process. Guidance on appropriate techniques and methods are provided elsewhere.
30	2	4	1		[Cdev definition] Does this also include buffer areas? Be explicit regarding including or excluding buffers.	We have clarified the definition of "development area" (Cdev) to indicate that this includes all areas of the wetland catchment outside the identified natural system (i.e. the natural heritage system plus natural hazard zones and buffers, as per TRCA's Living City Policies). The use of buffers may form part of the discussion around scope of analysis and risk classification where the development form and design have not been
31	2	4	1		[%IC planned within proponent's holdings] Is there agreement among disciplines on how land uses are classified in terms of imperviousness?	The determination of imperviousness values for a given proposal or land use type will be assessed by water resource engineers. There is general agreement of what constitutes an "impervious surface" (e.g. paved areas and building footprints) as opposed to a "pervious surface". And there are general estimates of % impervious cover for various land cover types available from

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	2	5	1		[Anticipated magnitude and duration of water taking] Do we need Timing of the taking(i.e. when/what season)?	Information regarding the proposed timing of taking would not likely be available to use as input into this early planning stage screening tool. Discussion around timing of water taking could form part of a mitigation strategy.
33	2	6	1		[SWH data is to be collected and provided by the proponent] Interpretation of SWH to be determined by proponent in consultation with CA/municipality	We agree; the text has been modified to reflect this change.
34	2	6	1		[SWH Data] What about wetlands that are SWH because of rarity?	Wetlands are not classified as SWH only because the wetland type is rare. The wetland must provide habitat for a species as well. Often rare habitat types support rare species and are
35	2	6	1		[SWH Data] Should also reference MNR 2015 criteria schedules and municipality (i.e Peel/Caledon guidelines)	We have added references within the text to the ecoregion schedules. As the document is meant to be generic enough to be adopted by other conservation authorities without substantial modification, we are not recommending guidelines
36	2	6	1		[Wetland classification is performed by the proponent] By a qualified professional	We feel that assessment by a qualified professional is implicit in all of the data that the proponent is expected to provide.

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37	2	6	1		<p>[{In relation to vegetation, fauna, and flora records} The CA will require updated data to be collected by the proponent if existing records are not representative of current conditions] Contact the CA to determine methods and to scope studies appropriately. Might be useful to be clear on what is considered current and what is considered historical</p>	<p>We feel that this would best be specified on a case by case basis rather than defined explicitly in the text.</p>
38	2.2	6			<p>[Impact to a wetland on or adjacent to the proposal site also occurs where water taking is anticipated to exceed MOECC EASR limits (50,000 - 400,000 L/day)] I assumed that the water taking is a groundwater taking; however some staff considered that it was a surface water taking. Does this change the guideline? Is it assumed that takings below this range will not result in any impact to a wetland, regardless of the wetland size or sensitivity?</p>	<p>The value for water takings, which would apply to both surface and groundwater takings, was chosen based on the information that is likely to be available to proponents at the early stages of the planning process. TRCA technical staff believe that proponents would be likely to have an idea of whether or not dewatering of a magnitude requiring registration with MOECC would be required by the time this screening tool is applied. It was felt by TRCA staff and External Stakeholder Committee members that further detail would not likely be available at the time when the evaluation is undertaken. We acknowledge that impacts are</p>
39	2.2	6			<p>I think it may be more user friendly to split the document into two sections 1) urban development 2) water taking (i.e if doing a water taking I only need to read this 1 section vs having to read the entire document and potentially missing something.</p>	<p>TRCA staff did not feel that this would improve the document, as many urban development applications may also have a water taking component. We think the document is concise and of appropriate length for the material presented and should be read in full.</p>
40	2.2	7			<p>[Section 2, Step 1, Impervious cover] Need to discuss site level water balance vs feature based water balance.</p>	<p>This is covered in the SWM Criteria Guideline (TRCA, 2012), the parent document to the Risk Evaluation that outlines the different requirements for approval of the SWM component of development applications. It was felt that it was not necessary to repeat this information within</p>

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41	2.2	7			[Section 2, Step 1, Impervious cover] I think it should be clearer that this is a threshold just for determining if a water balance is needed within this document, not that 25 % impervious is acceptable for development as research evidence shows it will result in a loss of function/diversity	The Risk Evaluation does not state that any of the thresholds used are acceptable for development. The Risk Evaluation uses thresholds, at which, loss in functional diversity of ecological function is expected to determine when the magnitude of hydrological change is expected to be high. When change is expected, more detailed monitoring and modelling is required to assess the impact and to ensure that appropriate mitigation techniques are
42	2.2	7			[Section 2, Step 1, Impervious cover] Is this the same process for wetlands with existing catchments >25% impervious (ie: urbanized areas?). If new applications for development are received that note changes to landuse within a catchment, they would automatically trigger a wetland water balance. Since this criterion only relates to existing conditions and not changed conditions, every proposal may result in a water balance.	Equation 1 considers the "development area" (Cdev) within the wetland's catchment, regardless of whether this area is developed already or not. Thus areas where impervious cover is >25% will not necessarily result in a high or medium risk outcome. A low risk water balance analysis, requiring no monitoring but some modeling, would be required as a minimum where a feature-based water balance analysis is deemed to be necessary.
43	2.2	8			[Equation 1] The equation should be multiplied by 100 to make it into a percentage, since this is what is used in the chart.	We have clarified that the values for IC and for S should be entered as a percentage between 1 and 100, rather than between 1 and 0, to ensure that the numbers are consistent.
44	2.2	8			Should the area of the wetland itself be removed from the total catchment area, since presumably the wetland will be retained no matter what, and that changes should be reflective of areas outside of the wetland?	As the studies from which the thresholds were derived did not remove the wetland area from the catchment area, we follow this convention in the Risk Evaluation. Additionally, the feature catchment may be easier to delineate for use in area calculations than the precise boundaries of
45	2.2	8			Define the term "effective catchment size" since this appears in Table 2 but not here.	We have removed the word "effective" from this definition. This was meant to convey that factors beyond topography can affect the area that drains towards a wetland.

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46	2.2	10	2		[Impervious cover score calculation] Should this be based on existing or proposed catchment areas?	Text has been added to Section 2, Step 2 stating that "In all cases, the pre-development catchment size should be used to define changes to both catchment size and impervious cover."
47	2.2	10	2		Some ecologist have concern of not addressing quantities less than 50,000L/day	The value for water takings was chosen based on the information that is likely to be available to proponents at the early stages of the planning process. TRCA technical staff believe that proponents would be likely to have an idea of whether or not dewatering of a magnitude requiring registration with MOECC would be required by the time this screening tool is applied. We acknowledge that impacts are possible with water taking below this threshold, but suggest that potential impacts and mitigation measures could
48	2.3	11			[The sensitivity of a wetland to hydrological change is assessed using the data listed in Table 1, which are compiled and provided by the proponent. The compiled data are then used to determine the sensitivity of the wetland using the criteria listed in Table 3. The highest magnitude sensitivity category in Table 3 with one or more criteria satisfied determines the overall sensitivity of the wetland to hydrological change]	We feel that the decision tree, presented as Figure 2, does a good job of summarizing the process of completing a Risk Evaluation.

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49	2.3	12			<p>[In recognition of the range of sensitivity between communities, CA planners and ecologists have ranked ELC communities by their sensitivity to hydrological change into three levels]</p> <p>Do planners have the required expertise to evaluate ecological sensitivities of vegetation communities? Suggest saying “the CA has ranked</p>	<p>We have revised the text to indicate that it was TRCA <i>ecologists</i> that compiled this list, and not planners <i>and</i> ecologists. This list is based on the professional opinion of professional flora and fauna ecologists.</p>
50	2.3	12			<p>[Section 2, Step 3, SWH Criteria] Suggest that this is cross checked with provincial and local regional SWH criteria to ensure that none are missed. For example, some wetlands can be SWH based on rarity of vegetation type, regardless of species composition. Also some species which are noted to be ‘medium constraints’ can add to the determination of SWH, such as American toads in Amphibian</p>	<p>Statements in the Risk Evaluation have been cross checked with provincial and local regional SWH criteria. The Risk Evaluation defers to these documents and does not create a new definition of Significant Wildlife Habitat.</p>
51	2.3	12			<p>[In recognition of the significant habitat wetlands may provide, and of the fact that some species may not be detected by surveys, CAs exercise the precautionary principle by stating that significant wildlife habitat for species ranked as having high sensitivity to hydrological change... requires increased protection]</p> <p>This doesn’t make sense. I agree with the precautionary approach of protecting wetlands, but you can’t protect species not detected based on the presence of species sensitive to hydrological change. The wetland should be protected based on the sensitivity of the habitat it provides</p>	<p>Defining and identifying significant wildlife habitat does not require the species to be observed (MNRF 2014). When identifying significant wildlife habitat it is recognized that it is not possible to detect all species at all wetlands and therefore characteristics of the habitat can be used. MNRF (2014) provides details on suitable data and methods to identify significant wildlife habitat and we defer to that resource as it is designed to inform the provincial planning process. Wording has been changed to state "wetlands that provide significant habitat for species ranked as having high sensitivity to hydrologic change (Appendix 3) require increased protection."</p>

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52	2.3	12			<p>[In recognition of the significant habitat wetlands may provide, and of the fact that some species may not be detected by surveys, CAs exercise the precautionary principle by stating that significant wildlife habitat for species ranked as having high sensitivity to hydrological change... requires increased protection]</p> <p>How does the precautionary principle work here if you're only including the SWH wetlands that have high sensitivity species --- wouldn't these species trigger increased protection regardless of the SWH label?</p>	<p>The risk evaluation exercises the precautionary principle by not requiring a species to be detected to define a wetland as SWH. Characteristics of the habitat can be used to determine whether a wetland is SWH (MNRF 2014). The species that the wetland provides habitat for does not have to be present. Wetlands which only provide habitat for species that are not sensitive to hydrologic change and do not satisfy other sensitivity criteria should not be classified as having increased sensitivity.</p>
53	2.3	14	3		<p>[High sensitivity fauna species criteria] Define: does this also include SC species? Is it only provincially ranked species? What about federally ranked? Only species that use wetland habitat directly for breeding/ impacted by change in hydrology?</p>	<p>High sensitivity species are defined in appendix 3. The provincial or federal requirement for SAR habitat under ESA or SARA are greater than those under SWM criteria so there is no need to add additional protections for SAR species here. To work in SAR habitat a proponent will need to obtain provincial and federal permits which will</p>
54	2.3	14	3		<p>[High sensitivity flora species criteria, low sensitivity criteria] This assumes even 1 high sensitivity species is treated as a low sensitivity.</p>	<p>The flora section has been edited to state that medium sensitivity is "Presence of multiple medium sensitivity species OR presence of one</p>
55	2.3	14	3		<p>[SWH criteria] How is this category different from the above 2? High sensitivity does not necessarily equate to SWH. Further discussion may be needed for SWH.</p>	<p>SWH is distinguished from the flora and fauna criteria in that it requires certain habitat conditions to be present but not necessarily direct detection of the species in question.</p>
56	2.3	14	3		<p>[Hydrological classification considering ecology, high sensitivity category: "Isolated/palustrine AND presence of medium sensitivity vegetation communities* or medium sensitivity species**"]</p> <p>Is this flora and fauna? Be Clear</p>	<p>We agree. The statement has been edited to read "...medium sensitivity <i>flora or fauna</i> species."</p>

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57	2.4	15			<p>[Determination of whether the post-development hydroperiod will be sufficiently close to the pre-development hydroperiod to achieve protection of the wetland should be made in consultation with CA staff and the municipality.]</p> <p>CVC recommends tht the CAs should come up with templates or ideas of how this information should be displayed for interpretation and</p>	<p>The interpretation of the simulated post-development hydroperiod and the effectiveness of a proposed mitigation plan is beyond the scope of the Risk Evaluation, which is designed to determine the need for and scope of a feature-based water balance analysis. TRCA intends to develop further guidance around this point and what constitutes an acceptable level of disturbance based on our research through the Wetland Water Balance Project. Some of this may</p>
58	2.4	16			<p>[For medium risk proposals, the mitigation plan should provide details on the design features and water management techniques that will be used...]</p> <p>Mitigation assumes the development will be/ is approved. Isn't the intent of this document just to determine if a WWB is needed based on level of risk and supplementary documents will determine how to mitigate effects (i.e. flow chart on page 2, figure 1) and if they can be</p>	<p>The Risk Evaluation only states that a mitigation plan will be required and not the specific requirements of the mitigation plan. TRCA intends to develop further guidance around this point and what constitutes an acceptable level of disturbance based on our research through the Wetland Water Balance Project. Some of this may be communicated in the forthcoming Wetland Water Balance Modeling Guidance Document.</p>
59	2.4	16			<p>[Determination of whether the post-development hydroperiod will be sufficiently close to the pre-development hydroperiod to achieve protection of the wetland should be made in consultation with CA staff and the municipality]</p> <p>Should this not come before mitigation mentioned at beginning of paragraph? What if</p>	<p>Tools to quantify the difference between pre- and post-development hydroperiods are under development for release in the near future. Some guidance will be provided in the forthcoming Wetland Water Balance Modeling Guidance Document.</p>

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60	2.4	16			<p>[For proposals in which a prolonged period between the start of construction and the implementation of functioning water balance mitigation measures (i.e. a long build-out phase) is anticipated, an interim mitigation plan may be required...]</p> <p>Consider defining</p>	<p>We have added some text to indicate that, in general, a period of more than 2 years without any mitigation measures being in place would be considered a prolonged period. The specific term "prolonged period" has been removed, as the requirement of an interim mitigation plan will involve consideration of the specific context of the proposal, as well as consultation with the</p>
61	2.4	17			<p>In table below "design mitigation plan for how water balance will be maintained" What if is shown that it can't be maintained even through mitigation? What is the next step? Not every development proposal with high impacts can or should go forward. It needs to be clearer that completion of a WWB does not = that appropriate mitigation can be provided and approval for development is automatically granted. I might be missing something but document reads as very development permissive in terms of potential impacts to</p>	<p>The SWM Criteria Document states the need to maintain water balance for protection of identified natural features, and it is therefore assumed that a proposal that does not meet this criteria will not receive approval from TRCA review staff. The determination of the adequacy of proposed mitigation measures is beyond the scope of the Risk Evaluation but TRCA will be providing additional guidance in this respect in the near future.</p>
62	3	19			<p>[In some cases where the existing level of wetland service provision or ecological function is low, it may be acceptable for there to be a divergence between the pre- and post-development hydroperiod such that the ecological function or other wetland services are enhanced.]</p> <p>Perhaps example(s) of how/ when this might occur and be acceptable would be beneficial</p>	<p>The text is written this way so that wetland hydrology could be improved or mitigated to return or improve ecological function from an existing degraded condition. A sentence has been added here to state this in more detail.</p>

Comment	Section	Page	Table	Figure	Comment	Response
63	Appendix 1	26			[Example 3] Would be helpful to show an example of an site where a portion of the catchment is ALREADY impervious. Or, where the impervious percentage is already >25%. What to do then?	This is a good suggestion. We have added additional examples to Appendix 1 to illustrate the application of the Risk Evaluation to infill type development.
64	Appendix 2	27			[Appendix 2 community ranked list] Did you x reference the community and species list to make sure they match?	Community and species lists have been cross-referenced to ensure they are compatible and do not contradict one another.
65	2	4	1		[Table 1, Cdev, suggested data source] We recommend replacing "flood lines" with "hazard limits".	The definition of Cdev currently states "Area of the feature's catchment lying outside of any identified natural system (e.g. natural heritage areas, floodplains and other natural hazard zones)." The natural hazard zone is inclusive of hazard limits,
66	2	5	1		[Table 1, Vegetation community type] You may also want to include OWES evaluation here as well.	We appreciate the suggestion but do not wish to confuse users of the Risk Evaluation with multiple ecological classification schemes. We note that the OWES classification scheme is used to classify the wetland hydrological type.
67	2	5	1		[Table 1, Fauna species present] You may wish to consider adding who provides the approval on the protocols to be used.	Protocols should be approved by the CA or municipality. Text has been added to reflect this.
68	2	6	1		[Table 1, Flora present] Depending on how detailed you would like to be, the document may benefit from some notation around monitoring this aspect. Reference to delineating changes in the vegetation communities within and adjacent to the feature, would be beneficial.	The Risk Evaluation makes use of existing data to determine the sensitivity of wetland flora and fauna to hydrologic change. Delineating changes in vegetation adjacent to the wetland feature would not aid in determining the sensitivity of the wetland feature; the presence of species alone is
69	2	6	1		[Table 1, SWH data] Also the 2015 Ecoregion Criteria Schedules, which are referred to elsewhere in the report should be reference	Reference to 2015 ecoregion schedules has been added.

Comment	Section	Page	Table	Figure	Comment	Response
70	2.3	12			We recommend that any area designated at potential or confirmed SWH as per the Ecoregion Criteria Schedules is ranked as high sensitivity.	The Risk Evaluation is only intended to evaluate the risk of a development to hydrology and species that are sensitive to changes in hydrology. By using all SWH the Risk Evaluation may rank wetlands in the high sensitivity category even though the flora and fauna present in the wetland are relatively
71	2.3	14	3		Could consideration be made for indicating that provincially (possibly regionally) significant wetlands be considered high (possibly medium) sensitivity?	PSWs can be defined for reasons that are unrelated to the sensitivity of the wetland to hydrological change. Much of the information used to define PSWs is used in the Risk Evaluation, which evaluates wetlands specifically for their
72	2.3	14	3		[SWH Criteria] Criteria Schedules are 2015; these should be included.	The criteria schedules have been referenced in the text as per the commenter's suggestion.
73	2.3	14	3		[Hydrological classification considering ecology, high sensitivity category] We would recommend that the wording be revised to "Isolated/palustrine AND no medium or high sensitivity vegetation communities or species present"	We agree; this correction has been made.
74	2.4	18		2	We are still struggling with this one. It is concerning that a low hydrological change on a high sensitive wetland is considered as a low risk. To us, a low plus a high should be a medium. What if the wetland is a fen or bog and the smallest amount of hydrologic change could alter the wetland?	The criteria for a low magnitude of change are intended to capture proposals that are unlikely to have a significant impact on wetland hydrology. If a proposal is unlikely to have a significant impact on wetland hydrology then there will be little value added by increasing the scope of monitoring and modeling efforts.

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75					<p>[The Risk Evaluation should be applied to all wetlands determined for protection except for lacustrine wetlands on the Lake Ontario shoreline, riverine wetlands located on stream segments of Strahler order ≥ 4 or with catchments >2500 ha, stormwater management ponds, or wastewater polishing wetlands.]</p> <p>What is the rationale for the catchment size?</p>	<p>The specific threshold values used here were chosen on the basis of pragmatic considerations around application of the Risk Evaluation, rather than on the basis of specific thresholds identified in the literature. TRCA staff believe that riverine wetlands associated with large river systems will be more tolerant to changes in hydrology than more hydrologically isolated wetlands, and that the risk of impact associated with any individual proposal on these riverine wetlands would be very small relative to the effort required to evaluate this risk. The criteria [Strahler order ≥ 4 or with catchments >2500 ha] provided a geographic distribution of applicability that satisfied the</p>
76					<p>[The Risk Evaluation recognizes that the effort put into analyzing potential changes to the water balance of a wetland, and designing a mitigation strategy, should be proportional to the magnitude of the potential impact of the proposal if the mitigation strategy is to be successful]</p>	<p>We appreciate the comment.</p>
77		4	1		<p>[The CA can provide average {IC} values for given land cover type.] Some municipalities may have values that they would require to be used.</p>	<p>We agree and those values can be used instead. Table has been updated to read, 'the CA or municipality may be able to...'</p>

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78	2.2	8			<p>[...a wetland within or adjacent to a proposed undertaking is considered impacted when water taking is anticipated to require MOECC EASR registration (>50,000 L/day)]</p> <p>Should define what is meant by "adjacent".</p>	<p>We have modified the text to indicate that only anticipated groundwater withdrawals or associated discharges within the wetland catchment, or elsewhere on a proposed development property that surrounds a wetland, are of concern in the Risk Evaluation. Adjacency was determined to be too difficult a criterion to apply, as the aquifer conditions, zone of influence, and rate and location of pumping would dictate the magnitude of impact to a greater degree than any set distance threshold. Substantial water</p>
79	2.3	12			<p>Identifying significant wildlife habitat can take several seasons of fieldwork. Once determined, the findings are presented to review agencies and there can often be lengthy discussions before significance is agreed to. How will this affect the timing of the wetland water balance risk evaluation?</p>	<p>We do not anticipate defining significant wildlife habitat at the time the Risk Evaluation is to be applied to be an issue. Defining significant wildlife habitat will typically occur as part of determining whether a wetland will remain after development. The risk evaluation is only applied to wetlands which have been determined to be protected as part of a planning or infrastructure review and</p>
80	2.3	12			<p>I have recently been advised by CH ecologists that MNRF is no longer referring to the 2000 [SWH] Guidelines and that only the 2014 Guidelines are applicable</p>	<p>The Risk Evaluation has been updated to only refer to MNRF (2014).</p>
81	2.3	14	3		<p>Any species at risk or just a species that is associated with wetland habitat? The table is not clear.</p>	<p>The species this criteria applies to are listed in Appendix 2; this information is provided as a footnote in the table.</p>

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82	2.4	16			<p>[For proposals in which a prolonged period between the start of construction and the implementation of functioning water balance mitigation measures (i.e. a long build-out phase) is anticipated, an interim mitigation plan may be required...]</p> <p>Please define as this will be open to</p>	<p>We have added some text to indicate that, in general, a period of more than 2 years without any mitigation measures being in place would be considered a prolonged period. The specific term "prolonged period" has been removed, as the requirement of an interim mitigation plan will involve consideration of the specific context of the proposal, as well as consultation with the</p>
83	General				<p>One implementation issue that I would like to recommend is that TRCA commit to an annual re-evaluation of the evaluation framework, with input from the advisory committee, to address issues that may arise through the use of the document. ...Training will also be critical to the success of this evaluation process and should not just happen at roll-out but rather, will need to happen periodically in order to ensure a consistent and appropriate application across jurisdictions and obtain feedback on its implementation.</p>	<p>The Risk Evaluation will be reviewed on a biannual basis similar to the monitoring protocol. Training on the suite of tools developed as part of the Wetland Water Balance project will be provided once all tools are finalized. Members of the development team are willing to meet with proponents, planners, and other staff to offer advice and facilitate the use of the Risk Evaluation in the interim.</p>
84	General				<p>In principle staff is satisfied with the intent of the evaluation and believes it provides a useful guide for proponents in undertaking development activities that could potentially</p>	<p>We appreciate the comment.</p>

Comment	Section	Page	Table	Figure	Comment	Response
85	2		1		<p>The assumption in Table is that all the data needed to do the evaluation is readily available, and it is suggested that the majority of information can be collected and compiled by the proponent from either personal knowledge of the project or from data readily available from municipalities, conservation authorities etc. However, depending on the nature of the information a proponent may have to rely on other technical expertise (perhaps a consultant), outside of a conservation authority may be required to address some of the data needs. For example, data requirement about the area of the wetland catchment owned by the proponent in our opinion could be misinterpreted and is not consistent with the required information which is the potentially developable area of the wetland catchment that is owned by the</p>	<p>TRCA staff have reviewed the data requirements and received feedback on this list from the External Stakeholder Committee. TRCA staff feels that the data required to complete the Risk Evaluation is not overly onerous, and that much of the data required would have been collected prior to the application of the Risk Evaluation, through the delineation of the natural system and natural heritage features to be retained and through other existing CA and municipal data.</p>
86	2.2				<p>Notwithstanding the information provided in Appendix 1, calculating and estimating the percent of impervious cover planned within the proponent's holding may prove to be a challenge just given the complexity involved in that computation.</p>	<p>We acknowledge that estimating impervious cover in a proposed development may be difficult in some cases. However, at the time the Risk Evaluation is applied (e.g. at the MESP stage), the proponent will have a general knowledge of development form and configuration of major infrastructure within the site. If not, TRCA or municipalities have conservative estimates that could be used in lieu of site-specific estimates, based on the proposed development form and the</p>

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87	2.2				Some proponents may not be able to provide the location and extent of any locally significant recharge areas which are defined (in the document) as areas within the wetland catchment covered by sand, gravel, or having high hydraulic conductivity. Further these may be identified through preliminary geotechnical site investigations, visual means, monitoring data or numerical model outputs, none of which may be familiar to the proponent.	We acknowledge that not all recharge areas will be identified at the time the Risk Evaluation is applied. The Risk Evaluation states that alterations to recharge areas will be evaluated if information is available; in the absence of this information, a proposal would be evaluated on the basis of the other three "hydrological change" criteria.
88	General				The lists provided in Appendices 2 and 3 of wetland community types and hydrologically sensitive fauna and flora respectively within TRCA jurisdiction by hydrological sensitivity is an invaluable resource for this risk evaluation exercise.	We appreciate the comment.
89	General				It was stated that the Risk Evaluation is one of a series of tools TRCA and other Conservation Authorities are developing. It may be useful to indicate which other Conservation Authorities are involved in the process and whether it is their intention to apply a similar policy simultaneously with the TRCA within their respective watersheds. The latter comment is of interest particularly where municipalities straddle more than one Conservation Authority jurisdiction resulting in varied policy approaches to development proposals, or where a wetland area owned by one person is situated in more	All tools developed as part of this project by TRCA were/are developed in collaboration with CVC. The Risk Evaluation and other tools have been made available for adoption by other CAs. If other CAs wish to adopt the tools and guidelines as they stand they can do so, but some CAs may wish to modify the document slightly to address other specific concerns in their jurisdiction areas. We encourage other CAs to follow the process TRCA has outlined to the greatest degree possible and will offer some support to those CAs considering implementation of a similar process in their watersheds.

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90	General				We appreciate very much that a number of our previous comments were addressed and some of the wording suggestions were also incorporated into the revised draft. The addition of sub-headings and some reorganization has also really improved the	We appreciate the comment.
91	2.2				One of our concerns with the first draft was regarding the water taking criteria when assessing the magnitude of hydrologic change in features. The revision to reference EASR or PTTW requirements and the duration of dewatering is better. We do again note, however, that the water volumes and extent of water taking effects can be difficult to determine at the early stage of study when the wetland risk evaluation is to be completed. The document acknowledges that the magnitude/duration of water taking should be determined using the best data available and proposed development concept at the time of the risk evaluation, but this still may be a tough criteria to use for 'early	We understand and appreciate the comment. The best available information at the time the application is received will be used to determine the magnitude of potential hydrological change related to water taking during the evaluation process.
92	General				Please confirm that the proponent is not responsible for evaluating the significance of a wetland (this would still rest with the MNRF)	which are "determined to be protected as part of a planning or infrastructure review and approval process". The proponent alone is not responsible for determining whether a wetland will remain on

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93	General				Please confirm the process for reviewing the evaluation and ensure it doesn't negatively impact the review and approval process for infrastructure projects	TRCA staff would not generally require a feature-based water balance analysis for impacts related to linear infrastructure such as roads and railways, and are confident that the impacts could be addressed through the regular permitting process. We recognize that in many cases, options for mitigation may be limited (e.g. installing equalization culverts), and that there may be little value added by undertaking a monitoring or modeling exercise. There may be some instances in which a feature-based water balance analysis could be requested to address the impacts of site-based infrastructure (e.g. a transformer station, a storage facility, etc.) and possibly underground
94	General				Please identify the role mitigation measures play in assessing magnitude of impact.	The Risk Evaluation is designed to evaluate the scope of analysis that is required to design a mitigation strategy, in order to address the potential hydrological impacts of a proposal. The adequacy of the mitigation measures that are proposed does not affect the classification of risk or likelihood of impact, except insofar as that increased wetland buffer zones within the wetland catchment (i.e. reduced changes to the catchment) may lower the risk outcome that is determined