

ECCC Input Comments Table

Section from d/TISG (April 15, 2021)	Proposed Edits to Agency Text Additions in bold ; deletions in striketrough from the Agency's original text.	Rationale
Air Quality		
8.4.1 Atmospheric environment 8.4.1.1 Baseline conditions Page 27	The Impact Statement must: <ul style="list-style-type: none"> provide an assessment of the ambient air quality in the Project, LSA and RSA, including for Elk Island National Park and Beaverhill Lake, and identify existing emissions and contaminant sources using the most recent emissions data available; 	Suggest explicitly stating Beaverhill Lake be included in the ambient air quality assessment, LSA and RSA because it is a Ramsar site located 60 km SE of the Project. Simulations in Makar et al. (2018) ¹ show acidifying emissions reaching as far south east as Beaverhill Lake and beyond. The most recent data (i.e., data up to 2019) should be used to ensure the results meaningfully inform the baseline assessment.
8.4.1 Atmospheric environment 8.4.1.1 Baseline conditions Page 28 8.4.1.2 Changes to the atmospheric environment Page 29	Page 28: <ul style="list-style-type: none"> provide dispersion and regional air quality modelling of a base case for existing pollutant sources and to determine the spatial distribution of pollutants in all study areas; Page 29: <ul style="list-style-type: none"> predict the fate of emissions resulting from all project sources for all emissions listed under <i>0 Baseline conditions</i>, by using atmospheric dispersion and regional air quality modelling; [...] provide detailed information on emission estimation methodologies for all project phases, including details on the configuration of the atmospheric dispersion models and regional air quality models used (e.g. meteorology using the most recent meteorological data, land use, modelling domain, 	It should be explicit that both air quality dispersion models, such as those referenced in the Detailed Project Description, as well as regional air quality models, which include all relevant photo-chemical reactions, are provided in the Impact Statement, considering the limitations of standard dispersion modeling at distances greater than 50 km. The Ramsar site Beaverhill Lake is about 60 km south east of the project and all ecological effects should be considered, based on the potential for emissions, including acidifying emissions, to reach the ecologically sensitive site. Models should be populated using the most recently available meteorological data.

¹ Makar, P. A., Akingunola, A., Aherne, J., Cole, A. S., Aklilu, Y.-A., Zhang, J., Wong, I., Hayden, K., Li, S.- M., Kirk, J., Scott, K., Moran, M. D., Robichaud, A., Cathcart, H., Baratzedah, P., Pabla, B., Cheung, P., Zheng, Q., and Jeffries, D. S. (2018): Estimates of exceedances of critical loads for acidifying deposition in Alberta and Saskatchewan, Atmos. Chem. Phys., 18, 9897–9927, <https://doi.org/10.5194/acp-18-9897-2018>, 2018.

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	receptor grid density, land users, default options and chemical and physical transformation parameters, where applicable);	
8.4.1.2 Changes to the atmospheric environment Page 30	<ul style="list-style-type: none"> estimate the concentration of SOAs (as PM_{2.5}) with a regional air quality an appropriate model using the quantified SOA precursor emissions for the base case, project-only, and application-case scenarios. SOA precursor emissions from other facilities in the region may be approximated by scaling measured emissions from these facilities to production levels. The model should provide an accurate estimation of SOA formation that will be included with primary PM_{2.5} emissions to arrive at a total PM_{2.5} burden. 	A regional air quality model is required to accurately estimate SOA (as dispersion models are not appropriate at the regional scale).
8.4.1.2 Changes to the atmospheric environment Page 30-31	<p>The Impact Statement must assess the potential for the Project's emissions of acidifying pollutants to contribute to acid deposition for the terrestrial and aquatic ecosystems at the regional scale, including Elk Island National Park and Beaverhill Lake, by using the following approach:</p> <ul style="list-style-type: none"> Conduct regional air quality model simulations to predict acidifying deposition using emissions of NO_x and SO₂ from processing facilities on the Project site; conduct model simulations to predict acidifying deposition using emissions of NO_x and SO₂ from processing facilities on the Project site; using modeled acidifying deposition rates, assess the potential for the Project to contribute to ecosystem damage by estimating exceedances of critical loads (an effective measure of ecosystem sensitivity) in the region. 	<p>Suggest explicitly stating Beaverhill Lake be included in the ambient air quality assessment, LSA and RSA because it is a Ramsar site located 60 km SE of the Project. Simulations in Makar et al. (2018) show acidifying emissions reaching as far south east as Beaverhill Lake and further.</p> <p>A regional air quality model should be used for accurate acid deposition calculations considering the limitations of standard dispersion modeling at distances greater than 50 km. Considering the combined volumes of SO₂ predicted to be emitted from the approved VCS-1 and Expansion Project, (which for comparison, are roughly double the reported 2017 SO₂ emissions from the Syncrude Canada Ltd. upgrader at the Mildred Lake Plant site⁴), the emissions and the affiliated acid deposition are likely to reach northern and eastern Alberta and western Saskatchewan. SO₂ plumes from Edmonton sources and oil</p>

⁴ Proposed combined emissions compared to 2017 Syncrude Canada Ltd. National Pollutant Release Inventory emissions of sulphur dioxide ([Environment and Climate Change Canada - NPRI Data Search - Facility and Substance Information](#))

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	Critical loads must be estimated using methods consistent with the internationally recognized UN-Economic Commission of Europe Convention on Long-Range Transboundary Air Pollution (CLRTAP, 2017) ² ; and . Further examples of critical load calculation datasets and procedures and the use of CLRTAP protocols may be found in Makar et al. (2018)³ ;	sand sources have been observed crossing Saskatchewan in simulations (i.e., Makar et al., 2018). Remove bullet because it is the same as above. Providing to include an additional reference that the proponent can use for information about critical load exceedances and the Convention on Long-Range Transboundary Air Pollution (CLRTAP).
8.4.1.2 Changes to the atmospheric environment Page 31	It is recommended that the Proponent engage with experts at Environment and Climate Change Canada (ECCC) to inform the choice of program to conduct regional air quality modeling of acidifying deposition rates.	Added precision to describe the expertise that ECCC can provide if the Proponent consults with ECCC.
21.12 Additional guidance for biophysical components Page 119	<ul style="list-style-type: none"> • for requirements pertaining to the use of modelling for acidifying deposition, the Proponent should consider the following technical requirements: <ul style="list-style-type: none"> ○ model simulations should be for a minimum of 1 year using the most recent meteorological and emissions year available, and should be conducted at minimum for the base case and the application case; ○ The regional air quality model's horizontal resolution should comprise a horizontal grid cell size equal to or less than 12 kilometres within the region modelled; 	The most recent data should be used to ensure the most accurate assessment. Specifying the recommended minimum grid size for regional air quality models of 12 km.

³ CLRTAP 2017. [Manual on methodologies and criteria for modelling and mapping critical loads and levels and air pollution effects, risks and trends](#)

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<p>17 Canada's ability to meet its environmental obligations and its climate change commitments</p> <p>Page 95</p>	<p>Federal environmental obligations relevant to this project include the following:</p> <ul style="list-style-type: none"> • the Convention on Biological Diversity and Canada's supporting national framework (e.g. the Canadian Biodiversity Strategy, Canada's Biodiversity Outcomes Framework and the current biodiversity goals and objectives in Canada); and legislation that supports the implementation of Canada's biodiversity commitments, including SARA and the <i>Canada Wildlife Act (1985)</i>, as well as supporting policies and guidance documents⁵; • recovery strategies and action plans developed under SARA for all species at risk potentially affected by the Project; • the <i>Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar)</i>, as implemented in part under the <i>Federal Policy on Wetland Conservation</i> and supporting guidance documents such as the <i>North American Waterfowl Management Plan</i>; and • the <i>Convention for the Protection of Migratory Birds in the United States and Canada</i>, as implemented in part under the <i>Migratory Birds Convention Act (1994)</i>, and supporting guidance documents on conservation objectives derived from bird conservation regions and strategies <p>Through a partnership between the Government of Canada, the Government of Alberta, and the Royal Astronomical Society of Canada (RASC), Elk Island National Park is designated as part of the Beaver Hills Dark-Sky Preserve under the Dark-Sky Preserve program. The Proponent should ensure the Project will not contravene the requirements set in the <i>Canadian Guidelines for Outdoor Lighting (Low-Impact Lighting) for RASC Dark-Sky Protection Programs</i> for Elk Island National Park and the surrounding area.</p>	<p>ECCC suggests adding these two potential Environmental Obligations to help inform the Minister's decision once the Proponent knows the extent of acidifying emissions. This is important to include for the Minister's awareness of Canada's environmental obligations and commitments.</p> <p>The Gothenburg Protocol to reduce transboundary air pollution may apply because it addresses pollutants that cause acidification, and includes limits on sulphur dioxide. Canada's emission reduction commitments for SO₂ starting in 2020 and beyond are 55% below 2005 levels.</p> <p>The agreement between the Government of Canada and the Government of the United States on Air Quality (AQA) may apply, and is again related to objectives to reduce emissions of acidifying emissions including SO₂. The agreement includes commitments on notification of potential new sources of transboundary pollution and includes a permanent national emissions cap.</p>

⁵ The Proponent is encouraged to consult the publications and resources available on the biodivcanada website

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	<p>Federal environmental obligations relevant to this project that may be applicable, depending on the range of transport for acidifying emissions that is determined in the Assessment:</p> <ul style="list-style-type: none"> • UNECE Protocol to Abate Acidification, Eutrophication, and Ground-level Ozone (Gothenburg Protocol); also known as the Gothenburg Protocol to Reduce Transboundary Air Pollution. • Agreement between the Government of Canada and the Government of the United States on Air Quality (AQA) 	
Water Quality		
<p>8.2.1 Baseline conditions</p> <p>8.2 Geology, geochemistry and geological hazards.</p> <p>Page 25-26</p>	<p>The Impact Statement must:</p> <ul style="list-style-type: none"> • describe baseline concentrations of contaminants of concern <i>associated with the project-area geology</i>, (these may include selenium, sulphate, cadmium, nitrate and calcite, heavy metals) within the local, regional and downstream receiving environments; and 	<p>ECCC reiterates this comment.</p> <p>Most of the contaminants listed are specific to coal mining and seem misplaced here! If they prefer to include examples, could include the same list that is used in Section 8.5.1: “(these may include major and minor ions, trace metals, radionuclides, nutrients, and organic compounds)”.</p>
<p>8.5 Groundwater and surface water</p> <p>8.5.1 Baseline conditions</p> <p>Page 34</p>	<ul style="list-style-type: none"> • indicate the type of watercourse impacted (e.g. lotic or lentic system, lake, river, pond, temporary or permanent stream), the size of the water bodies and watercourses, by linear length or area, and the width at the ordinary high water mark (OHWM) based on the following classes: large stream (over 20 metres in width), medium stream (between 5 and 20 metres in width), small permanent and intermittent streams less than 5 metres in width); 	<p>The adjacent text is copied from major pipeline project with many water crossings. As this project has very few water crossings, suggest removing.</p>

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<p>8.5 Groundwater and surface water 8.5.1 Baseline conditions Page 35</p>	<ul style="list-style-type: none"> • provide flow hydrographs for nearby streams and river, including the North Saskatchewan River, Beaverhill Creek, and Astotin Creek in , with the full range of seasonal and inter-annual variations, and seasonal baseflow . The hydrographs may be based on data from nearby gauging stations or from gauging stations on site; 	<p>Compared to the previous dTISG provided before the public comment period, the beginning of this point was removed, which appears to have been inadvertent.</p>
<p>8.5 Groundwater and surface water 8.5.2 Changes to ground water and surface water Page 36</p>	<ul style="list-style-type: none"> • provide a project-specific water use assessment for all phases of the project that includes: <ul style="list-style-type: none"> • the timing • the quantity (flow rates, annual volumes, etc.) and quality of water resources withdrawn from the environment or potentially affected by the project; • conditions under which waste waters would be released to the receiving environment; and • treatment carried out on these waters (e.g. addition of a tracer) 	<p>Minor addition to specify that the timing of discharges or withdrawals is important.</p>
<p>8.5 Groundwater and surface water 8.5.2 Changes to ground water and surface water</p>	<ul style="list-style-type: none"> • quantify the extent of hydrological changes that will result from disturbances to groundwater and surface water movement, taking into account climate change and cumulative effects, including changes to the quantity of surface flow, water levels and channel regime in watercourses and water levels in affected waterbodies, during minimum, average and peak flows, including seasonal variability of the LSA and of the RSA (including the North Saskatchewan River and Astotin Creek). 	<p>Proposed additional bullet.</p> <p>There is currently no mention of the potential effects of the Project to the full range of seasonal and inter-annual variations in flow regimes of surface water. Water quality parameters and fish habitat are very sensitive to changes to water availability (flows) in the extremes and in particular seasons. For example, an increase in high flows may lead to greater sediment runoff or erosion; depending on the timing of these increases, there could be effects to fish spawning. The suggested additional text will ensure the full range of hydrological changes are quantified in the Impact Statement. It will be important to consider these changes in the context of climate change and cumulative</p>

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		effects in order to understand the extent and effects of these changes on the flow regime within the LSA and RSA, and subsequent effects on other VC's.
16.2 Follow-up program monitoring Page 93	<ul style="list-style-type: none"> the identification of monitoring of identify and monitor activities that pose risks to the environment, health, social and economic conditions or VCs, and the measures and means to protect these conditions; 	ECCC reiterates this comment as an editorial comment. The monitoring activities themselves need to be identified to clarify the required follow-up monitoring program elements. As worded, this bullet speaks to risks associated with monitoring (not the development activities). The intent should be clarified with rewording to "identify and monitor activities that pose risks..."
Climate Change		
8.10.2 Effects to Climate Change Page 54-55	The following requirements are based on the Strategic Assessment of Climate Change (SACC14) document developed by ECCC. The SACC provides guidance on climate change information requirements throughout the impact assessment process. For more details the Proponent should refer to future technical guidance on the SACC developed by ECCC. More details will be provided in the <i>Technical Guide Related to the Strategic Assessment of Climate Change: Guidance on quantification of net GHG emissions and impacts on carbon sinks, mitigation measures, net-zero plan, and upstream GHG assessment</i> (hereafter 'the technical guide') when published in its draft form in spring 2021.	ECCC reiterates this comment. Naming this technical guide is important because there will be two technical guides related to the SACC: Quantification/Mitigation and Climate Resilience. It is important to specify we are referring to the Quantification/Mitigation technical guide in this instance.
8.10.2 Effects to Climate Change Page 56	In terms of upstream GHG emissions assessment, the Proponent must provide an assessment of the upstream GHG emissions of the Project, as described in Section 3.2 of the SACC. Additional guidance can also be found in the upcoming draft technical guide. The assessment includes the following components: <ul style="list-style-type: none"> Part A: the upstream assessment should quantify the range of GHG emissions released as a result of upstream activities associated with the project: 	The wording for the upstream assessment has been updated since previous input was provided. Additional clarification on aggregating GHG emissions and 'incremental' upstream emissions have been provided.

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	<ul style="list-style-type: none"> ○ aggregate GHG emissions, including CO₂, CH₄ and N₂O, into MT CO₂e per year; ○ calculate the estimate of upstream GHG emissions over the duration of the operational lifetime of the Project, on an annual basis; ○ base GHG emissions on the maximum additional capacity that the Project could produce; ○ include all processes and activities upstream of the Project in the estimate of the upstream GHG emissions, including production, processing and transport of the Project's diluted bitumen supply, including emissions related to the production of diluents, if any; ○ use recent, verifiable emission intensities that are pertinent to the region and provide a rationale for selecting those emission intensities; and ○ state and justify all assumptions for the estimate. ● Part B: the second part of the upstream assessment should discuss the conditions under which the Canadian upstream GHG emissions estimated in Part A could be expected to occur even if the Project were not built: <ul style="list-style-type: none"> ○ the discussion draws on technical and economic information to assess upstream bitumen production for various market and infrastructure assumptions; It also explores the potential impact of upstream GHG emissions associated with the Project on overall Canadian GHG emissions and how incremental bitumen production could affect global GHG emissions; This section includes an examination of scenarios comparing various outcomes that depend on whether the Project is built. For example, compare the upstream production outcomes in a scenario in which the Project is not built to at least one scenario where the Project is built; and <ul style="list-style-type: none"> ▪ the word incremental is used here to refer to the upstream production (and resulting emissions) that would only occur if the Project were built. 	

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	<ul style="list-style-type: none"> ○ in general, if a Project represents a new source of demand for upstream production or represents the sole means by which to transport upstream production, it would be expected to cause incremental upstream production and GHG emissions. However, for upstream sectors with other potential transportation modes that currently exist, the upstream production and GHG emissions associated with a project may not be incremental; and <p>Consider the relationship between production and domestic GHG emissions will also be discussed, including how proposed and existing GHG policies could influence upstream GHG emissions intensity over time. For global GHG emissions impacts, the impact of incremental Canadian upstream production would be some combination of displacing production and associated GHG emissions from elsewhere and increasing the total quantity of production supplied.</p>	
8.10 Climate change 8.10.3 Mitigation and enhancement measures Page 58	ECCC is developing additional guidance related to the SACC. Additional guidance can also be found in the upcoming draft technical guide.	ECCC reiterates the request to remove this line, and propose alternative wording. The additional guidance will come from the technical guide. For clarity, we suggest to replace this sentence with wording already used to refer to the technical guide.
17. Canada's ability to meet its environmental obligations and its climate change commitments Page 95	[...] <p>The Proponent should refer to the Agency's guidance documents on this topic, including the document Policy Context: Considering Environmental Obligations and Commitments in Respect of Climate Change under the Impact Assessment Act, as well as section 8.10 Climate change of the Guidelines in reference to climate change commitments. As outlined in Section 6 of the Strategic Assessment of Climate Change, the Government of Canada will provide</p>	ECCC was asked by IAAC to refer to the Paris agreement in the TISG. ECCC suggests the adjacent text for the Environmental Obligation and Climate Change Commitments section to provide clarity that the Paris agreements are still being considered along with Canada's 2030 and 2050 net-zero emission targets.

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	<p>supplemental analysis on the Project's (net and upstream) GHG emissions provided in the Impact Statement, in the context of Canada's emissions targets and forecasts, including Canada's commitments under the Paris agreement, the goal for Canada to achieve net-zero emissions by 2050 and Canada's 2030 emission targets.</p>	
Wildlife, Migratory Birds, Species at Risk and Wetland Function		
<p>4.4 Alternative means of carrying out the project</p> <p>Page 11</p> <p>7.5 Mitigation and enhancement measures</p> <p>Page 24</p> <p>8.8 Birds, migratory birds and their habitat</p> <p>Page 48</p> <p>8.9 Wildlife and its habitat</p> <p>Page 53</p>	<p>Recommendation to add "... residences" following "critical habitat", in the identified sentences in the DTISG;</p> <p>For example:</p> <p>Page 11: "any component or activity that has an effect on critical habitat or residences of a species listed under the <i>Species at Risk Act</i>"</p> <p>Page 11: "Should potential impacts to critical habitat or residences be predicted, potential risks to critical habitat or residences must be considered for each alternative..."</p> <p>Page 24: "Where compensatory measures are proposed as measures to mitigate remaining effects on species at risk and their critical habitats or residences..."</p> <p>Page 48: "the surface area, biophysical attributes, and location of habitat, including residences and critical habitat that may be affected;"</p>	<p>Edit previously proposed but was omitted. Revising and reiterating the comment because it is project specific and relevant to the review.</p> <p>Investigating how a project will interact with species at risk requires direct information about species habitat use in the Project area. The Proponent should identify not only critical habitat but also residences (for migratory birds) in order for ECCC to advise/verify the Proponent's characterization of environmental effects and the appropriateness of mitigation measures.</p> <p>Section 33 of the <i>Species at Risk Act</i> (SARA) prohibits damaging or destroying the residence of a listed threatened, endangered, or extirpated species. SARA defines residence as: "a dwelling-place, such as a den, nest or other similar area or place, that is occupied or habitually occupied by one or more individuals during all or part of their life cycles, including breeding, rearing, staging, wintering, feeding or hibernating" [s.2(1)].</p> <p>On non-federal lands, SARA relies on protections for residences/nests of birds provided by the MBCA and associated regulations. Using the term 'residences' with 'critical habitat', is appropriate. For example, for Bank Swallow (one of the SARA-listed and MBCA-protected bird species identified in the dTISG with potential to occur in the area of the Project), a residence description exists and the residence should be considered. In the TISG sections on fish and fish habitat,</p>

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<p>21.12 Additional guidance for biophysical components Page 128</p>	<p>Page 53: “describe measures that will be implemented to avoid or lessen potential adverse effects to wildlife and species at risk and their habitat, including residences and critical habitat. Include a description of the measures in terms of the effectiveness of each measure in avoiding negative effects;” Page 128: “critical habitat and residences of species at risk, and”</p>	<p>the language for aquatic species at risk also refers to residence and critical habitat.</p>
<p>21.12 Additional guidance for biophysical components Page 126</p>	<p>“the proponent should consult the Species at Risk Public Registry to obtain information on the list of species at risk and their protection status, as well as available recovery documents. These documents include information on species and habitat attributes, threats, population and distribution objectives, critical habitat, and residences that are to be considered and incorporated in the Impact Statement. The proponent is responsible for ensuring that the most up-to-date documents have been used and that the status of the species is up to date.”</p>	<p>Edit previously accepted in Section 8.9 so the information requirement is noted in the TISG in text relating to wildlife and its habitat. SARA requires implementing measures that are consistent with recovery documents to avoid or lessen adverse effects. Recovery strategy documents provide information on species and habitat attributes, threats, population and distribution objectives, critical habitat, and residences and the Impact Statement should provide IAAC, Panels, Indigenous Nations, public and federal departments with information about how the Project will be consistent with species recovery documents posted on the SARA Public Registry.</p>
<p>8.8 Birds, migratory birds and their habitat 8.8.1 Baseline conditions Page 50</p>	<p>“provide an estimate estimates of year-round bird use of the area (e.g. winter, spring migration, breeding season, fall migration), based on data from existing sources and surveys to provide current field data if required to generate reliable estimates. In each portion of the year, survey effort must account for differences in species movements including: winter usage of highly habitat reliant species and highly mobile species that will accurately characterize the use of a site;”</p>	<p>Edit previously proposed but was omitted. Reiterating the comment because the syntax changes the meaning of the requirement. Related to migratory birds. Numbers and species of birds using a project area will vary throughout the year, so the Impact Statement needs to include descriptions of changes in seasonal use. This information is not one single estimate, so the information requirements of the Impact Statement should identify the need for estimates (plural) in this item.</p>
<p>21.10 Compensation and offset plans</p>	<p>“With respect to wetlands, compensation plans should:</p>	<p>Edit previously proposed however, only the ratio edit was carried forward to this draft, and therefore ECCC is reiterating the additional text.</p>

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<p>Page 116</p>	<ul style="list-style-type: none"> • clearly indicate the location and total area of each type of wetland, as well as their respective locations, for which the residual effects should be mitigated by compensation measures; • favour the restoration of drained or altered natural wetlands of the same type and function as those affected by the project. Wetland restoration is preferable to wetland enhancement, both of which are preferable to the development of existing wetlands or the creation of new wetlands; • demonstrate that wetland functions can be replaced by the proposed compensation activities; • indicate where it is not possible to compensate for the loss of functions in cases where wetlands are unique, perform habitat functions that ensure the survival of a large proportion of migratory birds, or provide habitat for species at risk; and take this information into consideration when developing compensation measures; • use a minimum ratio of 3:1 for the area of wetlands to be restored or created, versus the original area of wetlands affected. A higher compensation ratio is recommended for wetland types where compensation is more difficult or where there is uncertainty about the success of the compensation measures, or where species at risk may be affected. The choice of ratio for wetland compensation needs to be justified; • prioritize compensating for locally affected wetland functions. If this is not possible, the preference is to compensate within the same watershed, and then within the same ecosystem as the one where functions are affected; • minimize the delay between the time the adverse effects occur and the time habitat and functions are restored; and • explain how vegetation removals, as well as soil and peat excavation activities will be managed for reclamation of disturbed wetlands (e.g. methods, conditions and timing of stockpiling). 	<p>The addition is directly related to species at risk and is reflective of the Federal Policy on Wetland Conservation, which provides a framework for undertaking measures such as conservation allowances to address impacts on wetlands in relation to the federal environmental assessment process (Operational framework for use of conservation allowances). ECCC suggests the additional text to reflect that provincial wetland replacement considerations include species at risk. In Alberta, provincial wetland replacement ratios may extend to 4:1 or 8:1, in consideration of wetland habitat functions supporting species at risk.</p>