



Environmental Health Program,
Regulatory Operations and Enforcement Branch,
Health Canada
391 York Ave, Winnipeg, MB R3C 0P4

January 20, 2021

Matthew Dairon
Project Manager, Prairie and Northern Region
Impact Assessment Agency of Canada
Canada Place
#1145, 9700 Jasper Avenue, Edmonton, AB T5J 4C3

Sent by email to: Matthew.Dairon@canada.ca

Subject: Health Canada's technical review of the Lake Manitoba and Lake St. Martin Outlet Channel Project Information Request Round 1 Package 1 Responses.

Dear Matthew Dairon:

Thank you for your letter dated December 9, 2020 requesting Health Canada's (HC) technical review of Manitoba Infrastructure's (the Proponent) responses to Information Request Round 1 Package 1, for the proposed Lake Manitoba and Lake St. Martin Outlet Channels Project (the Project). HC is participating in this review as a federal authority under the *Canadian Environmental Assessment Act, 2012* (CEAA, 2012).

As requested, HC has undertaken a technical review to confirm whether the Proponent's responses address the information requests raised previously by HC. Key information gaps remain. In the attached table, HC provides comments related to the following areas of expertise: drinking and recreational water quality, air quality and noise.

Should you have any questions regarding HC's comments, please contact Paul Partridge, who can be reached at Paul.Partridge@canada.ca or 1-204-333-2410.

Sincerely,

<original signed by>

Chantal Roberge
National Director, Environmental Health and Internationally Protected Persons Programs
Regulatory Operations and Enforcement Branch
Health Canada

cc: Suzanne Leppinen, Director, Chemicals and Environmental Health Management Bureau,
Health Canada
Kathleen Buset, Manager, Environmental Assessment and Contaminated Sites Division,
Health Canada
Matthew Gale, A/ Regional Manager, Health Canada
Paul Partridge, Impact Assessment Specialist, Health Canada
Melissa Gorman, A/ Senior Environmental Health Specialist, Health Canada

Lake Manitoba and Lake St. Martin Outlet Channel Project

Information Request Responses - Technical Review:

Reference to IR	Context and Rationale	Specific Question / Comment and potential mitigation
<p>Information Request:</p> <p>IAAC – 02</p> <p>(Atmospheric Environment – Air Quality)</p>	<p>Response to IAAC – 02</p> <p>Key Issues:</p> <ul style="list-style-type: none"> • There remains insufficient information to adequately characterize health effects from the air quality impact of the project; and, • It is unclear whether estimated ambient air pollutant concentrations from the project’s emissions will exceed the Canadian Ambient Air Quality Standards (CAAQS) at nearby receptor sites <p>The Proponent’s response did not provide an updated air quality assessment with predicted ambient concentrations (including background, project only and project plus background) for all relevant parameters (e.g. SO₂, NO₂ and PM_{2.5}) in the local assessment area (LAA) and regional assessment area (RAA), that could be compared to the CAAQS.</p> <p>An assessment of receptor locations (e.g. private residences adjacent to the proposed Lake Manitoba Outlet Channel (LMOC)) and frequency of any predicted exceedance of the CAAQS standards has not been provided.</p> <p>In the opinion of HC, the CAAQS are an appropriate comparison target for measured, modelled or otherwise estimated ambient conditions. They are health and environment-based environmental ambient air quality objectives established under Sections 54 and 55 of the <i>Canadian Environmental Protection Act</i>,</p>	<p><u>COMMENTS</u></p> <p>There remain gaps in the data and information provided in the Environmental Impact Statement (EIS), and in the Proponent’s response to IAAC – 02, to adequately characterize the potential health risk related to changes in ambient air quality due to this project. Predicted ground concentrations from air dispersion modelling (for all criteria air contaminants (CACs)) and comparison to ambient air quality criteria such as the CAAQS and Manitoba Ambient Air Quality Criteria (MAAQC) are required to support a valid characterization of the health impacts. The Proponent should use air dispersion modelling that is specific to the proposed project (e.g. meteorology, terrain, land use etc.), instead of model outputs from other projects (i.e. Springbank Reservoir in Alberta).</p> <p>Additionally, the Proponent used data from monitoring stations located in urban areas to represent background/baseline concentrations for this project, which is located in a remote area of Manitoba. Use of urban monitoring station data could generate misleading results, as these communities experience greater emissions than the proposed project area. Specifically, predicted exceedances of the CAAQS should not be rationalized by noting that background levels are already high. Consideration of monitoring data that is more representative of the project area (i.e., a less populated or less developed area), rather than the areas selected in their EIS, would provide a more accurate picture of the project’s contribution to ambient air contaminant concentrations in the study area.</p> <p><u>Information Request</u></p> <p>Health Canada recommends that the Agency request the Proponent:</p> <ol style="list-style-type: none"> Revise the baseline predictions using monitoring data that is more representative of the project area; Update the air quality assessment using project-specific air dispersion modelling to predict ground concentrations (for all CACs) and compare results to the CAAQS or MAAQC (including background, project only and project plus background) in the LAA and RAA area (preferably in the form of isopleth maps); and, Assess the receptor locations and frequency of any predicted exceedances of the CAAQS that may occur as a result of the Project. <hr/> <p><u>REFERENCES</u></p>

	<p>1999. The development of the CAAQS is consistent with their use in environmental assessments.</p> <p>Short-term exposure to NO₂ and PM_{2.5} has been associated with a range of adverse health effects. These pollutants are considered to be non-threshold, meaning health effects occur at all levels of exposure. Acute (short-term) concentration estimates, including an analysis of the background, project-only, and project plus background levels, were not provided.</p>	<p>Guidance for Evaluating Human Health Impacts in Environmental Assessment:</p> <ul style="list-style-type: none"> Human Health Risk Assessment (Health Canada, 2019) http://publications.gc.ca/collections/collection_2019/sc-hc/H129-54-6-2019-eng.pdf Air Quality (Health Canada, 2016) http://publications.gc.ca/collections/collection_2017/sc-hc/H129-54-1-2017-eng.pdf
<p>Attachment A1 - Draft Environmental Management Plans (EMPs) (Atmospheric Environment – Air Quality)</p>	<p>Draft EMPs for Atmospheric Environment</p> <p>Key Issue:</p> <ul style="list-style-type: none"> The Draft EMPs related to air quality do not address one of the project’s primary air pollutant emission sources (i.e. vehicle exhaust). <p>Draft EMPs were included in an Attachment to the Proponent’s responses to IAAC IR Package 1. Consideration of the atmospheric environment has been limited to management of fugitive dust emissions outlined in the Dust Control Plan (DCP), but does not include measures related to construction equipment vehicle exhausts, the other primary source of project related emissions.</p> <p>Uncertainty with the assessment of air quality noted in this and the comment above (IAAC – 02) limits constructive comment on the adequacy of draft EMPs and proposed mitigation.</p>	<p><u>COMMENTS</u></p> <p>The EIS’s assessment of the atmospheric environment (Chapter 6, page 6.66) concludes that:</p> <p><i>The primary emission sources of the Project are from construction equipment vehicle exhausts, and fugitive dust emissions result from surface disturbance activities.</i></p> <p>The use of diesel equipment during construction is associated with the emission of various air contaminants, such as NO₂, PM_{2.5}, PAHs and VOCs. However, the EMPs, proposed by the Proponent, do not consider all of these substances and focuses mainly on fugitive dust mitigation. Health risks associated with diesel engine emissions is therefore not adequately addressed.</p> <p>HC is of the opinion that the air quality management plan should include reliable monitoring data that can be used to validate predicted concentrations and serve as the basis for any actions to be taken. CAAQS should not be viewed as levels to pollute-up-to. Therefore, in order to minimize the health risks associated with these air contaminants (for which, some have health effects may occur at all level of exposure), any mitigation measures that can reduce emissions should be considered in the EMPs. Thus, it is appropriate to use the best available technology (e.g. Tier 4 standards engine) and cleaner fuels such as low sulphur fuel for reducing air contaminants as much as possible.</p> <p>Relying on visual monitoring methods for dust may be appropriate for larger particles; however, HC notes that they are not a major health concern compared to smaller particles (PM₁₀ and PM_{2.5}) or other air contaminants (e.g. NO₂, SO₂). Thus, this method is not appropriate for addressing the potential health risks from exposure to smaller sized particles and gaseous contaminants.</p> <p><u>INFORMATION REQUEST</u></p> <p>Health Canada recommends that the Agency request the Proponent:</p>

		<p>a) Update the draft EMPs related to air quality to include all primary emission sources of the project (i.e. diesel powered construction equipment, vehicle exhaust and fugitive dust emissions), considering all CACs such as NO₂, PM_{2.5}, PAHs and VOCs.</p> <p>b) Describe mitigation and monitoring plans for air quality including:</p> <ol style="list-style-type: none"> a. A description of the location and operation of air quality monitors; b. A list of CACs that will be monitored as part of the management of primary emission sources; and c. A description of how monitoring will be used to verify EIS predictions and conclusions, link monitoring results to adaptive management, and assess the effectiveness of mitigation measures.
<p>Information Requests:</p> <p>IAAC – 16 & 26 (Water Quality)</p>	<p>Responses to IAAC – 16 & 26</p> <p>Key Issue:</p> <ul style="list-style-type: none"> • There remains insufficient groundwater baseline data for microbiological and chemical contaminants; and, <p>To determine any changes in the quality of drinking water sources, good baseline data is required to characterise any drinking water sources and to be comparable for project monitoring data.</p>	<p><u>COMMENTS</u></p> <p>The only drinking water source identified by the Proponent is the LMOC groundwater aquifer. This serves as a drinking water source for public and semi-public systems, as well as for individual well owners. The baseline data for this aquifer, from a microbiological perspective (two samples for E. coli and total coliforms (n=2)) is very limited sample size in terms of characterising the microbiological quality of this drinking water source. Furthermore, the two samples of total coliforms indicated that the groundwater has unacceptable quality from a microbiological perspective. More baseline data is recommended.</p> <p>Furthermore, analysis of metals in groundwater was limited to “dissolved” concentrations, but did not include analysis of “total” metal concentrations (i.e. dissolved + particulate) for comparison to the Guidelines for Canadian Drinking Water Quality. Measuring only dissolved metals concentrations may underestimate the actual potential for human health risks. Consumers are exposed to total metals in drinking water, and this is the key factor in evaluating the potential risks of chemical contaminants in drinking water.</p>
<p>Attachment A1 - Draft Environmental Management Plans (EMPs) (Water Quality)</p>	<p>Draft EMPs for Surface & Groundwater Quality</p> <p>Key Issue:</p> <ul style="list-style-type: none"> • Additional details are needed for the draft EMPs, including notification of drinking water system operators/well owners, and details on adjustments to monitoring to capture events that may affect groundwater quality. 	<p><u>COMMENTS - SURFACE WATER</u></p> <p>The Proponent indicates that the surface waters within the LMOC and LSMOC sites are not used as drinking water sources. HC does not recommend the consumption of untreated surface water. From a recreational water quality perspective, the Proponent has not identified recreational swimming/bathing uses within the project area. Thus, HC has no comments at this time on the surface water monitoring programs.</p> <p><u>COMMENTS - GROUNDWATER</u></p> <p>In the EMPs, it is indicated that the planned long-term depressurization for the LMOC construction will reduce the groundwater pressure in the LMOC project area directly affecting artesian-dependent drinking water well operations, suggesting that some wells will not operate without pumping. Mitigation for domestic wells is indicated as:</p> <ul style="list-style-type: none"> • short term: provide water tanks or other alternate supply to affected well users until long term solutions can be put in place; and,

- long term: lower existing pump intake if feasible, supply new pumps, drill new wells or extend existing wells.

Reductions in artesian pressure may impact the quantity or quality of groundwater available to drinking water systems and well owners. Thus, HC suggests the Proponent monitor for any changes in water quality and immediately notifying drinking water systems operators and individual well owners if changes to source water quality are observed.

In the context of monitoring, the Proponent indicates the following:

- Groundwater quality monitoring in the LMOC will be conducted quarterly (spring, summer, fall) during pre-construction, during construction, and post-construction phases;
- In addition to installed monitoring wells, select domestic wells will be monitored;
- During construction of the LMOC, monitoring frequency will be adjusted in consultation with well owners and the de-watering contractor as necessary during the construction phase; and,
- Post-construction (i.e. channel operation phase) will be conducted quarterly over 2 years with an indication that the duration may be extended depending on the monitoring results, environmental conditions present, success of revegetation and the frequency of use of the LMOC.

HC recommends that adjustments in monitoring be made during the construction phase to capture significant events that could affect groundwater quality, such as flooding, construction failures etc. Additionally, during the post-construction phase, monitoring beyond two years should be considered during significant environmental events (e.g. flooding) to confirm that there are no adverse impacts on the LMOC groundwater aquifer, as it is a drinking water source. Additionally, it is recommended that mitigation plans be put in place to notify affected consumers if impacts on water quality are detected through monitoring.

INFORMATION REQUEST

Health Canada recommends that the Agency request the Proponent:

- a) Provide details as to whether drinking water system operators and individual well owners/consumers will be informed if monitoring determines that there are changes to source water quality during the construction and post-construction phase;
- b) Indicate if adjustments will be made to the monitoring of groundwater quality during the construction phase to capture significant events such as flooding, construction failures etc.; and,
- c) During the post-construction phase, indicate if monitoring will occur beyond two years during significant environmental events (e.g. flooding).