Health Canada Santé Canada

Environmental Health Program (EHP)
Regulatory Operations and Enforcement Branch (ROEB), Health Canada
391 York Avenue
Winnipeg, MB R3C 0P4

June 23, 2025

Keith Morrison
Manager, Project Monitoring
Nunavut Impact Review Board
P.O. Box 1360
Cambridge Bay, NU X0B 0C0

*Sent by email to:* info@nirb.ca; and, kmorrison@nirb.ca

**Subject: Health Canada's response to the Comment Request for Agnico Eagle Mines Limited's Meadowbank Complex Project 2024 Annual Monitoring Report**

Dear Keith Morrison,

Thank you for your letter dated May 22, 2025, requesting comments on the Meadowbank Complex Project 2024 Annual Monitoring Report provided by Agnico Eagle Mines Limited.

Health Canada (HC) participates in environmental assessments as a federal authority under the *Nunavut Planning and Project Assessment Act,* S.C. 2013, c. 14 (*NuPPAA*). Upon request, HC makes available specialist or expert information or knowledge in its possession to review panels and responsible authorities.

The objective and scope of HC's review was to verify that the potential health impacts of the project are properly identified and to support responsible authorities to prevent, reduce, and mitigate the potential health impacts of project activities.

HC has reviewed the 2024 Annual Report, which focused on topics related to country foods, air quality, water quality and noise monitoring. HC's comments are attached.

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Should you have any questions concerning HC's response, please contact Paul Partridge at paul.partridge@hc-sc.gc.ca.

Sincerely,

David Kitchen
Regional Manager, MB/SK/NU Region
Environmental Health Programs
Regulatory Operations & Enforcement Branch
Health Canada

cc: Heather Jones-Otazo, Manager, Environmental Assessment and Contaminated Sites (EACS) Division, Healthy Environments and Consumer Safety Branch (HECSB), Health Canada
Paul Partridge, Impact Assessment Specialist, EHP, ROEB, Health Canada
Ashley James, Impact Assessment Specialist, EHP, ROEB, Health Canada
Wendy Wilson, Senior Environmental Health Specialist, EACS, HECSB, Health Canada
Julie Anderson, Environmental Assessment Coordinator, EACS, HECSB, Health Canada

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**Meadowbank Complex Project 2024 Annual Monitoring Report**

**Health Canada Comments**

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| **Comment Number:** | HC-01 |
| **Subject/Topic:** | Baseline Characterization of Arsenic (As) in Soil – HHRA problem formulation |
| **References:** | 1. Meadowbank Complex 2024 Annual Report<br>a. Appendix 38 – Meadowbank Complex Terrestrial Ecosystem Management Plan<br>b. Appendix 40 – Meadowbank and Whale Tail 2024 Wildlife and Country Foods Screening Level Risk Assessment Report<br>i. Appendix B – Soil, Water and TSF Sediment Screening Tables – Page 48; PDF pg. 43<br><br>2. Azimuth (Azimuth Consulting Group Inc.) 2006. Wildlife Screening Level Risk Assessment for the Meadowbank Site. (NIRB: 060303-03MN107-Azimuth Rpt CRL Re MB Wildlife Screening Level Risk Assessment-ITAE.pdf)<br>a. Appendix C - ALS Laboratory Reports: Tissues and Soil Analyses (2006) (NIRB: 060303-03MN107-Tissue Soil Analyses Rpt-App C-ITAE.pdf) - PDF pg. 34-43<br><br>3. Golder (Golder Associates Ltd.) 2019. Human Health and Ecological Risk Assessment – Whale Tail Pit – Expansion Project.<br>a. Attachment B – Screening Tables<br>i. Annex B-2: Soil Quality - PDF pg. 132-134 |
| **Comment:** | **Characterized baseline As soil conditions may not be representative of natural variability across the broader Meadowbank Complex, and may be ineffective in defining project-related impacts.**<br><br>A reliable description of baseline conditions is integral to problem formulation[1], a key step in human health risk assessments. When characterized effectively, establishing baseline conditions (i.e., pre-development/pre-project) within a development area allow potential impacts from project activities to be distinguished from natural variability in the environment. This distinction can be used to confirm modelled predictions and focus health risk assessments on a project's incremental impacts. |

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| | The current Meadowbank Complex covers a large geographic area that includes the Meadowbank mine site and the satellite Whale Tail mine site connected by a 65km haul road, and is described by a Local Study Area for the Meadowbank mine site ($LSA_{(MB)}$) and the Whale Tail Pit ($LSA_{(WT)}$) respectively.[2]<br><br>Baseline soil conditions within the $LSA_{(MB)}$ were derived from the 2006 Wildlife Screening Level Risk Assessment (Azimuth, 2006) using 10 sampling sites (n=50), while conditions within the $LSA_{(WT)}$ were provided in the Human Health and Ecological Risk Assessment for the Whale Tail Pit Expansion Project (Golder, 2019) using 11 sampling locations (n=16).<br><br>Baseline characterization would benefit from additional practical and statistical consideration of the baseline data (see also: HC-02 and HC-03) due to the following inconsistencies:<br>1. The maximum $LSA_{(MB)}$ baseline concentration appears to be a statistical outlier, which limits its ability to differentiate between natural variability and project-related impacts.<br>2. The maximum $LSA_{(MB)}$ baseline concentration, derived from a single sample, cannot adequately characterize the natural variability across the extensive Meadowbank Complex.<br>3. The use of baseline soil concentration data from the Meadowbank site to describe variability in soil concentrations at the Whale Tail site when baseline data specific to that site exists (i.e., Golder 2019).<br>4. The use of the maximum baseline concentration from the Meadowbank site (Appendix 40, Appendix B: Table B-14) when screening for pollutants of potential concern (POPCs) at the Whale Tail site.<br><br>Without proper baseline characterization, HC was unable to comment on factors that contributed to the elevated arsenic measurements reported at the Whale Tail location (Table B-14; Site T10, samples 1 & 2) and Meadowbank mine site (Table B-16; Site T7, samples 1, 2, & 5). HC noted that elevated concentrations of As in soil samples from the *Wildlife and Country Foods Screening Level Risk Assessment Report* (Appendix 40) were located north of the respective Waste Rock Storage Facility at each project site. It was unclear if the elevated concentrations and locations |

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| | correlate with observed baseline concentrations at the Meadowbank site; however, there was some indication of correlation in Golder (2019), where measurements from the Whale Tail site suggest they might benefit from further investigation.<br><br>[1] Health Canada. 2023. Guidance for Evaluating Human Health Effects in Impact Assessment: Human Health Risk Assessment<br><br>[2] The $LSA_{(MB)}$ includes the 5 km area surrounding the Meadowbank mine site; and, the 3 km area along the 110 km all-weather access road (AWAR) between the mine site and the community of Baker Lake. The $LSA_{(WT)}$ includes the 1.5 km area surrounding the Whale Tail Expansion and 65 km Haul Road. |
| **Conclusion/Request:** | HC recommends:<br><br>1. Further arsenic soil characterization before the 2027 country foods assessment to reliably differentiate natural background variability from project-related emissions. This could include:<br>a. A review of existing pre-project concentration data of As in soil to identify and address:<br>i. limitations of existing data;<br>ii. statistical outliers;<br>iii. account for the vast geography of the Meadowbank Complex; and,<br>iv. describe the natural variability in baseline conditions, which could include data from other existing soil studies undertaken as part of the project.<br>b. Further characterize background and current soil conditions within the entire $LSA_{(MB)}$ and $LSA_{(WT)}$ through additional studies.<br>c. Additional site-specific sampling and characterization of As in soil north of the Meadowbank Tailings Storage Facility (Area T7) and Whale Tail Waste Rock Storage Facility (Area T10) where elevated measurements of As in soil were reported. |

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| **Comment Number:** | HC-02 |
| **Subject/Topic:** | Meadowbank Site $HHRA_{(Country\ Foods)}$, Arsenic Assessment |
| **References:** | 1. Meadowbank Complex 2024 Annual Report<br>a. Section 8.19 – Country Foods - PDF pg. 379-380<br>b. Appendix 40 – Meadowbank and Whale Tail 2024 Wildlife and Country Foods Screening Level Risk Assessment Report |

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| | i. Section 3.1.3 - Parameters of Potential Concern (POPCs) - Page 20; PDF pg. 15<br>ii. Section 4.2 - Human Health - Country Foods Assessment - Page 22; PDF pg.17<br>iii. Appendix B – Soil, Water and TSF Sediment Screening Tables - Page 48; PDF pg. 43<br><br>2. Azimuth (Azimuth Consulting Group Inc.). 2006. Wildlife Screening Level Risk Assessment for the Meadowbank Site. (NIRB: 060303-03MN107-Azimuth_Rpt CRL Re MB Wildlife_Screening Level Risk Assessment-ITAE.pdf)<br>a. Appendix C - ALS Laboratory Reports: Tissues and Soil Analyses (2006) (NIRB: 060303-03MN107-Tissue_Soil Analyses Rpt-App C-ITAE.pdf) (PDF pg. 34-43) |
| **Comment:** | **Conclusions of the Country Foods Health Risk Assessment were not supported by baseline screening criteria, therefore potential health risks should be assessed.**<br><br>Consideration of screening criteria when defining POPCs is consistent with Health Canada (HC) guidance on Human Health Risk Assessment[3]. However, the specific maximum measured baseline concentration of As in soil from the 2006 *Wildlife Screening Level Risk Assessment Report* (Azimuth, 2006; 173 mg/kg) used for screening appears to be a statistical outlier (i.e., outside the 95% upper confidence limit of the mean [UCLM] of 18.4 mg/kg and therefore, not representative of baseline conditions). This value is not appropriate as a screening criteria because it could mask project-related impacts within Meadowbank's local study area ($LSA_{(MB)}$). It is more appropriate to use regulatory guideline values that are protective of human health (i.e., CCME's Soil Quality Guidelines for the Protection of Human Health) as screening criteria for As ($SQG_{HH}$ – Residential Land Use; CCME - 12 mg/kg) without baseline.<br><br>Measured concentrations from samples collected as part of the current assessment (2024) exceed the health-based guidelines at location T7 north of the Meadowbank Tailings Storage Facility, with the following measured concentrations (Appendix 40, Table B-16): |

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| | <table><tr><th>Sample</th><th>Measured Soil [As] Concentration</th></tr><tr><td>T7-S1-SOIL</td><td>61.5 mg/kg</td></tr><tr><td>T7-S4-SOIL</td><td>34.5 mg/kg</td></tr><tr><td>T7-S5-SOIL</td><td>25.5 mg/kg</td></tr></table><br>In the absence of a reliable baseline concentration, the reported As exceedances in soil do not support the current conclusion from Section 8.19 of Annual Report or the Human Health Risk Assessment (HHRA)(country foods) that risks from country food consumption are negligible. It is unclear if the reported concentrations represent any real risk to human health; this should confirmed through further characterization as part of the current HHRA.<br><br>[3]Health Canada. 2023. Guidance for Evaluating Human Health Effects in Impact Assessment: Human Health Risk Assessment |
| **Conclusion/Request:** | HC recommends:<br><br>1. The current conclusion of the Human Health Risk Assessment be revised to include additional consideration of As in soil within the Meadowbank LSA(MB) as a POPC, and confirm whether risks associated with the consumption of country foods remain negligible. Those risks should be quantified.<br><br>2. Use appropriate regulatory guideline values that are protective of human health as screening criteria. |

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| **Comment Number:** | HC-03 |
| **Subject/Topic:** | Whale Tail Site HHRA(Country Foods), Arsenic Assessment |
| **References:** | 1. Meadowbank Complex 2024 Annual Report<br>a. Section 8.19 – Country Foods - PDF pg. 379-380<br>b. Appendix 40 – Meadowbank and Whale Tail 2024 Wildlife and Country Foods Screening Level Risk Assessment Report (SLRAR)<br>i. Section 3.1.3 - Parameters of Potential Concern (POPCs) - Page 20; PDF pg. 15<br>ii. 4.2 Section - Human Health - Country Foods Assessment - Page 22; PDF pg. 17<br>iii. Appendix B – Soil, Water and TSF Sediment Screening Tables – Page 48; PDF pg. 43 |

<table>
<tr><td></td><td>2. Golder (Golder Associates Ltd.) 2019. Human Health and Ecological Risk Assessment – Whale Tail Pit – Expansion Project.<br>a. Attachment A – Baseline Conditions for Soil and Vegetation<br>i. Annex A-2: Results of the Soil and Sediment Program - PDF pg. 106-107<br>b. Attachment B – Screening Tables<br>i. Annex B-2: Soil Quality - PDF pg. 132-134</td></tr>
<tr><td>Comment:</td><td>Soil As concentrations north of the Whale Tail Waste Rock Storage Facility exceed screening criteria, therefore potential health risks should be assessed.<br><br>Health Canada does not agree that: “All concentrations in soil met … screening values”, or its use as a rationale to conclude that: “no changes to risk from consumption of country foods under the current operational scenario are predicted and the country foods ingestion pathways are not required to be assessed further.”<br><br>Reported As concentrations in two soil samples within the Whale Tail Local Study Area (LSA(WT)), exceeded predicted concentrations from the Project’s Final Environmental Impact Statement and supporting documents (i.e., greater than maximum baseline concentration plus predicted project emissions – 13 mg/kg [Golder, 2019]). The assessment’s other screening criterion (SQGHH – Residential Land Use; CCME - 12 mg/kg) was also exceeded.<br><br>The 2024 samples were taken from the same location (T10) north of the Whale Tail Waste Rock Storage Facility, with the following measured concentrations (Appendix 40, Table B-14):<br><br>
<table>
<tr><th>Sample</th><th>Measured Soil [As] Concentrations</th></tr>
<tr><td>T10-1-SOIL</td><td>15.3 mg/kg</td></tr>
<tr><td>T10-2-SOIL</td><td>31.0 mg/kg</td></tr>
</table>
<br>While the exceedances appear minor, they do not support the conclusion presented in Section 8.19 of the 2024 Annual Report or HHRA(country foods) Appendix 40. It is unclear if the observed changes represent any risk to human health, which should be confirmed through further characterization as part of the current HHRA.</td></tr>
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| **Conclusion/Request:** | HC recommends:<br><br>1. The current conclusion of the Human Health Risk Assessment be revisited and revised to include additional consideration of As in soil within the Whale Tail $LSA_{(WT)}$, as a POPC, and confirm that risks associated with the consumption of country foods remain negligible. Those risks should be quantified. |

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| **Comment Number:** | HC-04 |
| **Subject/Topic:** | Changes to the 2024 Wildlife and $HHRA_{(Country\ Foods)}$ Screening Level Risk Assessment Plan |
| **References:** | 1. Meadowbank Complex 2024 Annual Monitoring Report<br>a. Appendix 38 – Terrestrial Ecosystem Management Plan (March 2025)<br>i. Appendix E: Wildlife and $HHRA_{(Country\ Foods)}$ Screening Level Risk Assessment Plan (Version 9) – March, 2024<br>b. Appendix 40 – Meadowbank and Whale Tail 2024 Wildlife and Country Foods Screening Level Risk Assessment Report<br><br>2. NIRB Project Certificate No.004 Condition 67 |
| **Comment:** | **Health Canada remains a potential resource to support the development and implementation of plans related to country foods monitoring and human health risk assessment.**<br><br>The *Wildlife and* $HHRA_{(Country\ Foods)}$ *Screening Level Risk Assessment Plan (SLRAP)* was revised in March 2024, and introduced new screening criteria (i.e., maximum baseline concentration) to focus the assessment on specific POPCs. HC's comments (on the 2024 Annual Report) centre around changes made to the SLRAP and could have been addressed had the Department been engaged in its development.<br><br>Although HC is not a member of the Technical Advisory Group where proposed revisions are discussed, the Department has scientific knowledge in the areas of country foods and HHRA methodologies, and could be a potential resource for offering guidance on best practices. |

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| **Conclusion/Request:** | 1. HC is available to review future proposed updates to the *Wildlife and HHRA(Country Foods) Screening Level Risk Assessment Plan* for areas related to its mandate (e.g., country foods, human health risk assessment methodologies). |