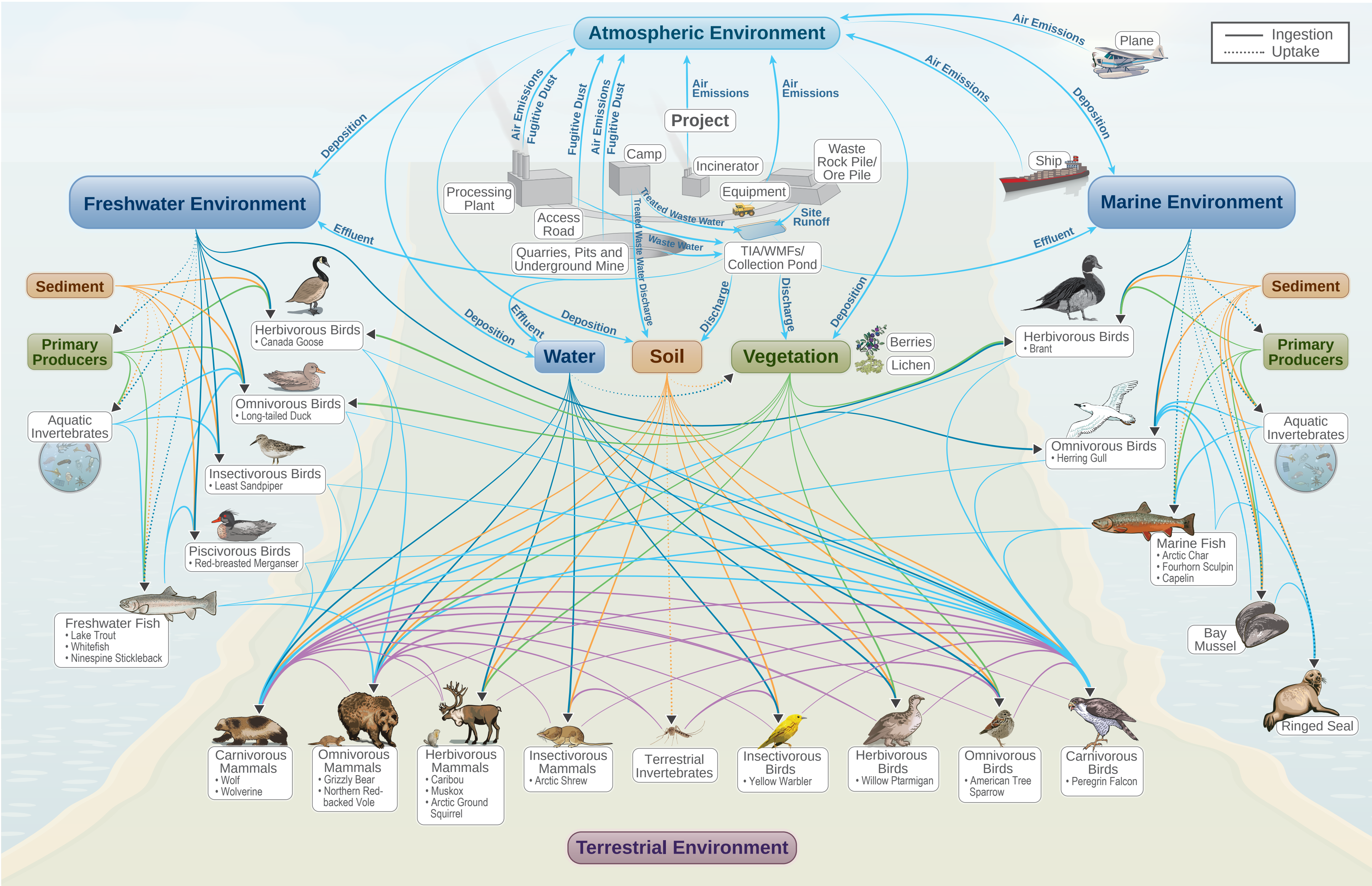
Figure 5.6-1

Conceptual Model for Potential Exposure to Phase 2 Project-related Contaminants of Potential Concern for Ecological Receptors



Zoonotic diseases identified to occur in the Arctic include those caused by: *Trichinella*, *Anisakis*, *Diphyllobothrium*, *Echinococcus*, and *Toxoplasma*, and potentially *Cryptosporidium* and *Giardia* (Polley, Hoberg, and Kutz 2010). Furthermore, the Artic fox is a carrier for some strains of rabies, while Brucellosis is caused by the bacterial genus *Brucella* and can be transmitted from animals (e.g., bison, caribou, fox, bears, ringed seals, and beluga whales) to people upon contact or consumption (Leighton 2011). However, the identification of trends and prediction of future trends is not possible as the ecology of Brucella in caribou and marine mammals is currently too poorly understood (Leighton 2011). Zoonotic diseases can result in obvious clinical disease in humans; however, infected people do not necessarily display clinical symptoms. Potential zoonotic diseases in Nunavut and their wildlife vectors are presented in Table 5.6-3.

Table 5.6-3. Potential Zoonotic Diseases in Nunavut and Their Vectors

Disease	Disease Type	Vector
Anthrax (*Bacillus anthracis*)	Bacteria	Bison, cervids
Broad fish tapeworm (*Diphyllobothriasis*)	Parasite	Fish
Brucellosis (*Brucella* spp.)	Bacteria	Mammals
Cryptosporidosis (*Cryptosporidium* spp.)	Parasite	Mammals, mosquitos
Filarial worms (*Dirofilaria* spp.)	Parasite	Black flies
Giardia (*Giardia* spp.)	Parasite	Mammals, birds
Hantavirus (*Bunyaviridae*)	Virus	Rodents (e.g., mice)
Herring roundworm (*Anisakiasis simplex*)	Parasite	Fish
Hydatid Disease (*Echinococcus granulosus* and *Echinococcus multilocularis*)	Parasite	Canine (dog, wolf, coyote, fox)
Leptospirosis (*Leptospira* spp.)	Bacteria	Beaver, deer, rodents, raccoon
Plague (*Yersinia pestis*)	Bacteria	Rodents, squirrels, mink, marten, bobcat, lynx, flea
Rabies (*Rhabdoviridae*)	Virus	Bat, any mammal
Raccoon Roundworm (*Baylisascaris* spp.)	Parasite	Raccoon
Ringworm (*Microsporum canis* and *Trichophyton verrucosum*)	Parasite	Mammals
Sarcoptic mange (*Sarcoptes scabiei*)	Parasite	Canine (dog, wolf, coyote, fox)
Toxoplasmosis (*Toxoplasma gondii*)	Parasite	Mammals
Trichinellosis (*Trichinella spiralis*)	Parasite	Bear
Tuberculosis (*Mycobacterium bovis* and *Mycobacterium avium*)	Bacteria	Birds, bison, cervids
Tularemia (*Francisella tularensis*)	Bacteria	Beaver, hare, rabbit, muskrat

5.6.2 Exposure Assessment for Caribou Exposure to the Tailings Impoundment Area

5.6.2.1 Introduction

As described in Section 5.6.1.3, concerns were identified regarding the potential for caribou to ingest tailings and water from the TIA. Therefore, the potential exposure to caribou from COPCs in tailings and TIA water is evaluated in this section. The exposure assessment methodology follows that described in the existing conditions ERA (Section 5.5.2).

5.6.2.2 Ingestion of Tailings

The 95th percentile metal concentrations from 14 tailings samples obtained from Appendix V3-4A (SRK 2016c) and SRK (2015) were used as an input into the equation to calculate the EDI of COPCs caribou receive from ingestion of tailings during the Construction and Operational phases. The equation used to calculate caribou exposure to COPCs (mg/kg BW/day) from tailings ingestion was Equation 13 provided in Section 5.5.2.2 of the existing conditions ERA.

The COPC EDI via the soil ingestion exposure route for the Construction and Operational phases for caribou are presented in Table 5.6-4. The assumptions used in the calculation of the EDI of COPCs via ingestion of tailings were the same as those described in the existing conditions ERA (Section 5.5.2.2). A sample calculation was also provided in the existing conditions ERA.

Table 5.6-4. Estimated Daily Intake of Contaminants of Potential Concern for Caribou from the Tailings Impoundment Area

COPC	$EDI_{[tailings]}$	$EDI_{[TIA\ water]}$	$EDI_{[total]}$
Arsenic	1.06E-03	1.49E-04	1.21E-03
Beryllium	6.38E-05	1.84E-06	6.56E-05
Chromium	7.60E-04	2.38E-06	7.62E-04
Copper	1.77E-04	5.22E-06	1.82E-04
Molybdenum	2.39E-05	2.54E-05	4.93E-05
Nickel	9.54E-04	1.14E-05	9.66E-04
Selenium	6.62E-06	2.26E-06	8.88E-06
Sulphate [a]	-	-	-
Tin	2.96E-03	2.07E-07	6.00E-03

Notes:
All EDIs are in mg/kg BW/day.
COPC = contaminant of potential concern
BW = body weight
EDI = estimated daily intake
$EDI_{[tailings]}$ *= estimated daily intake of COPC from tailings consumption (mg/kg BW/day)*
$EDI_{[TIA\ water]}$ *= estimated daily intake of COPC from TIA water consumption (mg/kg BW/day)*
$EDI_{[total]}$ *= total estimated daily intake of COPC caribou receives from tailings and TIA water consumption (mg/kg BW/day)*
(-) = not applicable
[a] *Exposure to sulphate occurs through water only. The TRV for sulphate is equivalent to the CCME water quality guideline in mg/L; therefore, the EDI calculation is not necessary.*

5.6.2.3 Ingestion of Water from the Tailings Impoundment Area

The predicted 95th percentile concentration of COPCs from the base case surface water quality model from the Tail Lake node (in the TIA) was used as an input in the equation to calculate the EDI of COPCs for caribou ingesting water from the TIA. The equation used to calculate caribou exposure to COPCs (mg/kg BW/day) from ingestion of water in the TIA was Equation 14 provided in Section 5.5.2.3 of the existing conditions ERA.

The surface water quality model did not provide predicted concentrations of tin at the Tail Lake node. Therefore, to be conservative, the maximum baseline concentration of tin measured in surface waters in the freshwater environment LSA (0.000967 mg/L; Rescan 2010d, 2011g) was used in the EDI calculations instead.

The COPC EDI via the TIA water ingestion exposure route for the Construction and Operational phases for caribou are presented in Table 5.6-4. The assumptions used in the calculation of the EDI of COPCs via ingestion of water in the TIA were the same as those described in the existing conditions ERA (Section 5.5.2.3). A sample calculation was also provided in the existing conditions ERA.

5.6.3 Toxicity Assessment for Caribou Exposure to the Tailings Impoundment Area

The toxicity assessment is the same as that presented in Section 5.5.3 of the existing conditions ERA. The same TRVs for caribou for the COPCs in tailings were used in the existing conditions ERA (Section 5.5.3.2, Mammalian and Avian Wildlife) were used in the assessment of risk to caribou from the TIA. However, a few additional COPCs were identified based on the COPC selection process from floatation tailings and TIA water chemistry. The TRVs for these new COPCs are described in the following sections.

5.6.3.1 Sulphate

The CCME livestock guideline for sulphate is 1,000 mg/L (CCREM 1987). Based on a search of available literature, no additional studies for sulphate toxicity in mammalian wildlife apart from studies included in the CCME sulphate guideline were identified. Therefore, the CCME livestock guideline of 1,000 mg/L for sulphate was selected as the TRV for caribou.

5.6.3.2 Beryllium

The Eco-SSL document for beryllium (US EPA 2005b) provides an oral mammalian TRV of 0.532 mg/kg BW/day (Schroeder and Mitchener 1975), which is based on a NOAEL for survival in juvenile mice (*M. musculus*). A study by Freundt and Ibrahim (1990) provides the only other NOAEL reported for mammalian species in the beryllium Eco-SSL document, which is 0.953 mg/kg BW/day for growth effects in sexually mature rats (*R. norvegicus*) exposed to oral doses of beryllium in drinking water. Because the lowest chronic NOAEL reported for reproduction, growth, or survival effects in mammals is 0.532 mg/kg BW/day, this value was adopted as the TRV for caribou.

5.6.3.3 Tin

The Oak Ridge National Laboratory (ORNL) document "*Toxicological Benchmarks for Wildlife: 1996 Revision*" (Sample, Opresko, and Suter 1996) provides a mammalian LOAEL for tin of 35 mg/kg BW/day, which is based on observed reproductive effects following a chronic oral exposure of tin to a critical lifestage (gestation) of mouse (Davis et al 1987). Observed reproductive effects included decreased fetal survival and increased frequency of litter resorption. The corresponding NOAEL from this study was reported as 23.4 mg/Kg BW/day, and was adopted as the TRV for caribou in this assessment.

5.6.4 Risk Characterization for Caribou Exposure to the Tailings Impoundment Area

Using the results of the exposure assessment and TRV assessment, ecological health risks were quantified using HQs. The HQ is the ratio between the total EDI and the TRV and provides a measure of exposure to a COPC through the various exposure pathways. Environment Canada (2012) states that an HQ of less than 1.0 indicates that the existence of adverse effects to ecological health is unlikely, while an HQ greater than 1.0 indicates a possibility of adverse effects to ecological health.

For sulphate, since the exposure occurs only through drinking water, the exposure is evaluated based on the concentration in water from the TIA. The predicted 95th percentile concentration (441 mg/L) of sulphate in the water of the TIA is below the CCME water quality guideline for the protection of livestock (1000 mg/L). Therefore, no risk to caribou would be expected based on sulphate exposure.

The total EDI of the remaining COPCs (in mg/kg BW/day) for caribou was calculated by summing the EDI from the two exposure pathways from the TIA (Table 5.6-4; ingestion of floatation tailings and water within the TIA). The total EDI was then divided by the TRV (in mg/kg BW/day) to obtain the HQ for caribou, using Equation 17 provided in Section 5.5.4.4 of the existing conditions ERA. Table 5.6-5 shows the HQ for caribou exposure to COPCs in the TIA.

Table 5.6-5. Caribou Toxicity Reference Values and Hazard Quotients for Contaminants of Potential Concern from the Tailings Impoundment Area

COPC	Mammal TRV (mg/kg BW/day)	Hazard Quotient
Arsenic	1.04	0.0012
Beryllium	0.53	0.00012
Chromium	2.4	0.00032
Copper	5.6	0.000032
Molybdenum	0.26	0.00019
Nickel	1.7	0.00057
Selenium	0.143	0.000062
Sulphate [a]	1000	0.44
Tin	23.4	0.00026

Notes:
COPC = contaminant of potential concern
TRV = toxicity reference value
BW = body weight
[a] TRV is in mg/L. The hazard quotient is calculated by dividing the 95th percentile concentration predicted in TIA water (441 mg/L) by the TRV.

All hazard quotients for caribou exposure to COPCs from the TIA were well below 1.0. Even if more conservative assumptions are made (e.g., exposure occurs 365 days per year, background uptake of COPCs from vegetation in the diet are added to the EDI), the HQs are still below 1.0. Based on this assessment, the risks and potential for effects to caribou from TIA exposure are expected to be negligible.

5.6.5 Conclusions for the Phase 2 Project-related Environmental Risk Assessment

This Phase 2 Project ERA integrated the results of the environmental media predictive studies, ecological receptor characteristics, and regulatory-recommended TRVs. Existing environmental conditions (e.g., naturally-occurring environmental media concentrations of COPCs) were also considered to enable to identification of Phase 2 Project-related sources of risk to ecological receptor health. This assessment considered potential ecological receptor health risks associated with the summed exposure to COPCs from several exposure pathways (i.e., ingestion of soil, ingestion of drinking water, and ingestion of vegetation or prey items).

Concerns were raised about the potential for exposure of caribou to COPCs in tailings or water contained within the TIA. Therefore, a special assessment of risk for this exposure scenario was provided. A number of COPCs were identified in both floatation tailings and in water within the TIA (Section 5.6.1.3). The EDI for these COPCs was calculated (Section 5.6.2) and compared to TRVs for caribou (Section 5.6.3). The calculated HQs for caribou through ingestions of floatation tailings and water from the TIA were well below 0.2 for all COPCs. Therefore, the risks and potential for effects to caribou from TIA exposure are expected to be negligible.

For other ecological receptors across the wider LSA and RSA, screening for COPCs based on predictive model results indicates that the concentrations of parameters in soil and water are predicted to remain below applicable guidelines or within the range of natural variability (i.e., below guidelines and/or the same as existing conditions). No COPCs were identified in soil or water, indicating that the concentration of COPCs are not likely to change in freshwater or marine sediments, vegetation, or prey items (since the quality of these are dependent on soil and water). No COPCs were identified for ecological receptors, and risk characterization for ecological receptors would be similar to those described in the existing conditions ERA (Section 5.5.4).

5.7 REFERENCES

1994. *Mine Health and Safety Act, SNWT (Nu) 1994, c 25, <http://canlii.ca/t/lcwz> retrieved on 2016-11-24.*

2002. *Species at Risk Act*, SC. C. c. 29.

2007. *Worker's Compensation Act, Snu 2007, c.15 <http://canlii.ca/t/52fk4> retrieved on 2016-11-24.*

AANDC. 2012. *Water Management*. Aboriginal Affairs and Northern Development Canada. http://www.aadnc-aandc.gc.ca/eng/1100100037427/1100100037428 (accessed August 2015).

Adriano, D. C. 2001. *Trace Elements in Terrestrial Environments: Biogeochemistry, Bioavailability, and Risk of Metals*. Second ed. New York, NY: Springer-Verlag.

Alberta Environment. 2013. *Alberta Ambient Air Quality Objectives and Guidelines Summary*. Alberta Environment, Air Policy Branch. http://environment.gov.ab.ca/info/library/5726.pdf (accessed May 17, 2013).

Alberta ERCB. 2007. *Directive 38: Noise Control* Energy Resources Conservation Board: Calgary, AB.

ATSDR. 1992. *Toxicological Profile for Thallium*. Agency for Toxic Substances and Disease Registry. http://www.atsdr.cdc.gov/ToxProfiles/TP.asp?id=309&tid=49 (accessed April 2015).

ATSDR. 1999. *Toxicological Profile for Mercury*. United States Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry: Atlanta, GA.

ATSDR. 2003. *Toxicological Profile for Selenium*. United States Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry: Atlanta, GA.

ATSDR. 2005a. *Toxicological Profile for Nickel*. Agency for Toxic Substances & Disease Registry. http://www.atsdr.cdc.gov/ToxProfiles/TP.asp?id=245&tid=44 (accessed April 2015).

ATSDR. 2005b. *Toxicological Profile for Zinc*. Agency for Toxic Substances & Disease Registry. http://www.atsdr.cdc.gov/ToxProfiles/TP.asp?id=302&tid=54 (accessed April 2015).

ATSDR. 2007a. *Toxicological Profile for Arsenic*. Agency for Toxic Substances & Disease Registry. http://www.atsdr.cdc.gov/ToxProfiles/TP.asp?id=22&tid=3 (accessed April 2015).

ATSDR. 2007b. *Toxicological Profile for Lead*. Agency for Toxic Substances & Disease Registry. http://www.atsdr.cdc.gov/ToxProfiles/TP.asp?id=96&tid=22 (accessed April 2015).

ATSDR. 2008. *Toxicological Profile for Aluminum*. Atlanta, GA.

ATSDR. 2012. *Toxicological Profile for Cadmium*. Agency for Toxic Substances & Disease Registry. http://www.atsdr.cdc.gov/ToxProfiles/TP.asp?id=48&tid=15 (accessed April 2015).

Aulerich, R. J., R. K. Ringer, and S. Iwamoto. 1974. Effects of dietary mercury on mink. *Arch Environ Contam Toxicol*, 2: 43-51.

Banci, V. and R. Spicker. 2015. *Inuit Traditional Knowledge for TMAC Resources Inc. Proposed Hope Bay Project, Naonaiyaotit Traditional Knowledge Project (NTKP)*. Prepared for TMAC Resources Inc. Kitikmeot Inuit Association: Kugluktuk, NU.

BC MOE. 2001. Ambient Water Quality Guidelines for Mercury: Overview Report - First Update. http://www.env.gov.bc.ca/wat/wq/BCguidelines/mercury/mercury.html (accessed June 2016).

BC MOE. 2008. *Guidelines for Air Quality Dispersion Modelling in British Columbia*. British Columbia Ministry of Environment. http://www.bcairquality.ca/reports/pdfs/air_disp_model_08.pdf (accessed May 2013).

BC MOE. 2013. *Tier 1 Ecological Risk Assessment Policy Decision Summary*. British Columbia Ministry of Environment. http://www.env.gov.bc.ca/epd/remediation/standards_criteria/standards/tier1policy.htm (accessed September 2015).

BC MOE. 2016. Provincial Air Quality Objective Information Sheet: British Columbia Ambient Air Quality Objectives - Updated November 8, 2016. http://www.bcairquality.ca/reports/pdfs/aqotable.pdf (accessed November 2016).

Beatty, J. M. and G. A. Russo. 2014. *Ambient water quality guidelines for selenium technical report update*. British Columbia Ministry of Environment, Water Protection and Sustainability Branch, Environmental Sustainability and Strategic Policy Division: Victoria, BC.

Bloom, N. S. 1992. On the chemical form of mercury in edible fish and marine invertebrate tissue. *Canadian Journal of Fisheries and Aquatic Sciences*, 49: 1010-17.

Bradley, M. J., S. J. Kutz, E. Jenkins, and T. M. O'Hara. 2005. The potential impact of climate change on infectious diseases of Arctic fauna. *International Journal of Circumpolar Health*, 64 (5): 468–77.

Canadian Herpetological Society. 2012. Nunavut. http://www.carcnet.ca/english/amphibians/tour/province/amphNU.php (accessed November 2016).

Carriere, D., K. Fischer, D. Peakall, and P. Angehrn. 1986. Effects of dietary aluminum in combination with reduced calcium and phosphorus on the ring dove (*Streptopelia risoria*). *Water, Air, and Soil Poll*, 30: 757-64.

CCME. 1999. *Canadian Water Quality Guidelines for the Protection of Aquatic Life: Chromium - Hexavalent Chromium and Trivalent Chromium*. In: Canadian Environmental Quality Guidelines, 1999. Canadian Council of Ministers of the Environment: Winnipeg, MB.

CCME. 2000. *Canadian Tissue Residue Guidelines for the Protection of Wildlife Consumers of Aquatic Biota: Methylmercury. In: Canadian Environmental Quality Guidelines, 1999.* Canadian Council of Ministers of the Environment: Winnipeg, MB.

CCME. 2016a. *Canadian environmental quality guidelines - summary table*. Canadian Council of Ministers of the Environment. http://st-ts.ccme.ca/en/index.html (accessed August 2016).

CCME. 2016b. Resources: Particulate Matter and Ground-level Ozone. http://www.ccme.ca/en/resources/air/pm_ozone.html (accessed November 2016).

CCME. 2016c. Resources: Sulphur Dioxide. http://www.ccme.ca/en/resources/air/air/sulphur-dioxide.html (accessed November 2016).

CCREM. 1987. *Canadian water quality guidelines*. Canadian Council of Resource and Environment Ministers, Task Force on Water Quality Guidelines: Ottawa, ON.

Chamberland, G., D. Belanger, A. Dallaire, J. S. Blais, L. Vermette, and N. Lariviere. 1996. Urinary protein excretion of semidomesticated mink in a chronic methylmercury study. *Journal of Toxicology and Environmental Health*, 47: 285-97.

Chan, L., O. Receveur, D. Sharp, H. Schwartz, A. Ing, and C. Tikhonov. 2011. *First Nations Food, Nutrition & Environment Study (FNFNES): Results from British Columbia (2008/2009)*. University of Northern British Columbia: Prince George, BC.

Coad, S. 1994. *Consumption of Fish and Wildlife by Canadian Native Peoples: A Quantitative Assessment from the Published and Unpublished Literature*. Contract Report prepared for the Hazardous Waste Section, Environmental Health Directorate, Health and Welfare Canada: n.p.

COSEWIC. 2016. *Database of Wildlife Species Assessed by COSEWIC*. Committee on the Status of Endangered Species in Canada. http://www.cosewic.gc.ca/eng/sct5/index_e.cfm (accessed October 2016).

CSL. 2002. *Methods for Estimating Daily Food Intake of Wild Birds and Mammals. Final Report*. Project PN0908. Central Science Laboratory, Department for Environment, Food & Rural Affairs: York, UK.

Davis et al. 1987. Evaluation of the genetic and embryotoxic effects of bis(tri-nbutyltin)oxide (TBTO), a broad-spectrum pesticide, in multiple in vivo and in vitro short-term tests. *Muta Res*, 188: 65-95.

EFSA. 2009. Scientific opinion on arsenic in food. *European Food Safety Authority Journal*, 7 (10): 1351.

EFSA. 2014. Dietary exposure to inorganic arsenic in the European population. *European Food Safety Authority Journal*, 12 (3): 3597-665.

Egeland, G. M. 2010. *Inuit Health Survey 2007-2008: Nunavut. International Polar Year Inuit Health Survey: Health in Transition and Resiliency*. Centre for Indigenous Peoples' Nutrition and Environment, School of Dietetics and Human Nutrition, Macdonald Campus of McGill University: Anne de Bellevue, QC.

EGVM. 2003. *Safe Upper Limits of Vitamins and Minerals*. ISBN 10904026-11-7. Food Standard Agency, Expert Group on Vitamins and Minerals: n.p.

Environment Canada. 2012. *Federal Contaminated Sites Action Plan (FCSAP) Ecological Risk Assessment Guidance*. Government of Canada, Environment Canada: Gatineau, QC.

ERM. 2015a. *Back River Project Final Environmental Impact Statement Supporting Volume 8: Human Environment. Chapter 6: Human Health and Environmental Risk Assessment*. Prepared for Sabina Gold and Silver Corp. by ERM Consultants Canada Ltd.: Vancouver, BC.

ERM. 2015b. *Hope Bay (Phase 2) Project: Conceptual Project Description*. Prepared for TMAC Resources Inc. by ERM Consultants Canada Ltd.: Vancouver, BC.

ERM. 2016a. *Phase 2 - Draft Environmental Impact Statement (DEIS): Environmental Noise and Vibration Study Report*. Prepared for TMAC Resources Inc. by ERM Australia: Sydney, AU.

ERM. 2016b. *Phase 2 of the Hope Bay Project: Air Quality Modeling Study*. Prepared for TMAC Resources Inc. by ERM Consultants Canada Ltd.: Vancouver, British Columbia.

ERM and EDI. 2016. *Hope Bay Project: Caribou Workshop*. Prepared for TMAC Resources Inc. by ERM Consultants Canada Ltd.: Vancouver, British Columbia and EDI Environmental Dynamics Inc: Whitehorse, Yukon: Vancouver, British Columbia.

ERM Rescan. 2014a. *Doris North Project: 2013 Air Quality Compliance Monitoring Report*. Prepared for TMAC Resources Inc. by ERM Rescan: Yellowknife, Northwest Territories.

ERM Rescan. 2014b. *Doris North Project: 2014 Air Quality Compliance Program*. Prepared for TMAC Resources Inc. by ERM Consultants Canada Ltd.: Yellowknife, Northwest Territories.

Formigli, L., R. Scelsi, P. Poggi, C. Gregotti, A. DiNucci, E. Sabbioni, L. Gottardi, and L. Manzo. 1986. Thallium-induced testicular toxicity in the rat. *Environ Res*, 40: 531-39.

Freundt and Ibrahim. 1990. Growth of rats during a subchronic intake of the heavy metals Pb, Cd, Zn, Mn, Cu, Hg, and Be. *Pol J Occup Med*, 3 (2): 227-32.

Golder and Associates. 2005. *Guidance Document for Country Foods Surveys for the Purpose of Human Health Risk Assessment*. Prepared for Health Canada: n.p.

Golder Associates Ltd. 2005. *Guidance for Including Country Foods in Human Health Risk Assessments for Federal Contaminated Sites*. 04-1412-041. Prepared for Health Canada: Burnaby, BC.

Golder Associates Ltd. 2008. *Doris North Project 2007 Noise Measurement Report*. Prepared for Hope Bay Mining Ltd. Doris North, Hope Bay Project by Golder Associates Ltd.: Calgary, AB.

Golder Associates Ltd. 2009. *Doris North Project 2008 Noise Monitoring Report*. Prepared for Hope Mining Ltd. by Golder Associates Ltd.: Calgary, AB.

Golder Associates Ltd. 2014. *Volume 10.0 - Environmental and Human Health Risk Assessment. Final Environmental Impact Statement (FEIS) - Meliadine Gold Project, Nunavut*. Prepared for Agnico Eagle Mine Limited by Golder Associates Ltd.: n.p.

Golder Associates Ltd. 2015. *Human and Wildlife Heath Risk Assessment Report for the Jay Project*. Prepared for Dominion Diamond Ekati Corporation by Golder Associates Ltd.: n.p.

Golub, M. S., S. L. Germann, B. Han, and C. L. Keen. 2000. Lifelong feeding of a high aluminum diet to mice. *Toxicology*, 150: 107-17.

Government of Nunavut. 2011. *Environmental Guideline for Ambient Air Quality*. http://env.gov.nu.ca/sites/default/files/guideline_-_ambient_air_quality_2011.pdf (accessed May 1, 2013).

Health Canada. 1999. *Canadian Handbook on Health Impact Assessment Volume 1: The Basics*. A report of the Federal/Provincial/Territorial Committee on Environmental and Occupational Health: Ottawa, ON.

Health Canada. 2000. *Decision-Making Framework for Identifying, Assessing, and Managing Health Risks*. Health Canada. http://www.hc-sc.gc.ca/ahc-asc/pubs/hpfb-dgpsa/risk-risques_tc-tm-eng.php (accessed April 18, 2013).

Health Canada. 2007a. *Human Health Risk Assessment of Mercury in Fish and Health Benefits of Fish Consumption*. Bureau of Chemical Safety, Food Directorate, Health Products and Food Branch: Ottawa, ON.

Health Canada. 2007b. *Procedure Manual for Safe Drinking Water in First Nations Communities South of 60°*. Minister of Health, First Nations and Inuit Health Branch, Environmental Health Division. http://publications.gc.ca/collections/collection_2007/hc-sc/H34-140-2007E.pdf (accessed May 23, 2013).

Health Canada. 2010a. *Draft Federal Contaminated Site Risk Assessment in Canada, Supplemental Guidance on Human Health Risk Assessment for Country Foods ($HHRA_{FOODS}$)*. Version 1.2 (Draft). Contaminated Sites Division, Safe Environments Directorate: Ottawa, ON.

Health Canada. 2010b. *Federal Contaminated Site Risk Assessment in Canada, Part I: Guidance on Human Health Preliminary Quantitative Risk Assessment (PQRA)*. Version 2.0. Revised 2012. Contaminated Sites Division, Safe Environments Directorate: Ottawa, ON.

Health Canada. 2010c. *Federal Contaminated Site Risk Assessment in Canada, Part II: Health Canada Toxicological Reference Values (TRVs) and Chemical-Specific Factors*. Version 2.0. Contaminated Sites Division, Safe Environments Directorate: Ottawa, ON.

Health Canada. 2010d. *Federal Contaminated Site Risk Assessment in Canada, Part V: Guidance on Human Health Detailed Quantitative Risk Assessment for Chemicals (DQRA$_{CHEM}$)*. Contaminated Sites Division, Safe Environments Directorate: Ottawa, ON.

Health Canada. 2010e. *Federal Contaminated Site Risk Assessment in Canada, Supplemental Guidance on Human Health Risk Assessment for Country Foods (HHRA$_{Foods}$)*. Contaminated Sites Division, Safe Environments Directorate: Ottawa, ON.

Health Canada. 2010f. *Useful Information for Environmental Assessments*. 978-1-001-15153-3. Health Canada, Environmental Assessment Division: Ottawa, ON.

Health Canada. 2011. *Toxicological Reference Values, Estimated Daily Intakes or Dietary Reference Values for Trace Elements. Obtained from Chemical Health Hazard* Revised March 2011, unpublished: Ottawa, ON.

Health Canada. 2012. *Guidelines for Canadian Recreational Water Quality, third edition*. Water, Air and Climate Change Bureau, Healthy Environments and Consumer Safety Branch, Health Canada: Ottawa, ON.

Health Canada. 2013a. *Final Human Health State of the Science Report on Lead*. Health Canada: Ottawa, ON.

Health Canada. 2013b. *Risk Management Strategy for Lead*. Health Canada: Ottawa, ON.

Health Canada. 2015. *Guidelines for Canadian drinking water quality - summary table*. Federal-Provincial-Territorial Committee on Drinking Water of the Federal-Provincial-Territorial Committee on Health and the Environment. http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/sum_guide-res_recom/index-eng.php (accessed January 2015).

Heinz, G. H. 1976a. Methylmercury: second-generation reproductive and behavioral effects on mallard ducks. *Journal of Wildlife Management*, 40: 710-15.

Heinz, G. H. 1976b. Methylmercury: second-year feeding effects on mallard reproduction and duckling behavior. *Journal of Wildlife Management*, 40: 82-90.

Heinz, G. H. 1979. Methylmercury: reproductive and behavioral effects on three generations of mallard ducks. *Journal of Wildlife Management*, 43: 394-400.

Herrman, J. and M. Younes. 1999. Background to the ADI/TDI/PTWI. *Regulatory Toxicology and Pharmacology*, 30: S109-S13.

Hill, E. F. and C. S. Schaffner. 1976. Sexual maturation and productivity of Japanese Quail fed graded concentrations of mercuric chloride. *Poult Sci*, 55: 1449-59.

INAC. 2003. *Nutrition and Food Security in Kugaaruk, Nunavut Baseline Survey for the Food Mail Pilot Project*. Indian and Northern Affairs Canada: Ottawa, ON.

JECFA. 1972. *Cadmium*. Presented at Joint FAO/WHO Expert Committee on Food Additives (JECFA), n.p.

JECFA. 1982. *Zinc*. Presented at Joint FAO/WHO Expert Committee on Food Additives (JECFA), n.p.

JECFA. 2000. *Lead. Safety Evaluation of Certain Food Additives and Contaminants. Prepared by the Fifty-third meeting of the Joint FAO/WHO Expert Committee on Food Additives (JECFA)*. Joint

FAO/WHO Expert Committee on Food Additives (JECFA). http://www.inchem.org/documents/jecfa/jecmono/v44jec12.htm (accessed March 2013).

JECFA. 2005. *Cadmium. Summary of Evaluations Performed by the Join FAO/WHO Expert Committee on Food Additives*. Joint FAO/WHO Expert Committee on Food Additives (JECFA). http://www.inchem.org/documents/jecfa/jeceval/jec_297.htm (accessed March 2013).

JECFA. 2007a. *Aluminum. Safety Evaluation of Certain Food Additives.* Prepared by the sixty-seventh meeting of the Joint FAO/WHO Expert Committee on Food Additives (JEFCA). (accessed March 2013).

JECFA. 2007b. *Methylmercury. Safety Evaluation of Certain Food Additives*. Prepared by the sixty-seventh meeting of the Joint FAO/WHO Expert Committee on Food Additives (JEFCA). http://whqlibdoc.who.int/trs/WHO_TRS_940_eng.pdf (accessed March 2013).

JECFA. 2010. *Arsenic*. Joint FAO/WHO Expert Committee on Food Additives (JECFA). http://apps.who.int/ipsc/database/evaluations/chemical.aspx?chemID=1863 (accessed March 2013).

JECFA. 2011. *Safety Evaluation of Certain Food Additives and Contaminants*. WHO Technical Report Series 960. Prepared by the Seventy-third Meeting of the Joint FAO/WHO Expert Committee on Food Additives (JECFA): Geneva, CH.

Kuhnlein, H. V., H. M. Chan, D. Leggee, and V. Barthet. 2002. Macronutrient, mineral and fatty acid composition of Canadian Arctic traditional foods. *Journal of Food Composition and Analysis* 15: 5445-566.

Kuhnlein, H. V. and O. Receveur. 2001. *Personal Communication*. Center for Indigenous People's Nutrition and Environment (CINE): Sainte-Anne-de Bellevue, QC.

Leighton, F. A. 2003. Pathogens and Disease. In *Handbook of Ecotoxicology, 2nd Edition*. Eds. D. J. Hoffman, B. A. Rattner, G. A. J. Burton, and J. J. Cairns. Boca Raton, FL: Lewis Publishers, A CRC Press Company.

Leighton, F. A. 2011. *Wildlife Pathogens and Diseases in Canada. Canadian Biodiversity: Ecosystem Status and Trends 2010*. Technical Thematic Report No. 7. Canadian Councils of Resource Ministers: Ottawa, ON.

MacKenzie, R. D., R. U. Byerrum, C. F. Decker, C. A. Hoppert, and R. F. Langham. 1958. Chronic toxicity studies. II. Hexavalent and trivalent chromium administered in drinking water to rats. *American Medical Association for Archives of Industrial Health*, 18: 232-34.

Manitoba Government. 2005. Objectives and Guidelines for Various Air Pollutants: Ambient Air Quality Criteria (updated July, 2005). Conservation and Water Stewardship, Environmental Programs & Strategies. https://www.gov.mb.ca/conservation/envprograms/airquality/pdf/criteria_table_update_july_2005.pdf (accessed March 2016).

Miramar Hope Bay Ltd. 2005. *Final Environmental Impact Statement for Doris North Project*. n.p.

Nancarrow, T. L. 2007. Climate Change Impacts on Dietary Nutrient Status of Inuit in Nunavut, Canada. Master of Science diss., School of Dietetics and Human Nutrition, McGill University.

Nicholson, H. C. 2002. *Arsenic in Plants Important to Two Yukon First Nations: Impacts of Gold Mining and Reclamation Practices*. MERG Report 2002-4. Mining Environment Research Group: Whitehorse, YT.

NIRB. 2012. *Guidelines for the Preparation of an Environmental Impact Statement for Hope Bay Mining Ltd.'s Phase 2 Hope Bay Belt Project*. NIRB File No. 12MN001. Nunavut Impact Review Board: Cambridge Bay, NU.

Nosal, M., A. H. Legge, and S. V. Krupa. 2000. Application of a stochastic, Weibull probability generator for replacing missing data on ambient concentrations of gaseous pollutants. *Environmental Pollution*, 108 (3): 439-46.

NPC. 2004. *West Kitikmeot Regional Land Use Plan: Preliminary Draft*. Nunavut Planning Commission: Cambridge Bay, NU.

NRCan. 2014. *Communities, Health and Well-Being*. Natural Resources Canada. http://www.nrcan.gc.ca/environment/impacts-adaptation/assessments/10035 (accessed September 2015).

Ondreicka, R., E. Ginter, and J. Kortus. 1966. Chronic toxicity of aluminum in rats and mice and its effects on phosphorus metabolism. *Brit J Indust Med*, 23: 305-13.

Ontario MOE. 2012. *Ontario's Ambient Air Quality Criteria*. Standards Development Branch, Ontario Ministry of Environment. http://www.airqualityontario.com/downloads/AmbientAirQualityCriteria.pdf (accessed February 2015).

Phillips, D. J. H. 1990. Arsenic in aquatic organisms: a review, emphasizing chemical speciation. *Aquatic Toxicology*, 16: 151-86.

Polley, L., E. Hoberg, and S. J. Kutz. 2010. Climate change, parasites and shifting boundaries. *Acta Veterinaria Scandinavia*, 52 (S1): 1-5.

Priest, H. and P. J. Usher. 2004. *Nunavut Wildlife Harvest Study. Final Report*. Prepared for Nunavut Wildlife Management Board (NWMB): n.p.

Rahman, M. A., H. Haseqawa, and R. P. Lim. 2012. Bioaccumulation, biotransformation and trophic transfer of arsenic in the aquatic food chain. *Environmental Research*, 116: 118-35.

RAIS. 2010. *Chemical Factors*. Risk Assessment Information System. http://rais.ornl.gov/index.html (accessed January 2012).

Rescan. 2009. *Doris North Gold Mine Project: Air Quality Compliance Report for Section 4 Item 30 of the Project Certificate*. Prepared for Hope Bay Mining Ltd. by Rescan Environmental Services Ltd.: Vancouver, BC.

Rescan. 2010a. *2009 Freshwater Fish and Fish Habitat Baseline Report, Hope Bay Belt Project*. Prepared for Hope Bay Mining Ltd. by Rescan Environmental Services Ltd.: Vancouver, BC.

Rescan. 2010b. *2009 Marine Baseline Report, Hope Bay Belt Project*. Prepared for Hop Bay Mining Limited by Rescan Environmental Services Ltd.: Vancouver, BC.

Rescan. 2010c. *Doris North Gold Mine Project: Air Quality Compliance Report Q1 and Q2, 2010*. Prepared for Hope Bay Mining Ltd. by Rescan Environmental Services Ltd.: Vancouver, BC.

Rescan. 2010d. *Hope Bay Belt Project: 2009 Freshwater Baseline Report*. Prepared for Hope Bay Mining Ltd. by Rescan Environmental Services Ltd.: Vancouver, BC.

Rescan. 2011a. *Doris North Gold Mine Project: 2010 Aquatic Effects Monitoring Program Report*. Prepared for Hope Bay Mining Limited by Rescan Environmental Services Ltd.: Vancouver, BC.

Rescan. 2011b. *Doris North Gold Mine Project: 2010 Noise Compliance Report*. Prepared for Hope Bay Mining Limited by Rescan Environmental Services Ltd.: Vancouver, British Columbia.

Rescan. 2011c. *Doris North Gold Mine Project: Air Quality Compliance Report Q1 and Q2, 2011.* Prepared for Hope Bay Mining Ltd. by Rescan Environmental Services Ltd.: Vancouver, BC.

Rescan. 2011d. *Doris North Gold Mine Project: Air Quality Compliance Report Q3 and Q4, 2010.* Prepared for Hope Bay Mining Ltd. by Rescan Environmental Services Ltd.: Vancouver, BC.

Rescan. 2011e. *Doris North Gold Mine Project: Wildlife Mitigation and Monitoring Program, 2010.* Prepared for Hope Bay Mining Ltd. by Rescan Environmental Services Ltd.: Vancouver, BC.

Rescan. 2011f. *Hope Bay Belt Project: 2010 Ecosystem and Vegetation Baseline Report*. Prepared for Hope Bay Mining Ltd. by Rescan Environmental Services Ltd.: Vancouver, BC.

Rescan. 2011g. *Hope Bay Belt Project: 2010 Freshwater Baseline Report*. Prepared for Hope Bay Mining Ltd. by Rescan Environmental Services Ltd.: Vancouver, BC.

Rescan. 2011h. *Hope Bay Belt Project: 2010 Freshwater Fish and Fish Habitat Baseline Report*. Prepared for Hope Bay Mining Limited by Rescan Environmental Services Ltd.: Vancouver, BC.

Rescan. 2011i. *Hope Bay Belt Project: 2010 Marine Baseline Report*. Prepared for Hope Bay Mining Ltd. by Rescan Environmental Services Ltd.: Vancouver, BC.

Rescan. 2011j. *Hope Bay Belt Project: 2010 Regional Marine Baseline Report*. Prepared for Hope Bay Mining Limited. by Rescan Environmental Services Ltd: Vancouver, BC.

Rescan. 2011k. *Hope Bay Belt Project: 2010 Terrain and Soils Baseline Report*. Prepared for Hope Bay Mining Limited by Rescan Environmental Services Ltd: Vancouver, BC.

Rescan. 2012a. *Doris North Gold Mine Project: 2012 Air Quality Compliance Report*. Prepared for Hope Bay Mining Ltd. by Rescan Environmental Services Ltd.: Vancouver, BC.

Rescan. 2012b. *Doris North Gold Mine Project: Air Quality Compliance Report Q3 and Q4, 2011*. Prepared for Hope Bay Mining Ltd. by Rescan Environmental Services Ltd.: Vancouver, BC.

Rescan. 2012c. *Hope Bay Belt Project: 2011 Socio-economic and Land Use Baseline Report*. Prepared for Hope Bay Mining Ltd. by Rescan Environmental Services Ltd.: Vancouver, BC.

Richardson, G. M. 1997. *Compendium of Canadian Human Exposure Factors for Risk Assessment* O'Connor Associates Environmental Inc.: Ottawa, ON.

Richardson, G. M. and Stantec Consulting Ltd. 2013. *Canadian Exposure Factors Handbook*. Toxicology Centre, University of Saskatchewan: Saskatoon, SK.

Rosemond, S. D., Q. Xie, and K. Liber. 2008. Arsenic concentration and speciation in fish freshwater fish species from Back Bay near Yellowknife, NT, Canada. *Environmental Monitoring and Assessment*, 147: 199-210.

Roy, P. and A. Saha. 2002. Metabolism and toxicity of arsenic: a human carcinogen. *Current Science*, 82 (1): 38-45.

Sample, B. E., M. S. Aplin, R. A. Efroymson, G. W. Suter II, and C. J. E. Welsh. 1997. *Methods and Tools for Estimation of the Exposure of Terrestrial Wildlife to Contaminants*. ORNL/TM-13391. Oak Ridge National Laboratory, US Department of Energy: Oak Ridge, TN.

Sample, B. E., D. M. Opresko, and G. W. Suter. 1996. *Toxicological Benchmarks for Wildlife: 1996 Revision*. ES/ER/TM-86/R3. Prepared by the Risk Assessment Program, Health Science Research Division for the United States Department of Energy, Office of Environmental Management: Oak Ridge, TN.

Schafer, E. W. 1972. The acute oral toxicity of 369 pesticidal, pharmaceutical and other chemicals to wild birds. *Toxicol Appl Pharmacol*, 21: 315-30.

Schroeder and Mitchener. 1975. Life-term studies in rats: effects of aluminum, barium, beryllium, and tungsten. *The Journal of Nutrition*, 105 (4): 421-27.

Shearer, R. R. and D. M. Hadjimarkos. 1975. Geographic distribution of selenium in human milk. *Archives of Environmental Health*, 30: 230-33.

Slejkovec, Z., Z. Bajc, and D. Z. Doganoc. 2004. Arsenic speciation patterns in freshwater fish. *Talanta*, 62 (5): 931–36.

Springborn Laboratories Inc. 2000. *An Oral (Gavage) Two-Generation Reproduction Toxicity Study in Sprague-Dawley Rats with Nickel Sulphate Hexahydrate*. Study No. 3472.2. Prepared by Springborn Laboratories Inc. for Nickel Producers Environmental Research Association: Durham, NC.

SRK. 2015. *Geochemical Characterization of Tailings from the Doris Deposits, Hope Bay*. Prepared for TMAC Resources Inc. by SRK Consulting (Canada) Inc.: Vancouver, BC.

SRK. 2016a. *Geochemical Characterization of Phase 2 Quarries, Hope Bay Project*. Report prepared for TMAC Resources by SRK Consulting (Canada) Inc.: Vancouver, BC.

SRK. 2016b. *Geochemical Characterization of Tailings from the Madrid North, Madrid South and Boston Deposits, Hope Bay Project*. Prepared for TMAC Resources Inc. by SRK Consulting (Canada) Inc.: Vancouver, BC.

SRK. 2016c. *Geochemical Characterization of Waste Rock and Ore from the Boston Deposit, Hope Bay Project*. Report prepared for TMAC Resources by SRK Consulting (Canada) Inc.: Vancouver, BC.

SRK. 2016d. *Geochemical Characterization of Waste Rock and Ore, Madrid North Deposit, Hope Bay Project*. Report prepared for TMAC Resources by SRK Consulting (Canada) Inc.: Vancouver, BC.

SRK. 2016e. *Geochemical Characterization of Waste Rock and Ore, Madrid South Deposit, Hope Bay Project*. Report prepared for TMAC Resources by SRK Consulting (Canada) Inc.: Vancouver, BC.

Standards Australia. 2006. *AS2187.2-2006™ Explosives—Storage and Use Part 2: Use of Explosives (Appendix J)*. Standards Australia: Sydney, NSW.

Stantec. 2009. *Environmental Assessment Scoping Guidance for Energy and Mining Projects*. Prepared for the Regulatory Performance Improvement Working Group (RPIWG) by Jacques Whitford Stantec Limited (JWSL): Vancouver, BC.

Statistics Canada. 2008. *Inuit Health, Education and Country Food Harvesting*. http://www.statcan.gc.ca/pub/89-637-x/89-637-x2008004-eng.pdf (accessed January 2012).

Statistics Canada. 2015. *2011 Census Profile*. http://www12.statcan.gc.ca/census-recensement/2011/dp-pd/prof/index.cfm?Lang=E (accessed September 2015).

Staven, L. H., K. Rhoads, B. A. Napier, and D. L. Strenge. 2003. *A Compendium of Transfer Factors for Agricultural and Animal Products*. PNNL-13421. Pacific Northwest National Laboratory US Department of Energy: Richland, WA.

Swanson, H. K., K. A. Kidd, J. A. Babaluk, R. J. Wastle, P. P. Yang, N. M. Halden, and J. D. Reist. 2010. Anadromy in Arctic populations of lake trout (*Salvelinus namaycush*): otolith microchemistry, stable isotopes, and comparisons with Arctic char (*Salvelinus alpinus*). *Canadian Journal of Fisheries and Aquatic Sciences*, 67: 842-53.

Tenenbein, M. 2005. Unit-dose packaging of iron supplements and reduction of iron poisoning in young children. *Archives of Paediatrics and Adolescent Medicine*, 159 (6): 557-60.

Texas CEQ. 2016. Effects Screening Levels (ESL) Lists Used in the Review of Air Permitting Data (November 2016 update). http://www.tceq.texas.gov/toxicology/esl/list_main.html#esl_1 (accessed December 2016).

Thorpe, N. L. 2000. Contributions of Inuit Ecological Knowledge to Understanding the Impacts of Climate Change on the Bathurst Caribou Herd in the Kitikmeot Region, Nunavut. Ph.D. diss., Simon Fraser University.

US EPA. 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. United States Environmental Protection Agency, Office of Noise Abatement and Control. www.nonoise.org/library/levels74/levels74.htm (accessed May 14, 2013).

US EPA. 1993. *Wildlife Exposure Factors Handbook*. EPA/600/R-93/187. United States Environmental Protection Agency, Office of Health and Environmental Assessment, Office of Research and Development: Washington, DC.

US EPA. 1997a. *Health Effects Assessment Summary Table*. United States Environmental Protection Agency, Office of Research and Development: Washington, DC.

US EPA. 1997b. *Mercury Study Report to Congress. Vol. III: Fate and Transport of Mercury in the Environment*. United States Environmental Protection Agency: Washington, DC.

US EPA. 1999a. *Screening Level Ecological Risk Assessment Protocol for Hazardous Waster Combustion Facilities*. EPA 530-D-99-001A. United States Environmental Protection Agency Region 6, Office of Soild Waste: n.p.

US EPA. 1999b. *Screening Level Ecological Risk Assessment Protocol. Appendix C: Media-to-Receptor Bioconcentration Factors (BCFs)*. United States Environmental Protection Agency, Office of Solid Waste: n.p.

US EPA. 2000a. *Assigning Values to Non-Detected/Non-Quantified Pesticide Residues*. United States Environmental Protection Agency, Office of Pesticide Programs: Washington, DC.

US EPA. 2000b. Risk Assessment and Fish Consumption Limits. In *Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories*.Washington, DC: United States Environmental Protection Agency, Office of Science and Technology, Office of Water.

US EPA. 2003a. *Ecological Soil Screening Level for Aluminum*. OSWER Directive 9285.7-60. United States Environmental Protection Agency, Office of Solid Waste and Emergency Response: Washington, DC.

US EPA. 2003b. *Guidance for Developing Ecological Soil Screening Levels (Eco-SSLs)*. OSWER Directive 9285.7-55. United States Environmental Protection Agency: Washington, DC.

US EPA. 2005a. *Ecological Soil Screening Levels for Arsenic*. OSWER Directive 9285.7-62. United States Environmental Protection Agency, Office of Solid Waste and Emergency Response: Washington, DC.

US EPA. 2005b. *Ecological Soil Screening Levels for Beryllium*. OSWER Directive 9285.7-64. United States Environmental Protection Agency, Office of Solid Waste and Emergency Response: Washington, DC.

US EPA. 2005c. *Ecological Soil Screening Levels for Cadmium*. OSWER Directive 9285.7-65. United States Environmental Protection Agency, Office of Solid Waste and Emergency Response: Washington, DC.

US EPA. 2005d. *Ecological Soil Screening Levels for Lead*. OSWER Directive 9285.7-70. United States Environmental Protection Agency, Office of Solid Waste and Emergency Response: Washington, DC.

US EPA. 2005e. *Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities*. EPA520-R-05-006. United States Environmental Protection Agency, Office of Solid Waste and Emergency Response: Washington, DC.

US EPA. 2007a. *Ecological Soil Screening Levels for Copper*. OSWER Directive 9285.7-68. United States Environmental Protection Agency, Office of Solid Waste and Emergency Response: Washington, DC.

US EPA. 2007b. *Ecological Soil Screening Levels for Nickel*. OSWER Directive 9285.7-76. United States Environmental Protection Agency, Office of Solid Waste and Emergency Response: Washington, DC.

US EPA. 2007c. *Ecological Soil Screening Levels for Selenium*. OSWER Directive 9285.7-72. United States Environmental Protection Agency, Office of Solid Waste and Emergency Response: Washington, DC.

US EPA. 2007d. *Ecological Soil Screening Levels for Zinc*. OSWER Directive 9285.7-73. United States Environmental Protection Agency, Office of Solid Waste and Emergency Response: Washington, DC.

US EPA. 2008. *Ecological Soil Screening Levels for Chromium*. OSWER Directive 9285.7-66. United States Environmental Protection Agency, Office of Solid Waste and Emergency Response: Washington, DC.

US EPA. 2010. *Ecological Soil Screening Levels (Eco-SSL)*. United States Environmental Protection Agency. http://www.epa.gov/ecotox/ecossl/ (accessed September 2015).

US EPA. 2015. *Integrated Risk Information System (IRIS)*. United States Environmental Protection Agency. http://www.epa.gov/IRIS/ (accessed September 2015).

US EPA. 2016a. Ecotox User Guide: Ecotoxicology Database System. Version 4.0. http://cfpub.epa.gov/ecotox/ (accessed January 2016).

US EPA. 2016b. Integrated Risk Information System (IRIS). http://www.epa.gov/IRIS/ (accessed January 2016).

Walker, C. H., S. P. Hopkin, R. M. Sibly, and D. B. Peakall. 2001. *Principles of Ecotoxicology*. 2nd ed. New York, NY: Taylor & Francis.

Washington State. 2015. Washington Administrative Code (WAC 173-460-150): Table of ASIL, SQER, and de minimis emission values. http://apps.leg.wa.gov/WAC/default.aspx?cite=173-460-150 (accessed September 2016).

WHO. 1948. *Preamble to the Constitution of the World Health Organization as Adopted by the International Health Conference, New York, 19-22 June, 1946; Signed on 22 July 1946 by the Representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and Entered into Force on 7 April 1948*. World Health Organization: New York, NY.

WHO. 1982. *Toxicological Evaluation of Certain Veterinary Drug Residues in Food*. Presented at Prepared by the 26th Meeting of the Joint FAO/WHO Expert Committee on Food Additives (JECFA), International Programme on Chemical Safety, World Health Organization, Geneva, CH.

WHO. 1984. *Health Promotion: A Discussion Paper on the Concept and Principles*. World Health Organization, Regional Office for Europe: Copenhagen, DK.

WHO. 1999. *Guidelines for Community Noise*. A68672. World Health Organization: Geneva, CH.

Wilson, R. and G. M. Richardson. 2013. Lead (Pb) is now a non-threshold substance: how does this affect soil quality guidelines? *Human and Ecological Risk Assessment*, 19 (5): 1152-71.

Yang, G.-Q. and R.-H. Zhou. 1994. Further observations on the human maximum safe dietary selenium intake in a seleniferous area of China. *Journal of Trace Elements and Electrolytes in Health and Disease*, 8: 159-65.

Zhang, J. and X. Li. 1987. Chromium pollution of soil and water in Jinzhou. *Chinese Journal of Preventive Medicine*, 21: 262-64.