

Appendix 21-F

Predicted Metal Concentrations in Vegetation due to Root Uptake of Metals from Soil and Direct Deposition of Metals in Dustfall for the Operation Phase of the Brucejack Gold Mine Project

Appendix 21-F. Predicted Metal Concentrations in Vegetation due to Root Uptake of Metals from Soil and Direct Deposition of Metals in Dustfall for the Operation Phase of the Brucejack Gold Mine Project

Metals	Parameters in Dustfall Calculation				BJ018 <i>Stereocaulon</i> spp.				BJ024 <i>Cladina stygia</i>				BJ028 <i>Stereocaulon</i> spp.			
	Rp for Lichen and Sedge	kp (year ⁻¹)	Tp (year)	Yp for Lichen and Sedge (kg DW/m ²)	Baseline Concentration ¹ (mg/kg)	Predicted Concentration due to Root Uptake ² (mg/kg)	Predicted Concentration due to Dustfall ³ (mg/kg)	Predicted Concentration ⁴ (mg/kg)	Baseline Concentration ¹ (mg/kg)	Predicted Concentration due to Root Uptake ² (mg/kg)	Predicted Concentration due to Dustfall ³ (mg/kg)	Predicted Concentration ⁴ (mg/kg)	Baseline Concentration ¹ (mg/kg)	Predicted Concentration due to Root Uptake ² (mg/kg)	Predicted Concentration due to Dustfall ³ (mg/kg)	Predicted Concentration ⁴ (mg/kg)
Selenium	0.769	18	0.493	5.66	0.055	0.107	0.0113	0.118	0.0210	0.0210	0.00609	0.0271	0.0600	0.0600	0.0000357	0.0600

Metals	BJ030 <i>Stereocaulon</i> spp.				W005 <i>Carex aquatilis</i>				W009 <i>Carex aquatilis</i>				W023 <i>Carex aquatilis</i>			
	Baseline Concentration ¹ (mg/kg)	Predicted Concentration due to Root Uptake ² (mg/kg)	Predicted Concentration due to Dustfall ³ (mg/kg)	Predicted Concentration ⁴ (mg/kg)	Baseline Concentration ¹ (mg/kg)	Predicted Concentration due to Root Uptake ² (mg/kg)	Predicted Concentration due to Dustfall ³ (mg/kg)	Predicted Concentration ⁴ (mg/kg)	Baseline Concentration ¹ (mg/kg)	Predicted Concentration due to Root Uptake ² (mg/kg)	Predicted Concentration due to Dustfall ³ (mg/kg)	Predicted Concentration ⁴ (mg/kg)	Baseline Concentration ¹ (mg/kg)	Predicted Concentration due to Root Uptake ² (mg/kg)	Predicted Concentration due to Dustfall ³ (mg/kg)	Predicted Concentration ⁴ (mg/kg)
Selenium	0.105	0.120	0.000867	0.121	0.500	0.500	0.00609	0.506	0.500	0.500	0.00609	0.506	0.500	0.500	0.00609	0.506

Metals	W037 <i>Carex aquatilis</i>				W047 <i>Carex aquatilis</i>				W055 <i>Carex aquatilis</i>				W058 <i>Carex aquatilis</i>			
	Baseline Concentration ¹ (mg/kg)	Predicted Concentration due to Root Uptake ² (mg/kg)	Predicted Concentration due to Dustfall ³ (mg/kg)	Predicted Concentration ⁴ (mg/kg)	Baseline Concentration ¹ (mg/kg)	Predicted Concentration due to Root Uptake ² (mg/kg)	Predicted Concentration due to Dustfall ³ (mg/kg)	Predicted Concentration ⁴ (mg/kg)	Baseline Concentration ¹ (mg/kg)	Predicted Concentration due to Root Uptake ² (mg/kg)	Predicted Concentration due to Dustfall ³ (mg/kg)	Predicted Concentration ⁴ (mg/kg)	Baseline Concentration ¹ (mg/kg)	Predicted Concentration due to Root Uptake ² (mg/kg)	Predicted Concentration due to Dustfall ³ (mg/kg)	Predicted Concentration ⁴ (mg/kg)
Selenium	0.500	0.500	0.00609	0.506	0.500	0.500	0.00609	0.506	0.500	0.500	0.00609	0.506	0.500	0.500	0.00609	0.506

Metals	W060 <i>Carex aquatilis</i>			
	Baseline Concentration ¹ (mg/kg)	Predicted Concentration due to Root Uptake ² (mg/kg)	Predicted Concentration due to Dustfall ³ (mg/kg)	Predicted Concentration ⁴ (mg/kg)
Selenium	0.500	0.500	0.00609	0.506

Notes:

¹ Baseline concentrations are from samples collected in 2012 (dry weight)

² Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix 21-E with the biotransfer factor. For sites where soil and vegetation were not co-collected, it was assumed that the predicted concentration via root uptake is equivalent to the measured baseline concentration at that site.

³ Predicted vegetation concentration due to dustfall deposition is calculated using US EPA (2005).

⁴ Total predicted vegetation concentrations are the sum of concentrations due to root uptake and deposition.