BLACKWATER GOLD PROJECT: SUMMARY OF CONTAMINANTS OF POTENTIAL CONCERN (COPCS) EXCEEDING BC WATER QUALITY GUIDELINES AND THE RANGE OF BASELINE SEASONAL VARIABILITY

Waterbody (Assessment Node)	Water Quality Parameter	Water Quality Guideline (mg/L)	Occurrence of COPC			Predicted Concentration Range (mg/L)*		Range of Seasonal Baseline Variability (mg/L);	
			Phase	Month	Frequency	Minimum	Maximum	5th Percentile	95th Percentile
Davidson Creek (WQ26)	Nitrate	3 (long-term aquatic life)	Operations	June	35%	4.00	4.68	0.0081	0.0520
	Total Antimony	0.006 (drinking water)	Post-Closure	April	19%	0.0060	0.0083	0.00003	0.00006
				May	47%	0.0063	0.0085	0.00003	0.00006
				June	5%	0.0063	0.0066	0.00003	0.00006
	Total Zinc	0.0075 (long-term aquatic life)	Post-Closure	January	13%	0.0075	0.0076	0.0022	0.0039
				February	53%	0.0077	0.0081	0.0022	0.0039
				March	10%	0.0076	0.0077	0.0007	0.0029
				April	5%	0.0077	0.0077	0.0007	0.0029
				November	6%	0.0075	0.0076	0.0022	0.0039
Davidson Creek (WQ7)	Nitrate	3 (long-term aquatic life)	Operations	June	35%	3.68	4.26	0.0025	0.0500
	Total Antimony	0.006 (drinking water)	Post-Closure	April	14%	0.0064	0.0071	0.00003	0.00006
				May	38%	0.0060	0.0077	0.00003	0.00006
Creek 661 (WQ5_US)	Dissolved Aluminum	0.05 (long-term aquatic life)	Closure	February	8%	***0.0595***	0.0755	0.035	0.063
			Post-Closure	February	10%	0.0649	0.0756	0.035	0.063
	Total Chromium	0.001 (long-term aquatic life)	Operations	February	41%	0.00103	0.00104	0.0002	0.0003
				April	12%	0.00103	0.00107	0.0002	0.0005
				September	12%	0.00123	0.00125	0.0002	0.0005
			Closure	February	29%	0.00102	0.00103	0.0002	0.0003
				April	4%	0.00107	0.00107	0.0002	0.0005
				September	4%	0.00123	0.00123	0.0002	0.0005

Waterbody (Assessment Node)	Water Quality Parameter	Water Quality Guideline (mg/L)	Occurrence of COPC			Predicted Concentration Range (mg/L)*		Range of Seasonal Baseline Variability (mg/L);	
			Phase	Month	Frequency	Minimum	Maximum	5th Percentile	95th Percentile
	Total Copper	0.002 (long-term aquatic life)	Operations	January	42%	0.00305	0.00356	0.00005	0.0005
			Closure	January	42%	0.00312	0.00351	0.00005	0.0005
	Total Zinc	0.0075 (long-term aquatic life)	Operations	March	41%	0.0081	0.0142	0.0003	0.0044
				April	18%	0.0076	0.0132	0.0003	0.0044
				August	12%	0.0097	0.0118	0.0003	0.0044
				September	24%	0.0079	0.0130	0.0003	0.0044
			Closure	January	100%	***0.0094***	0.0217	0.0005	0.0217
				March	96%	0.0081	0.0188	0.0003	0.0044
				April	17%	0.0076	0.0132	0.0003	0.0044
				August	13%	0.0079	0.0106	0.0003	0.0044
				September	17%	0.0079	0.0130	0.0003	0.0044
			Post-Closure	March	95%	0.0078	0.0155	0.0003	0.0044
				April	21%	0.0075	0.0121	0.0003	0.0044
				August	5%	0.0089	0.0089	0.0003	0.0044
				September	10%	0.0078	0.0108	0.0003	0.0044
Creek 661 (WQ5_DS)	Total Zinc	0.0075 (long-term aquatic life)	Operations	March	47%	0.0075	0.0095	0.0003	0.0044
				April	12%	0.0076	0.0087	0.0003	0.0044
			Closure	March	88%	0.0075	0.0095	0.0003	0.0044
				April	17%	0.0075	0.0088	0.0003	0.0044
			Post-Closure	March	95%	0.0075	0.0096	0.0003	0.0044
				April	19%	0.0075	0.0088	0.0003	0.0044
Chedakuz Creek (WQ8)	No COPCs were identified at this site.								
Chedakuz Creek (WQ9)	No COPCs were identified above the upper limit of seasonal natural variability at this site.								

* Presents the range of concentrations (monthly timestep) coincident of COPC occurrence only.

Bolded, italic font indicates that the predicted value is within the range of natural seasonal variation for the relevant parameter at the site.

Notes:

1. This table contains a subset of all parameters identified as COPCs (i.e., predicted concentrations greater than background concentrations and guidelines) in the surface water quality effects assessment.
2. COPCs were excluded from the table on a monthly basis if all predicted concentrations for that month were below the 95th percentile (upper limit) of seasonal natural variability. Predicted exceedances in dissolved aluminum concentrations in Davidson Creek in May during all project phases, and in June during Operations through Post-Closure, were excluded from the table for this reason. Predicted exceedances in dissolved aluminum in Chedakuz Creek (WQ9) were also excluded for this reason.
3. Although copper exceedances are reported for Creek 661 during Operations and Closure, these exceedances are attributed to an artifact of the model, and were not retained for further consideration. ENV is currently updating the BC hardness based guideline for copper, and the copper impact assessment should be revisited if Blackwater proceeds to permitting, once the new copper WQG is in place.
4. Ammonia and weak acid dissociable (WAD) cyanide were removed as COPCs, based on the application of an attenuation factor of 80% along the unrecoverable seepage pathways (ERM, 2017d[1]) in a post-processing step outside of GoldSim. As a result, ammonia and WAD cyanide concentrations are predicted to be less than the applicable WQGs in Post-Closure in Davidson Creek. Since the attenuation factor is derived based on data from analogue sites, rather than from the Blackwater site, there is uncertainty if the Blackwater Gold Project can achieve a similar attenuation factor. An attenuation factor of <80% could result in ammonia and WAD cyanide WQG exceedances in the receiving environment. These exceedances would be generally very marginal and occur during short periods/ months.

[1] ERM. 2017d. Blackwater Gold Project: Subsurface Attenuation of Ammonia and WAD Cyanide in Post-Closure, July 20, 2017. Prepared for New Gold Inc. by ERM Consultants Canada Ltd.: Vancouver, BC.