Appendix D

PREDICTIONS OF INFLUENT WATER

1.0 Contaminated Water Chemistry

Contaminated Water chemistry at Britannia Mine has been monitored for many years. However, the existing data mainly represent the chemistry of water flowing through the mine workings in an unimpeded manner, and do not necessarily reflect the effects of storage. The effect of storage was assessed through a "plug test" conducted in 2002, and has been reported by SRK Consulting. The following tables, modified from the SRK report, present a summary of the projected variations. The information is provided solely to acquaint the Proponents with the range of water chemistry parameters that may be expected during operation of the plant. The Proponents must refer to the complete reports for background and qualifications on these figures. Neither the Province, nor its agents or consultants are liable for any interpretations or conclusions drawn from this information.

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BRITANNIA MINE REMEDIATION

GEOCHEMISTRY AND WATER QUALITY OF THE MINE WORKINGS

Table 1 (Modified from Table 4.5)

Expected Concentrations in the 4100 Drainage During Flow-Through Conditions

Water Type or Mixture	pH s.u.	Total Acidity mg$CaCO_3$/L	Sulphate mg/L	Ca mg/L	Mg mg/L	Al mg/L	Cd Mg/L	Cu mg/L	Fe mg/L	Zn mg/L
Average Water Chemistry Prior to 2002 Plug Test	3.6	294	1427	334	65	30	0.11	27	11	23
Sample Collected Two Months After the 2002 Plug Test	3.4	338	1830	391	99	41	0.13	30	7.1	24

Notes: *Weighted average of the historical 2200 and 4100 data.

TABLE 2 (Modified From Table 4.6)
Statistical Summary of Water Chemistry During the 2002 Plug Tests

	pH s.u.	Total Acidity $mgCaCO_3/L$	Sulphate mg/L	Ca mg/L	Mg mg/L	Al mg/L	Cd mg/L	Cu mg/L	Fe mg/L	Mn mg/L	Zn mg/L
Averages											
Time Weighted	3.36	451	1889	401	116	52	0.116	38	33	8.1	24
Volume Weighted	3.36	415	1859	403	114	49	0.115	40	22	8.0	24
Statistics											
Standard Deviation	0.19	216	343	42	33	16	0.012	11	36	2.7	2.2
Median	3.30	473	1970	400	110	52	0.114	38	16	7.9	24
10^{th} Percentile	3.20	195	1454	351	70	26	0.103	25	2.6	4.6	22
90^{th} Percentile	3.70	686	2320	458	165	73	0.126	55	63	12	27
Maximum	3.90	1240	2780	496	193	91	0.163	66	206	14	29

TABLE 3 (Modified from Table 4.8)
Predicted Average Annual Concentrations in Mine Drainage during Dry, Typical and Wet Years Assuming Various Storage Scenarios

Event	pH s.u.	Total Acidity $mgCaCO_3/L$	Sulphate mg/L	Ca mg/L	Mg mg/L	Al mg/L	Cd Mg/L	Cu mg/L	Fe Mg/L	Zn mg/L
Wet	3.4	380	1763	387	102	44	0.12	36	18	24
Typical	3.5	346	1659	370	89	39	0.12	32	14	24
Dry	3.6	302	1456	339	68	31	0.11	28	12	23

2.0 Contaminated Groundwater Chemistry

The groundwater in the Fan Area has been sampled during several of the investigation programs and chemical characterization is described in reports prepared by URS Corporation which are in the electronic data room. A pumping well was established in the Fan Area in 2003 as part of an investigation of groundwater flows. The chemical characterization data obtained from this program are erratic, and do not necessarily represent the chemical composition of the groundwater that will be extracted from a full-scale groundwater management program.

Range	pH s.u.	Chloride Mg/l	Sulphate mg/L	Ca mg/L	Mg mg/L	Al mg/L	Cd Mg/L	Cu mg/L	Fe Mg/L	Zn mg/L
High		5000	1500	N.A.	N.A.	75	N.A.	20	200	75
Typical	4.0	2000	500	N. A.	N. A.	50	N. A.	10	50	20
Low		20	100	N. A.	N. A.	20	N. A.	10	10	20