

Appendix 5

The chemical composition of the 137 samples compiled in this study is given in the following Table. Data are grouped according to the study from which they were compiled and listed in the order of decreasing TDS values. Major elements (Na^+ , Mg^{2+} , K^+ , Ca^{2+} , HCO_3^- , Cl^- and SO_4^{2-}) were systematically analyzed in the 5 studies. Compared to the other studies, Frapé and Fritz (1987) analyzed 10 more metallic ions (Al^{3+} , Cd^{2+} , Cr^{2+} , Co^{2+} , Cu^{2+} , Mn^{2+} , Ni^{2+} , Zn^{2+} , B^{3+} , Pb^{2+}). Sr^{2+} and Br^- are only missing in Gascoyne and Kamineni (1994).

Frapé and Fritz (1987) provided a summary of the geochemistry of Canadian Shield groundwaters which have been partially presented in previous paper by the authors. For instance, compiled data by Frapé and Fritz (1987) include several data by Frapé et al. (1984) and Frapé and Fritz (1987). Frapé et al. (1984) analyzed chemical content of groundwater from a variety of locations in the crystalline rocks of the Canadian Shield in the province of Ontario (Yellowknife N.W.T and Sudbury Basin) and Manitoba (Thompson). The results of geochemical analyses discussed in Frapé and Fritz (1987) were obtained for groundwater samples collected in five mines and several shallow wells in the Sudbury Basin, Ontario, Canada. Mine samples were obtained from abandoned diamond drill holes or fractures from depths of 152-1219 m. Frapé and Fritz (1987) added data from Matagami area located in the province of Quebec. Chemical data from Bottomley et al. (1999) were collected at depths of 701 m to 1616 m in the Miramar Con gold mine, Yellowknife N.W.T., Canada. Most of the samples were collected from flowing boreholes. In the study by Bottomley et al. (1999) TDS for waters collected above approximately 650 meters and show concentrations for TDS less than 10,000 mg/L, and 22 over the 35 compiled samples show concentrations for TDS above 10,000 mg/L. Gascoyne and Kamineni (1994) determined the composition of groundwater in selected granitic, gabbroic and gneissic plutons in the Canadian Shield as part of the Canadian Nuclear Fuel Waste Management Program. Samples were collected in Ontario (Chalk River, Massey, and Atikokan) and Manitoba (Lac du Bonnet).

Supplementary material

N	Sample	Samples source	Aquifer Type	TDS (mg/L)	T Eh (mV)	pH	O.D. (mg/L)	Na	Mg	K	Ca	HCO3	Cl	SO4	Al	Sb	Ag	Ba	Cd	Cr	Co	Cu	Mn	Mo	Ni	Zn	B	Fe	Li	Se	Sr	Sn	Ti	V	Be	Bi	Si	Pb	U	NH4	Br	F	NO3	P		
17	L261400	Frage and Fritz (1982)	Roc	-	-	-	213	0.05	47.1	150	-	431	259	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
6	N3651	Frage and Fritz (1982)	Roc	-	-	-	190	0.05	30	140	-	322	241	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	N3640	Frage and Fritz (1982)	Roc	-	-	-	2050	18.3	250	58750	30.6	142000	155	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	CCS2500	Frage and Fritz (1982)	Roc	-	-	-	8000	96	44	24500	8.1	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
28	CCS3200	Frage and Fritz (1982)	Roc	-	-	-	85789	82	42	22000	14.3	55200	75.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
8	F33182	Frage and Fritz (1982)	Roc	-	-	-	29737	-	-	3500	13.95	87	6800	8.8	18500	566	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
12	L40140	Frage and Fritz (1982)	Roc	-	-	-	23170	2413	415	2417	4988	42	1500	358	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
7	F33300	Frage and Fritz (1982)	Roc	-	-	-	22594	-	-	2625	4	32	4800	9.9	14400	530	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
10	F33170	Frage and Fritz (1982)	Roc	-	-	-	21669	-	-	2420	2.15	22	4800	10.5	13900	516	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
9	F33192	Frage and Fritz (1982)	Roc	-	-	-	17173	-	-	2200	1.9	20.8	825	9.3	11000	498	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
14	L40143	Frage and Fritz (1982)	Roc	-	-	-	13128	-	-	1375	4.23	19.4	2938	68.1	8540	26.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
13	L40141	Frage and Fritz (1982)	Roc	-	-	-	6862	-	-	378	12.2	1560	95.2	4180	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
2	N3602	Frage and Fritz (1982)	Roc	-	-	-	6200	-	-	800	1.78	8.6	1380	7.6	3820	190	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
1	N3601	Frage and Fritz (1982)	Roc	-	-	-	5303	-	-	675	1.38	7.4	1050	8.7	3310	180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
11	L40139	Frage and Fritz (1982)	Roc	-	-	-	4538	-	-	700	2.65	26	855	113	2710	46.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
30	G1600	Frage and Fritz (1982)	Roc	-	-	-	4279	-	-	180	330	23.5	480	213	97	2550	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
4	N3643	Frage and Fritz (1982)	Roc	-	-	-	4113	-	-	900	6.1	6.4	800	28.2	2250	160	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
26	CCS26002	Frage and Fritz (1982)	Roc	-	-	-	3989	-	-	425	82	107	1470	1320	640	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
25	CCS26001	Frage and Fritz (1982)	Roc	-	-	-	3544	-	-	440	44.5	8	590	111	985	1340	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
27	CCS26003	Frage and Fritz (1982)	Roc	-	-	-	3076	-	-	385	8.1	5.8	425	19.3	1380	738	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
18	L261450	Frage and Fritz (1982)	Roc	-	-	-	2596	-	-	370	0.05	300	208	864	620	223	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
16	L261350	Frage and Fritz (1982)	Roc	-	-	-	1964	-	-	250	15.45	7.6	380	127	870	282	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
22	CCS08421	Frage and Fritz (1982)	Roc	-	-	-	1888	-	-	70	103.5	17	217	152	38	1240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
23	CCS08422	Frage and Fritz (1982)	Roc	-	-	-	1295	-	-	36	74	11.7	155	190	26	768	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
21	L22450	Frage and Fritz (1982)	Roc	-	-	-	1282	-	-	140	16.3	5.8	207	211	408	237	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
19	L401650	Frage and Fritz (1982)	Roc	-	-	-	1061	-	-	145	0.05	44	129	213	190	350	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
24	CCS08481	Frage and Fritz (1982)	Roc	-	-	-	791	-	-	26	29	4.4	118	129	11	460	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
5	N3644	Frage and Fritz (1982)	Roc	-	-	-	264	-	-	59	24	22	24	98	181	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
31	2	Frage and Fritz (1982)	Roc	-	-	-	1	-	-	31	3.98	3.4	28	18.8	92	24.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
32	2	Frage and Fritz (1982)	Roc	-	-	-	187	-	-	30	6.03	1.8	21	23.2	63	25.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
15	L26000	Frage and Fritz (1982)	Roc	-	-	-	128	-	-	12	2.35	2.2	16	32.3	7	43.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
33	3	Frage and Fritz (1982)	Roc	-	-	-	107	-	-	19	2.9	2	10	11.8	34	17.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
34	YS	Bottomley et al. (1999)	Roc	-	-	-	995	7.5	7.8	728	256	2015	1168	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
35	B846	Bottomley et al. (1999)	Roc	-	-	-	905	6.88	256	5.1	309	604	0.145	0.04	0.804	0.099	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
36	Seep	Bottomley et al. (1999)	Roc	-	-	-	1585	324	12.5	2265	112	6471	880	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
37	B8948	Bottomley et al. (1999)	Roc	-	-	-	32	2.8	425	368	20.8	113	0.023	0.059	0.218	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
38	B9362	Bottomley et al. (1999)	Roc	-	-	-	2614	40	10.3	2095	20	7136	620	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
39	B8452	Bottomley et al. (1999)	Roc	-	-	-	1990	150																																						

