DEPARTMENT OF
MINERALS AND ENERGY

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

Record 1975/96

MISCELLANEOUS CHEMICAL, PETROGRAPHIC AND MINERAGRAPHIC INVESTIGATIONS CARRIED OUT IN THE GEOLOGICAL LABORATORY

JANUARY-DECEMBER 1974

Compiled

by

J.C.W. WEEKES

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Compiled by J. Weekes

Record

January - December 1974

The miscellaneous chemical, petrographic and mineragraphic investigations carried out in the Geological Laboratory, Bureau of Mineral Resources during 1974 are compiled in this Record. The results of these investigations are presented in a series of Laboratory Reports which are arranged in numerical order in the Record.

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Laboratory Report No. 1.

18 January 1974

Zinc Content of Molonglo River Water

by

B.I. Cruikshank & G.F. Sparksman

The following results were obtained for the determination of specific conductance at 20°C, pH, total zinc and iron on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with 5N Hydrochloric acid prior to the determination of zinc and iron.

Samples were collected by the Commonwealth Department of Works for the joint N.S.W. Mines Department/Commonwealth investigation of zinc pollution in the Molonglo River.

Date of sampling: 3/1/74

Sampling points	Sp. Cond (umho/cm)	pH	Zn (ppm)	Fe (ppm)	Flow
Captains Flat Mine drain Southern dump (410766)	-	-	-	-	-
Mine Eastern Spring Northern dump (410767)	3,500	2.3	202	309	0.225 M
Copper Creek (410762)	2,150	6.2	25.8	23.8	1.42
Molonglo River at Copper Ck (410757)	264	4.7	6.60	8.15	0.86
Bungendore Rd (C) (410758)	329	3.4	8.59	0.48	1.10
Hoskinstown Rd (D) (410759)	246	6.9	0.26	0.39	1.13
Burbong Weir (D2) (410705)	301	7.1	0.14	0.25	0.35
Honeysuckle Ck (F2)	169	6.8	0.04	0.68	
Lake Burley Griffin at Kings Ave (H2)	181	7.1	0.06	2.35	
Commonwealth Ave (H3)	178	7.5	0.07	2.55	
Scrivener Dam (H4)	166	7.7	0.09	2.60	
Molonglo River below Scrivener Dam (410718)	225	7.0	0.14	2.85	2.56

Bracketed numbers are Dept of Works stream gauge reference numbers.

Laboratory Report No. 2

18 January 1974

Zinc Content of Molonglo River Water

by

B.I. Cruikshank & G.F. Sparksman

The following results were obtained for the determination of specific conductance at 20°C, pH and total zinc on water samples, collected by Rising Stage Automatic Samplers, from the Molonglo River system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Commonwealth Department of Works for the joint N.S.W. Mines Department/Commonwealth investigation of zinc pollution in the Molonglo River.

Samples removed: 4.1.74.

Sampling points	Estimated time of sampling	Sp. Cond (umho/cm)	pH	Zn (ppm)	Gauge height
Captains Flat Mine drain southern dump (410766)	1100 on 30.12.73.	7,280	2.4	975	0.294 M
	1102 on 30.12.73.	12,400	2.3	1500	0.403M
Copper Creek (410762)	1200 on 30.12.73	8,120	2.0	423	1.57'
Molonglo River at Copper Creek (410757)	1425 on 30.12.73	2,940	1.8	132	1.26'
Molonglo River at Bungendore Rd. (410758)	1330 on 27.12.73	260	5.6	6.45	1.39'

Laboratory Report No. 3

4 March 1974

Zinc Content of Molonglo River Water

by

B.I. Cruikshank, G.F. Sparksman & G.K. Willcocks

The following results were obtained for the determination of specific conductance at 20°C, pH, total zinc and iron on water samples as listed below from the Molonglo River/Lake Burley Griffin System. All samples were acidified with 5N Hydrochloric acid prior to the determination of zinc and iron.

Samples were collected by the Commonwealth Department of Works for the joint N.S.W. Mines Department/Commonwealth investigation of zinc pollution in the Molonglo River.

Date of sampling:- 17-1-74

Sampling points	Sp. Cond (umho/cm)	pH	Zn (ppm)	Fe (ppm)	Flow
Captains Flat Mine drain Southern dump (410766)	-	-	-	-	-
Mine Eastern Spring Northern dump (410767)	3,260	2.8	192	266	0.228M
Copper Creek (410762)	1,610	4.2	40.3	19.8	1.37
Molonglo River at Copper Ck (410757)	136	5.8	3.00	4.80	1.32
Bungendore Rd (C) (410758)	133	6.2	2.50	2.93	1.45
Hoskinstown Rd (D) (410759)	186	6.2	1.47	0.27	1.75
Burbong Weir (D2) (410705)	260	6.1	3.20	1.35	0.70
Honeysuckle Ck (F2)	175	6.3	0.56	1.25	-
Lake Burley Griffin at Kings Ave (H2)	172	6.7	0.18	2.15	-
Commonwealth Ave (H3)	167	7.3	0.09	2.15	-
Scrivener Dam (H4)	167	8.0	0.07	2.40	24.86
Molonglo River below Scrivener Dam (410718)	168	6.6	0.21	2.65	3.55

Bracketed numbers are Dept of Works stream gauge reference numbers.

Laboratory Report No. 4

4 March 1974

Zinc Content of Molonglo River Water

by

B.I. Cruikshank and G.F. Sparksman

The following results were obtained for the determination of specific conductance at 20°C, pH and total zinc on water samples, collected by Rising Stage Automatic Samplers, from the Molonglo River system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Commonwealth Department of Works for the joint N.S.W. Mines Department/Commonwealth investigation of zinc pollution in the Molonglo River.

Samples removed:- 16/1/74

Sampling points	Estimated time of sampling	Sp. Cond. (umho/cm)	pH	Zn (ppm)	Gauge height
Captains Flat Mine drain Southern dump (410766)	1610 on 4/1/74	7,520	2.0	1,120	0.294M
	1620 on 4/1/74	9,310	2.1	800	0.403M
Copper Creek (410762)	1730 on 4/1/74	9,510	2.2	525	1.57'
	1100 on 10/1/74	2,630	1.8	118	1.98'
	1215 on 10/1/74	2,400	1.8	89.0	2.33'
Molonglo River at Copper Creek (410757)	1040 on 10/1/74	1,510	2.2	70.0	1.26'
	1300 on 10/1/74	1,640	2.1	63.0	1.66'
Molonglo River at Bungendore Road (410758)	0300 on 5/1/74	285	5.5	6.80	1.39'
	1700 on 10/1/74	225	5.5	4.90	1.70'
	2200 on 10/1/74	434	3.7	18.8	2.10'

Laboratory Report No. 5.

30 January 1974

Zinc Content of Molonglo River Water

by

B.I. Cruikshank and G.F. Sparksman

The following results were obtained for the determination of specific conductance at 20°C and total zinc on water samples taken at 8 hourly intervals from the Molonglo River at Burbong Weir (410705). All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Commonwealth Department of Works for the joint N.S.W. Mines Department/Commonwealth investigation of zinc pollution in the Molonglo River.

Date of sampling: 10/1/74 to 17/1/74.

Date	Time	Sp. Cond. (umho/cm)	Zn (ppm)	Gauge height
10-1-74	1425	285	1.53	0.28
	2225	280	1.07	0.34
11-1-74	0625	286	1.45	1.35
	1425	261	1.24	1.53
	2225	221	1.29	1.72
12-1-74	0625	191	1.35	2.00
	1425	225	1.40	1.90
	2225	245	1.35	1.65
13-1-74	0625	272	1.53	1.37
	1425	295	2.10	1.18
	2225	310	2.90	1.12
14-1-74	0625	316	3.55	1.08
	1425	317	3.95	1.02
	2225	309	4.45	0.95
15-1-74	0625	299	4.39	0.90
	1425	294	4.20	0.85
	2225	285	4.20	0.81
16-1-74	0625	277	3.73	0.77
	1425	268	3.55	0.74
	2225	258	3.50	0.71
17-1-74	0625	252	3.31	0.70

Laboratory Report No. 6

30 January 1974

Zinc Content of Molonglo River Water.

by

B.I. Cruikshank, G.F. Sparksman & G.K. Willcocks

The following results were obtained for the determination of specific conductance at 20°C, pH, total zinc and iron on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with 5N Hydrochloric acid prior to the determination of zinc and iron.

Samples were collected by the Commonwealth Department of Works for the joint N.S.W. Mines Department/Commonwealth investigation of zinc pollution in the Molonglo River.

Date of sampling: 10-1-74.

Sampling points	Sp. Cond (umho/cm)	pH	Zn (ppm)	Fe (ppm)	Flow
Captains Flat Mine drain Southern dump (410766)	3,950	1.8	213	468	0.401M
Mine Eastern Spring Northern dump (410767)	3,220	2.2	171	230	0.212M
Copper Creek (410762)	2,330	2.0	84.0	338	2.45
Molonglo River at Copper Ck (410757)	1,810	2,0	63.3	122	1.20
Bungendore Rd (C) (410758)	252	4.2	5.40	0.80	1.35
Hoskinstown Rd (D) (410759)	258	6.8	0.44	0.60	1.18
Burbong Weir (D2) (410705)	284	7.3	0.08	0.22	0.28
Honeysuckle Ck (F2)	195	6.5	0.04	0.55	-
Lake Burley Griffin at Kings Ave (H2)	182	6.6	0.07	2.35	-
Commonwealth Ave (H3)	174	7.3	0.11	2.55	-
Scrivener Dam (H4)	172	7.2	0.06	2.40	24.88
Molonglo River below Scrivener Dam (410718)	156	6.6	0.08	3.10	9.35

Bracketed numbers are Dept of Works stream gauge reference numbers.

Laboratory Report No. 7

Zinc Content of Molonglo River Water.

by

B.I. Cruikshank, G.K. Willcocks & G.F. Sparksman

The following results were obtained for the determination of specific conductance at 20°C, pH, total zinc and iron on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with 5N Hydrochloric acid prior to the determination of zinc and iron.

Samples were collected by the Commonwealth Department of Works for the joint N.S.W. Mines Department/Commonwealth investigation of zinc pollution in the Molonglo River.

Date of sampling 24-1-74

Sampling points	Sp. Cond (umho/cm)	pH	Zn (ppm)	Fe (ppm)	Flow
Captains Flat Mine drain Southern dump (410766)		No sample			
Mine Eastern Spring Northern dump (410767)	3,410	2.3	195	277	0.240 M
Copper Creek (410762)	2,160	2.1	53.3	137	1.10
Molonglo River at Copper Ck (410757)		No sample			
Bungendore Rd (C) (410758)	162	6.0	2.50	3.45	1.48
Hoskinstown Rd (D) (410759)	206	6.3	2.13	0.38	2.32
Burbong Weir (D2) (410705)	227	6.1	1.10	0.34	-
Honeysuckle Ck (F2)	176	6.3	0.32	1.08	-
Lake Burley Griffin at Kings Ave (H2)	169	6.6	0.16	2.20	-
Commonwealth Ave (H3)	174	7.0	0.07	2.20	-
Scrivener Dam (H4)	168	7.2	0.05	2.40	24.86
Molonglo River below Scrivener Dam (410718)	177	6.4	0.14	2.95	3.53

Bracketed numbers are Dept of Works stream gauge reference numbers.

Laboratory Report No. 8

Zinc Content of Molonglo River Water

by

B.I. Cruikshank, G. Willcocks, G.F. Sparksman

The following results were obtained for the determination of specific conductance at 20°C, pH, total zinc and iron on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with 5N Hydrochloric acid prior to the determination of zinc and iron.

Samples were collected by the Commonwealth Department of Works for the joint N.S.W. Mines Department/Commonwealth investigation of zinc pollution in the Molonglo River.

Date of sampling 31.1.74

	Sp. Cond (umho/cm)	pH	Zn (ppm)	Fe (ppm)	Flow
Captains Flat Mine drain Southern dump (410766)	No sample				
Mine Eastern Spring Northern dump (410767)	3,250	2.4	186	275	0.218 M
Copper Creek (410762)	1,850	4.2	32.8	27.3	1.36
Molonglo River at Copper Ck (410757)	123	5.8	2.41	3.92	1.36
Bungendore Rd (C) (410758)	124	6.0	1.88	3.03	1.41
Hoskinstown Rd (D) (410759)	187	6.1	1.23	0.21	1.52
Burbong Weir (D2) (410705)	269	6.0	2.66	0.37	0.54
Honeysuckle Ck (F2)	172	6.4	0.19	0.50	-
Lake Burley Griffin at Kings Ave (H2)	181	6.4	0.13	1.67	-
Commonwealth Ave (H3)	194	6.0	0.10	2.00	-
Scrivener Dam (H4)	185	7.5	0.04	2.07	-
Molonglo River below Scrivener Dam (410718)	185	6.4	0.08	2.65	-

Bracketed numbers are Dept of Works stream gauge reference numbers.

Laboratory Report No. 9 21 February, 1974

Zinc Content of Molonglo River Water

by

B.I. Cruikshank, G.K. Willcocks & G.F. Sparksman

The following results were obtained for the determination of specific conductance at 20°C, pH and total zinc on water samples, collected by Rising Stage Automatic Samplers, from the Molonglo River system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Samples removed - 31/1/74

Sampling Points	Estimated time of sampling	Sp. Cond. (umho/cm)	pH	Zn (ppm)	Gauge height
Captains Flat Mine drain Southern dump (410766)	1000 on 26/1/74	7,600	2.2	960	0.294M
Copper Creek (410762)	1140 on 26/1/74	1,400	3.4	40.0	1.23'
	1330 on 26/1/74	2,920	2.7	269	1.57'
	1330 on 26/1/74	3,280	1.9	286	1.98'
Molonglo River at Copper Creek (410757?)	-	562	3.4	25.0	1.66'

Laboratory Report No. 10. 21 February, 1974.

Zinc Content of Molonglo River Water

by
B.I. CRUIKSHANK

The following results were obtained for the determination of specific conductance at 20°C and total zinc on water samples taken at 8 hourly intervals from the Molonglo River at Burbong Weir (410705). All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Dates of sampling: 17/1/74 to 24/1/74.

Date	Time	Sp.Cond. (umho/cm)	Zn (ppm)	Gauge height
17/1	1030	247	3.07	0.70
	1830	244	3.10	0.70
18/1	0230	241	2.81	0.68
	1030	242	2.44	0.66
	1830	237	2.44	0.65
19/1	0230	235	2.43	0.62
	1030	232	2.15	0.68
	1830	225	2.13	0.87
20/1	0230	219	2.05	0.82
	1030	212	1.79	0.75
	1830	202	1.68	0.68
21/1	0230	201	1.69	0.65
	1030	197	1.44	0.62
	1830	192	1.41	0.60
22/1	0230	190	1.35	0.59
	1030	187	1.21	0.58
	1830	184	1.22	0.56
23/1	0230	183	1.27	0.55
	1030	182	1.10	0.59
	1830	183	1.18	0.60
24/1	0230	185	2.51	1.30
	1030	206	1.24	1.40

Laboratory Report No. 11

21 February 1974

Zinc Content of Molonglo River Water

by

B.I. Cruikshank, G.F. Sparksman & G.K. Willcocks

The following results were obtained for the determination of specific conductance at 20°C, pH, total zinc and iron on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of zinc and iron.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling: 7.2.74

Sampling points	Sp. Cond (umho/cm)	pH	Zn (ppm)	Fe (ppm)	Flow
Captains Flat Mine drain Southern dump (410766)	-	-	-	-	-
Mine Eastern Spring Northern dump (410767)	3,300	2.5	182	244	0.212M
Copper Creek (410762)	2,070	6.2	21.8	14.8	1.02
Molonglo River at Copper Ck (410757)	348	3.6	10.6	11.2	0.83
Bungendore Rd (C) (410758)	122	5.9	1.37	0.72	1.16
Hoskinstown Rd (D) (410759)	150	6.6	0.47	0.24	1.38
Burbong Weir (D2) (410705)	202	6.4	0.95	0.38	0.47
Honeysuckle Ck (F2)	156	6.4	0.41	0.49	-
Lake Burley Griffin at Kings Ave (H2)	168	7.1	0.05	1.63	-
Commonwealth Ave (H3)	171	6.9	0.05	1.81	-
Scrivener Dam (H4)	174	6.9	0.08	1.78	24.85
Molonglo River below Scrivener Dam (410718)	175	6.6	0.07	2.57	3.01

Bracketed numbers are Dept of Works stream gauge reference numbers.

Laboratory Report No. 12

6 March 1974

Zinc Content of Molonglo River Water

by

B.I. Cruikshank, G.K. Willcocks, R. Denardi, H. Hughes

The following results were obtained for the determination of specific conductance at 20°C, pH, total zinc and iron on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of zinc and iron.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling: 14-2-74.

Sampling points	Sp. Cond (umho/cm)	pH	Zn (ppm)	Fe (ppm)	Flow
Captains Flat Mine drain Southern dump (410766)	-	-	-	-	-
Mine Eastern Spring Northern dump (410767)	3,390	2.3	186	270	0.205M
Copper Creek (410762)	3,000	2.2	57.0	133	0.28
Molonglo River at Copper Ck (410757)	528	2.5	11.7	19.1	0.79
Bungendore Rd (C) (410758)	232	4.7	4.52	1.08	1.12
Hoskinstown Rd (D) (410759)	163	6.2	0.38	0.46	1.04
Burbong Weir (D2) (410705)	208	6.2	0.72	0.38	0.23
Honeysuckle Ck (F2)	129	6.3	0.10	0.52	-
Lake Burley Griffin at Kings Ave (H2)	176	6.9	0.05	0.74	-
Commonwealth Ave (H3)	172	6.7	0.04	0.58	-
Scrivener Dam (H4)	176	7.4	0.06	0.65	24.87
Molonglo River below Scrivener Dam (410718)	185	6.3	0.08	0.84	3.53

Bracketed numbers are Dept of Works stream gauge reference numbers.

Laboratory Report No. 13

6 March 1974

Zinc Content of Molonglo River Water

by

B.I. Cruikshank, G.K. Willcocks, R. Denardi and H. Hughes

The following results were obtained for the determination of specific conductance at 20°C, pH and total zinc on water samples, collected by Rising Stage Automatic Samplers, from the Molonglo River system. All samples were acidified with hydrochloric acid prior to the determination of total zine.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Samples removed - 14.2.74

Sampling points	Estimated sampling time	Sp. Cond. (umho/cm)	pH	Zn (ppm)	Gauge height
Captains Flat Mine drain Southern dump (410766)	0640 on 12/2/74	12,600	1.9	3,050	0.294M
	0640 on 12/2/74	8,190	2.3	1,100	0.403M
Copper Creek (410762)	0605 on 12/2/74	1,540	4.9	39.9	1.57'
	0605 on 12/2/74	2,160	2.2	112	2.70'
Molonglo River at Copper Creek (410757)	-	869	2.6	30.5	1.26'
Molonglo River at Bungendore Rd., (410758)	0030 on 13/2/74	219	6.2	6.00	1.39'

Laboratory Report No. 14

6 March 1974

Analysis of Laterite Samples from the Mount Theo Area.

by

B.I. Cruikshank & G.F. Sparksman

The following results were obtained for the analysis of four typical tertiary laterite samples from the Mount Theo area (map SF52/8). The samples were submitted by A.J. Stewart.

Sample No.	Ag	Bi	Cu	Mn	Ni	Pb	Zn
			(all in p.p.m.)				
72110307	1	-	11	763	13	29	72
72110309A	1	-	13	108	6	16	9
72110317	19	-	10	37	6	41	13
72110322	48	-	11	82	6	38	8
Detection Limit		8					

Laboratory Report No.15 28th March, 1974

Zinc Content of Molonglo River Water.

by

B.I. Cruikshank, G. Willcocks, R. Denardi, G. Sparksman, H. Hughes.

The following results were obtained for the determination of specific conductance at 20°C, pH, total zinc and iron on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of zinc and iron.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 20-2-74

Sampling points	Sp. Cond (umho/cm)	pH	Zn (ppm)	Fe (ppm)	Flow
Captains Flat Mine drain Southern dump (410766)	6,500	1.7	790	945	.340 M
Mine Eastern Spring Northern dump (410767)	No sample				
Copper Creek (410762)	2,090	1.9	79.2	208	1.46
Molonglo River at Copper Ck (410757)	1,240	2.1	9.68	78.0	1.02
Bungendore Rd (C) (410758)	459	2.6	37.8	14.9	1.64
Hoskinstown Rd (D) (410759)	221	6.2	1.20	0.30	
Burbong Weir (D2) (410705)					
Honeysuckle Ck (F2)					
Lake Burley Griffin at Kings Ave (H2)					
Commonwealth Ave (H3)					
Scrivener Dam (H4)					
Molonglo River below Scrivener Dam (410718)					

Bracketed numbers are Dept. of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 16 28 March, 1974

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK, G.F. SPARKSMAN, R. DENARDI, H. HUGHES, G. WILLCOCKS

The following results were obtained for the determination of specific conductance at 20°C, pH and total zinc on water samples, collected by Rising Stage Automatic Samplers, from the Molonglo River system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Samples removed - 20-2-74

Sampling Points	Estimated Sampling Time	Sp. Cond (umho/cm)	pH	Zn (ppm)	Gauge height
Captains Flat Mine drain	-	3,710	2.0	325	.294M
Southern dump (410766)	-	4,100	2.2	375	.403M
Copper Creek (410762)	-	1,730	4.0	30.5	1.57
	-	1,530	2.3	51.3	2.33
	-	2,120	2.1	75.0	2.70
Molonglo River at Copper Creek (410757)	-	790	2.4	17.1	1.26
Molonglo River at Bungendore Rd (410758)	-	300	3.8	7.85	1.39
	-	290	3.7	6.50	1.70

Laboratory Report No.17 28th March, 1974

Zinc Content of Molonglo River Water.

by

B.I. Cruikshank, R. DeNardi, H. Hughes, G. Sparksman, G. Willcocks.

The following results were obtained for the determination of specific conductance at 20°C, pH, total zinc and iron on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of zinc and iron.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 21-2-74

Sampling points	Sp. Cond (umho/cm)	pH	Zn (ppm)	Fe (ppm)	Flow
Captains Flat Mine drain Southern dump (410766)	7,250	1.6	995	865	0.255M
Mine Eastern Spring Northern dump (410767)	3,300	2.5	191	276	0.217M
Copper Creek (410762)	1,600	2.3	63.2	69.0	1.38'
Molonglo River at Copper Ck (410757)	589	2.6	16.4	20.4	0.87'
Bungendore Rd (C) (410758)	380	2.8	10.7	8.30	1.32'
Hoskinstown Rd (D) (410759)	299	5.9	2.75	0.38	2.57'
Burbong Weir (D2) (410705)	230	6.4	0.60	0.80	1.36'
Honeysuckle Ck (F2)	167	6.5	0.11	0.90	
Lake Burley Griffin at Kings Ave (H2)	168	6.7	0.04	0.85	
Commonwealth Ave (H3)	172	6.9	0.04	0.65	
Scrivener Dam (H4)	176	6.7	0.04	0.65	24.93'
Molonglo River below Scrivener Dam (410718)	180	6.8	0.03	0.68	5.41'

Bracketed numbers are Dept of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 18. 3 April, 1974.

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK, G. WILLCOCKS, H. HUGHES, R. DENARDI

The following results were obtained for the determination of specific conductance at 20°C, pH, total zinc and iron on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of zinc and iron.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 28.2.74.

Sampling points	Sp. Cond (umho/cm)	pH	Zn (ppm)	Fe (ppm)	Flow
Captains Flat Mine drain Southern dump (410766)	No sample				
Mine Eastern Spring Northern dump (410767)	3,300	2.4	178	281	.212 M
Copper Creek (410762)	1,952	4.6	29.2	101	1.35'
Molonglo River at Copper Ck (410757)	395	3.0	11.6	13.2	0.82'
Bungendore Rd (C) (410758)	239	5.3	6.08	0.58	1.17'
Hoskinstown Rd (D) (410759)	276	5.7	3.75	0.18	1.23'
Burbong Weir (D2) (410705)	335	6.3	2.98	0.30	0.37'
Honeysuckle Ck (F2)	162	6.6	0.07	0.95	
Lake Burley Griffin at Kings Ave (H2)	155	7.0	0.03	1.78	
Commonwealth Ave (H3)	167	7.0	0.03	1.50	
Scrivener Dam (H4)	172	7.1	0.04	1.54	24.84'
Molonglo River below Scrivener Dam (410718)	175	6.8	0.04	2.00	3.45'

Bracketed numbers are Dept of Housing and Construction stream gauge reference numbers.

Laboratory Report No.19

Zinc Content of Molonglo River Water.

by

B.I. CRUIKSHANK, G. WILLCOCKS, R. DENARDI.

The following results were obtained for the determination of specific conductance at 20°C, pH, total zinc and iron on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of zinc and iron.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 7-3-74

Sampling points	Sp. Cond (umho/cm)	pH	Zn (ppm)	Fe (ppm)	Flow
Captains Flat Mine drain Southern dump (410766)	No Sample				
Mine Eastern Spring Northern dump (410767)	3280	2.6	189	282	0.207M
Copper Creek (410762)	1235	3.9	23.0	24.0	1.42'
Molonglo River at Copper Ck (410757)	540	2.5	13.0	17.6	0.81'
Bungendore Rd (C) (410758)	295	3.8	7.70	0.48	1.15'
Hoskinstown Rd (D) (410759)	247	5.8	1.85	1.04	1.09'
Burbong Weir (D2) (410705)	328	6.4	2.84	0.28	0.25S.G.
Honeysuckle Ck (F2)	166	6.7	0.09	0.72	
Lake Burley Griffin at Kings Ave (H2)	162	7.0	0.04	0.93	
Commonwealth Ave (H3)	163	7.0	0.03	0.93	
Scrivener Dam (H4)	178	7.0	0.04	0.55	
Molonglo River below Scrivener Dam (410718)	177	6.9	0.05	1.47	3.03'

Bracketed numbers are Dept of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 20 28 March, 1974

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK, G. WILLCOCKS, R. DENARDI

The following results were obtained for the determination of specific conductance at 20°C, pH and total zinc on water samples, collected by Rising Stage Automatic Samplers, from the Molonglo River system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Samples removed - 8-3-74

Sampling Points	Estimated Sampling Time	Sp. Cond (umho/cm)	pH	Zn (ppm)	Gauge height
Captains Flat Mine drain Southern dump (410766)	2050 6/3	7,780	1.9	1200	.403M
Copper Creek (410762)	2040 6/3	1,640	3.8	50.6	1.57'
	2040 6/3	1,725	3.8	72.4	1.98'
	2040 6/3	2,080	2.9	117	2.33'
	2040 6/3	2,975	2.1	169	2.70'
	2040 6/3	3,580	1.1	268	3.00'
Molonglo River at Copper Creek (410757)	-	450	3.4	13.3	1.26'
	-	775	2.8	26.0	1.66'
Molonglo River at Bungendore Rd (410758)	0400 7/3	320	4.1	9.70	1.39'

Laboratory Report No. 21 28 March, 1974

Zinc Content of Molonglo River Water

by

B.I. Cruikshank, G.K. Willcocks

The following results were obtained for the determination of specific conductance at 20°C, pH, total zinc and iron on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of zinc and iron.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 14/3/74

Sampling points	Sp. Cond (umho/cm)	pH	Zn (ppm)	Fe (ppm)	Flow
Captains Flat Mine drain Southern dump (410766)	7,400	1.6	952	778	.257 m
Mine Eastern Spring Northern dump (410767)	3,450	2.5	190	310	.233 m
Copper Creek (410762)	945	2.5	31.4	23.0	1.43'
Molonglo River at Copper Ck (410757)	108	6.0	1.39	2.95	1.80'
Bungendore Rd (C) (410758)	132	6.0	1.39	3.20	1.79'
Hoskinstown Rd (D) (410759)	332	5.7	7.20	0.10	2.61'
Burbong Weir (D2) (410705)	300	6.3	1.84	0.32	1.47'
Honeysuckle Ck (F2)	102	6.5	0.05	0.97	
Lake Burley Griffin at Kings Ave (H2)	189	6.5	0.10	0.68	
Commonwealth Ave (H3)	175	7.1	0.05	0.50	
Scrivener Dam (H4)	180	6.9	0.06	0.32	29.92'
Molonglo River below Scrivener Dam (410718)	180	6.7	0.04	0.50	5.28'

Bracketed numbers are Dept. of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 22 28 March, 1974

Zinc Content of Molonglo River Water

by

B.I. Cruikshank, G.K. Willcocks

The following results were obtained for the determination of specific conductance at 20°C, pH and total zinc on water samples, collected by Rising Stage Automatic Samplers, from the Molonglo River system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Samples removed – 15/3/74

Sampling Points	Estimated Sampling Time		Sp. Cond (umho/cm)	pH	Zn (ppm)	Gauge height
Captains Flat Mine drain Southern dump (410766)	1815	7/3	7,880	2.2	880	.294 m
	1830	7/3	7,620	2.1	680	.403 m
Copper Creek (410762)	1700	10/3	1,360	3.6	30.0	1.57'
	1700	12/3	3,610	2.0	212	1.98'
	1730	12/3	3,690	2.1	212	2.33'
	1735	12/3	1,080	2.2	41.3	2.70'
	1750	12/3	840	2.3	43.5	3.00'
Molonglo River at Copper Creek (410757)	–		2,200	2.0	94.4	1.26'
	–		2,090	1.9	90.0	1.66'
	–		827	2.3	30.4	2.10'
	–		538	2.4	12.1	2.45'
Molonglo River at Bungendore Rd (410758)	0100	11/3	340	4.0	8.70	1.39'
	1800	12/3	262	3.8	6.48	1.70'
	2110	12/3	208	4.1	6.37	2.10'
	2200	12/3	412	2.9	12.3	2.44'

LABORATORY REPORT NO. 23 28 March, 1974.

Analysis of Silicates from the Westmoreland Area, North Queensland.

by

B.I. CRUIKSHANK, G.K. WILLCOCKS, R. DeNARDI & H. HUGHES.

Forty-three silicate samples from the Westmoreland Area (Seigal 1:100,000 sheet), North Queensland, were analysed for Bi, Co, Cu, Li, Ni, Pb and Zn by atomic absorption spectrophotometry. The samples were submitted by C. M. Gardner.

The samples were digested by the action of hydrofluoric/perchloric acids. Non-atomic absorption corrections were made for Bi, Co, Ni, Pb and Zn.

7376-	Bi ppm	Co ppm	Cu ppm	Li ppm	Ni ppm	Pb ppm	Zn ppm
0802	ND	28	41	21	120	35	755
0805	ND	2	1	433	ND	5	188
0809	ND	5	4	82	ND	41	27
0812	ND	4	6	6	ND	43	33
0814	ND	6	3	6	4	23	24
0815A	ND	16	10	16	32	41	628
0817B	ND	14	14	15	4	34	685
0820	ND	22	7	25	49	32	65
0824	ND	2	42	3	ND	31	418
0826	ND	5	3	7	ND	36	588
0827	ND	36	48	18	83	24	850
0828	ND	12	20	10	4	76	665
0836B	8	4	7	3	2	22	393
0845A	8	3	3	5	ND	42	30
0850	ND	23	16	25	12	38	88
0852A	ND	20	14	27	36	18	533
0855C	ND	6	ND	8	ND	43	21
0858	ND	5	21	4	4	42	9
0859A	ND	13	15	24	4	38	81
0860C	ND	23	16	19	46	29	725
0862A	8	18	10	21	44	27	510
0862B	10	30	134	20	81	44	740
0864A	ND	5	79	9	ND	28	39
0868	ND	3	115	1	ND	30	223
0869A	ND	2	7	3	ND	44	366
0871B	ND	5	3	6	ND	61	29
0875	ND	6	3	26	ND	51	270
0876	8	38	253	25	43	33	556
0882	ND	4	2	39	ND	54	21
0885	ND	8	7	12	2	66	33
0886A	ND	11	5	7	19	27	69
0888	ND	4	1	10	ND	48	204
0889C	ND	11	3	16	8	25	298
0893A	10	4	29	4	ND	15	168
0913B	ND	5	3	3	ND	13	223

	Bi ppm	Co ppm	Cu ppm	Li ppm	Ni ppm	Pb ppm	Zn ppm
7376-							
0915A	10	16	13	14	2	29	409
0916	ND	41	210	21	45	15	128
0923A	ND	9	37	26	6	30	59
0923B	ND	14	220	32	18	47	371
0924	10	10	3	19	12	32	331
0925	ND	10	18	27	4	40	80
0926	8	2	3	14	ND	35	25
0927	8	5	3	18	2	57	39

ND = NOT DETECTED.

Detection Limit	8	1	2

Laboratory Report No. 24

Zinc Content of Molonglo River Water.

by

B.I. Cruikshank, C. Willcocks, R. Denardi.

The following results were obtained for the determination of specific conductance at 20°C, pH, total zinc and iron on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of zinc and iron.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 21-3-74

Sampling points	Sp. Cond (umho/cm)	pH	Zn (ppm)	Fe (ppm)	Flow
Captains Flat Mine drain Southern dump (410766)	No sample				
Mine Eastern Spring Northern dump (410767)	3,190	2.5	179	260	.235M
Copper Creek (410762)	1,340	4.1	35.0	16.8	1.39'
Molonglo River at Copper Ck (410757)	665	2.6	22.5	25.0	0.79'
Bungendore Rd (C) (410758)	192	5.6	4.80	1.29	1.30'
Hoskinstown Rd (D) (410759)	160	5.6	1.65	0.08	1.32'
Burbong Weir (D2) (410705)	244	6.1	4.00	0.19	0.43'
Honeysuckle Ck (F2)	132	6.0	0.31	0.78	
Lake Burley Griffin at Kings Ave (H2)	136	6.5	0.04	0.78	
Commonwealth Ave (H3)	154	6.7	0.02	0.48	
Scrivener Dam (H4)	170	6.6	0.03	0.39	24.86'
Molonglo River below Scrivener Dam (410718)	163	6.4	0.02	0.48	3.82'

Bracketed numbers are Dept of Works stream gauge reference numbers.

5.4.1974

Laboratory Report No.25

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK, G. WILLCOCKS, R. DE NARDI

The following results were obtained for the determination of specific conductance at 20°C, pH, total zinc and iron on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of zinc and iron.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling ....28-3-74.....

Sampling points	Sp. Cond (umho/cm)	pH	Zn (ppm)	Fe (ppm)	Flow
Captains Flat Mine drain Southern dump (410766)	No Sample				
Mine Eastern Spring Northern dump (410767)	3180	2.4	180	258	0.218M
Copper Creek (410762)	1660	5.7	32.7	16.0	1.03'
Molonglo River at Copper Ck (410757)	122	5.6	2.30	3.16	1.36'
Bungendore Rd (C) (410758)	126	5.9	1.95	1.87	1.50'
Hoskinstown Rd (D) (410759)	184	6.1	0.72	0.14	1.78'
Burbong Weir (D2) (410705)	173	6.0	1.57	0.18	0.70'
Honeysuckle Ck (F2)	112	6.4	0.28	0.57	
Lake Burley Griffin at Kings Ave (H2)	146	6.4	0.08	0.72	
Commonwealth Ave (H3)	150	6.6	0.06	1.72	
Scrivener Dam (H4)	195	6.6	0.02	0.47	24.88'
Molonglo River below Scrivener Dam (410718)	165	6.5	0.02	0.57	4.61'

Bracketed numbers are Dept of Works stream gauge reference numbers.

5.4.1974.

Laboratory Report No.26

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK, G. WILLCOCKS, R. DE NARDI

The following results were obtained for the determination of specific conductance at 20°C, pH and total zinc on water samples, collected by Rising Stage Automatic Samplers, from the Molonglo River system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Samples removed - 28-3-74

Sampling Points	Estimated Sampling Time		Sp. Cond (umho/cm)	pH	Zn (ppm)	Gauge height
Captains Flat Mine drain Southern dump (410766)	2000	21/3	5,500	2.0	940	0.294M
	2000	21/3	4,340	1.9	415	0.403M
Copper Creek (410762)	2050	21/3	950	4.7	22.8	1.57'

Laboratory Report No. 27

1 May 1974

Zinc Content of Molonglo River Water

by

B. I. Cruikshank, G. Willcocks, R. DeNardi

The following results were obtained for the determination of specific conductance at 20°C, dissolved zinc and total zinc on water samples taken at 8 hourly intervals from the Molonglo River at Burbong Weir (D2-410705). All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical committee on Mine Waste Pollution in the Molonglo River.

Date of sampling: 4.4.74/18.4.74

Date	Time	Sp. Cond. (umho/cm)	Zn (dissolved)	Zn (Total)	Gauge height
4-4-74	1145	184		2.70	0.61
	1945	176		2.14	0.60
5-4-74	0345	175		2.47	0.60
	1145	170		3.08	0.58
	1945	169		2.82	0.57
6-4-74	0345	166		2.32	0.56
	1145	166		2.53	0.55
	1945	164		2.36	0.55
7-4-74	0345	164		2.14	0.54
	1145	165		2.47	0.54
	1945	164		2.66	0.54
8-4-74	0345	164		2.32	0.54
	1145	165		2.23	0.55
	1945	163		2.02	0.55
9-4-74	0345	163		1.90	0.56
	1145	163		1.36	0.64
	1945	226		2.10	0.88
10-4-74	0345	207		1.47	1.72
	1145	188		1.73	1.90
	1945	159		1.81	2.80
11-4-74	0345	163		1.78	3.03
	1100	182		1.90	2.87
	1115	182	1.20	1.84	2.88
	1915	161	1.25	1.73	2.88
12-4-74	0315	140	1.10	2.16	3.35
	1115	122	0.98	1.68	3.41
	1915	115	0.93	1.54	3.50
[illegible]-4-74	0315	109	0.89	1.47	3.57
	1115	105	0.93	1.42	3.47
	1915	101	0.90	1.22	3.08

Date	Time	Sp. Cond (umho/cm)	Zn (dissolved)	Zn (Total)	Gauge height
14-4-74	0315	107	0.93	1.17	2.95
	1115	113	0.90	1.20	2.68
	1915	117	1.00	1.29	2.50
15-4-74	0315	120	0.90	1.12	2.38
	1115	124	0.89	1.14	2.25
	1915	127	0.98	1.20	2.07
16-4-74	0315	131	0.90	1.12	1.88
	1115	135	0.86	1.12	1.74
	1915	138	0.90	1.16	1.62
17-4-74	0315	141	0.89	1.14	1.52
	1115	144	0.86	1.07	1.44
	1915	146	0.89	1.12	1.37
18-4-74	0315	147	0.86	1.11	1.32
	1115	150	0.80	1.03	1.28

Laboratory Report No. 28. 1 May, 1974.

Zinc Content of Molonglo River Water

by

B. CRUIKSHANK, G. WILLCOCKS, R. DENARDI

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 18-4-74.

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	153	5.9	0.78	0.86	1.28'
Honeysuckle Crk (F2)	128	6.3	0.17	0.25	
Lake Burley Griffin at					
Scrivener Dam (H4)	129	6.2	0.04	0.07	24.90'

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 29. 1 May, 1974.

Zinc Content of Molonglo River Water

by

B. CRUIKSHANK, G. WILLCOCKS, R. DENARDI

The following results were obtained for the determination of specific conductance at 20°C, pH and total zinc on water samples, collected by Rising Stage Automatic Samplers, from the Molonglo River system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Samples removed - 28-3-74.

Sampling Points	Estimated Sampling Time		Sp. Cond. (umho/cm)	pH	Zn (ppm)	Gauge height
Captains Flat Mine drain Southern dump (410766)	28-3-74	1630	8,900	2.0	1,120	.294M
Copper Creek (410762)						
Molonglo River at Copper Creek (410757)						
Molonglo River at Bungendore Rd (410758)	28-3-74	1600	132	5.6	2.20	1.70'
	28-3-74	1630	150	4.2	3.40	2.10'
	28-3-74	1645	136	4.5	2.90	2.44'
	28-3-74	1700	71	5.4	0.70	2.83'

1 May 74

Laboratory Report No. 30.

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK, G.K. WILLCOCKS, R.W. DE NARDI.

The following results were obtained for the determination of specific conductance at 20°C, pH, total zinc and iron on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of zinc and iron.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 4-4-74.

Sampling points	Sp. Cond (umho/cm)	pH	Zn (ppm)	Fe (ppm)	Flow
Captains Flat Mine drain Southern dump (410766)					
Mine Eastern Spring Northern dump (410767)					
Copper Creek (410762)					
Molonglo River at Copper Ck (410757)					
Bungendore Rd (C) (410758)					
Hoskinstown Rd (D) (410759)					
Burbong Weir (D2) (410705)	189	6.3	0.95	0.75	0.61'
Honeysuckle Ck (F2)	128	6.3	0.23	1.78	
Lake Burley Griffin at Kings Ave (H2)	166	6.0	0.11	1.65	
Commonwealth Ave (H3)	170	6.9	0.05	1.40	
Scrivener Dam (H4)	180	6.1	0.07	1.45	24.86'
Molonglo River below Scrivener Dam (410718)	180	6.4	0.05	2.39	4.12'

Bracketed numbers are Dept of Works stream gauge reference numbers.

1 May, 1974.

Laboratory Report No. 31

Zinc Content of Molonglo River Water.

by

B.I. Cruikshank, G.K. Willcocks, R.W. DeNardi

The following results were obtained for the determination of specific conductance at 20°C, pH, total zinc and iron on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of zinc and iron.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 11.4.74

Sampling points	Sp. Cond (umho/cm)	pH	Zn (ppm)	Fe (ppm)	Flow
Captains Flat Mine drain Southern dump (410766)					
Mine Eastern Spring Northern dump (410767)					
Copper Creek (410762)					
Molonglo River at Copper Ck (410757)					
Bungendore Rd (C) (410758)					
Hoskinstown Rd (D) (410759)					
Burbong Weir (D2) (410705)	178	5.8	1.13	3.23	2.88'
Honeysuckle Ck (F2)	114	6.0	0.15	4.08	7.92'
Lake Burley Griffin at Kings Ave (H2)	110	6.4	0.08	4.88	
Commonwealth Ave (H3)	131	6.1	0.09	3.35	
Scrivener Dam (H4)	160	6.9	0.01	1.08	25.24'
Molonglo River below Scrivener Dam (410718)	163	6.5	0.03	1.20	9.78'

Bracketed numbers are Dept of Works stream gauge reference numbers.

Laboratory Report No. 32 8 May, 1974

Zinc Content of Molonglo River Water

by

B. Cruikshank, G. Willcocks & R. de Nardi

The following results were obtained for the determination of specific conductance at 20°C, dissolved zinc and total zinc on water samples taken at 8 hourly intervals from the Molonglo River at Burbong Weir (D2 - 410705). All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling: 18/4/74 to 26/4/74

Date	Time	Sp. Cond. (umho/cm)	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Gauge height
18/4/74	1210	150	0.75	1.07	1.28
	2010	154	0.78	1.05	1.22
19/4/74	0410	154	0.81	1.08	1.29
	1210	154	0.78	1.07	1.38
	2010	154	0.75	1.08	1.33
20/4/74	0410	164	0.75	1.13	1.26
	1210	164	0.75	1.07	1.32
	2010	160	0.75	1.05	1.32
21/4/74	0410	155	0.83	1.12	1.60
	1210	156	0.94	1.26	2.92
	2010	136	0.97	1.32	3.07
22/4/74	0410	124	0.95	1.32	2.80
	1210	120	1.03	1.34	2.57
	2010	116	1.01	1.30	2.49
23/4/74	0410	115	1.03	1.32	2.89
	1210	115	1.06	1.43	2.83
	2010	116	1.03	1.28	2.75
24/4/74	0410	114	1.01	1.24	2.93
	1210	114	1.01	1.22	2.78
	2010	114	0.99	1.24	2.65

Date	Time	Sp. Cond. (umho/cm)	Zn (ppm) (dissolved)	Zn (ppm) (total)	Gauge height
25/4/74	0410	120	1.05	1.30	2.55
	1210	117	0.99	1.55	2.48
	2010	118	1.14	1.52	2.43
26/4/74	0410	113	1.18	1.57	2.35

Laboratory Report No. 33 8 May, 1974

Zinc Content of Molonglo River Water

by

B. Cruikshank, G. Willcocks, R. De Nardi

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 26/4/74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flo
Molonglo River at					
Burbong Weir (D2) (410705)	124	6.4	0.73	0.80	2.22
Honeysuckle Crk (F2)	93	6.4	0.16	0.24	
Lake Burley Griffin at					
Scrivener Dam (H4)	117	6.5	0.07	0.10	24.91

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 34

17 May 1974

Zinc Content of Molonglo River Water

by

B. Cruikshank, G. Willcocks, R. De Nardi

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling: 2.5.74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn(ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at Burbong Weir (D2) (410705)	173	7.3	0.52	0.72	1.53
Honeysuckle Crk (F2)	132	6.9	0.12	0.18	
Lake Burley Griffin at Scrivener Dam (H4)	113	6.3	0.12	0.15	24.96

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 35

17 May 1974

Zinc Content of Molonglo River Water

by

B. Cruikshank, G. Willcocks, R. De Nardi

The following results were obtained for the determination of specific conductance at 20°C, dissolved zinc and total zinc on water samples taken at 8 hourly intervals from the Molonglo River at Burbong Weir (D2 - 410705). All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling: 26/4/74 - 2/5/74

Date	Time	Sp. Cond (umho/cm)	Zn (dissolved)	Zn (Total)	Gauge height
26.4.74	1630	122	1.02	1.37	2.22
27.4.74	0030	124	0.98	1.17	2.05
	0830	126	0.95	1.17	1.97
	1630	130	0.84	1.17	1.93
28.4.74	0030	154	0.84	1.11	2.05
	0830	156	0.75	1.08	2.07
	1630	167	0.78	0.99	2.25
29.4.74	0030	152	0.75	1.03	2.57
	0830	154	0.73	1.03	2.45
	1630	153	0.76	1.08	2.35
30.4.74	0030	154	0.79	1.03	2.30
	0830	153	0.80	1.05	2.18
	1630	153	0.73	0.99	2.07
1.5.74	0030	150	0.69	0.96	1.94
	0830	150	0.71	0.95	1.85
	1630	151	0.76	1.11	1.77
2.5.74	0030	149	0.70	1.00	1.65
	0830	150	0.70	0.92	1.57
	1515	151	0.75	1.00	1.53

Laboratory Report No. 36. 27 May, 1974.

Zinc Content of Molonglo River Water

by

B. CRUIKSHANK, G. WILLCOCKS, J. PRICE.

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 16-5-74.

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	180	7.0	0.44	0.50	0.75
Honeysuckle Crk (F2)	111	6.4	0.05	0.10	
Lake Burley Griffin at					
Scrivener Dam (H4)	107	6.4	0.10	0.14	24.92

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 37. 27 May, 1974.

Zinc Content of Molonglo River Water

by

B. CRUIKSHANK, G. WILLCOCKS, J. PRICE.

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 9-5-74.

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	143	6.5	0.56	0.72	0.91
Honeysuckle Crk (F2)	111	6.7	0.12	0.20	
Lake Burley Griffin at					
Scrivener Dam (H4)	113	6.4	0.09	0.16	24.90

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No.38

3 June, 1974.

Microprobe Determination of feldspars and feldspathoids in Volcanic Rocks from the New Ireland Region

Laboratory Report No.38

by

R.N. England

The following microprobe determinations of feldspathoids and feldspars in alkalic lavas collected in 1969 by G.A.M. Taylor from islands in the New Ireland region were made in 1971. They are listed here on request from R.W. Johnson. Localities are given in Table 1, qualitative feldspathoid determinations in Table 2, and quantitative plagioclase determinations in Table 3.

Table 1.

Sample No.	Locality
69400271	
275	Tefa Is.
276	
280	
282	Malendok Is.
284	
292	
293	
309	
310	
312	
313A	
314	Ambitle Is.
316	
329	
333	
334	
375	Simberi Is.
398	
403	
416	Tatau Is.
417	
448	Tabar Is.

Table 2. Qualitative Electron Probe Examination of Feldspathoids and Zeolites

The table gives peak intensities in counts per second for the following elements in the feldspathoids and zeolites checked: Na, Al, Si, Cl, S, K, Ca. The specimen current used was 1/10 μA. The intensities, when comparisons are made between the same element in different specimens give a very rough idea of the comparative concentration in the different specimens. There is no point in comparing the count rate of one element with that of another element in the same sample as different elements have different count rates for a given concentration. Na has the poorest count rate per wt. percent while Si has the best.

Alteration and replacement of primary feldspathoids is a problem. In some cases, for instance, leucite may be so highly altered as to be difficult to recognize by its chemical composition. It is also possible that very fine intergrowths of different zeolites and even clay minerals may prevent proper identification.

Rock	Na	Al	Si	S	Cl	K	Ca	Identification	Comments
271	5	2700	6000	0	0	300	6	Leucite	
275	17	2400	7000	0	0	0	20	Analcite	
276	3	2200	6000	0	0	300	15	Leucite	unexpectedly birefringent for leucite
280	3	3000	7500	0	0	250	5	Leucite	
282	100	3500	9000	5	0	0	0	Analcite	
284	60	1500	3500	0	0	20	0	Analcite	altered leucite?
292	100	2500	4000	300	10	45	250	HaSyne	
293	1	2700	6000	0	0	300	6	Leucite?	patchy, distinctly birefringent
309	50	3000	5000	0	0	50	30	Leucite?	showing alteration to kaspar + nephcline?
310	0	0	12000	0	0	0	0	Silica	?Tridymite?
312	10-100	1500	2000	0	0	30	3000	?	
313A	60	3000	7000	0	0	2	150	Faujasite?	
314	100	2000	3000	250	0	0	250	HaSyne	
316	80	2600	6000	0	0	4	160	Faujasite?	
329	3	2300	6000	0	0	30	300	?	
333	0	2000	5000	0	0	200	120	?	
334	130	2500	4000	200	--	40	200	HaSyne	highly altered
375	3	1600	4500	0	0	30	400	?	
398	2	2200	6000	0	0	20-200	300	?	Ca zeolite
403	50-100	2500	7000	0	0	60	70	?Analcite	patchy
416	70	3000	4000	0	0	0	200		Interstitial Ca-Na zeolite
417	-	700	4000	0	0	0	99	Chlorite	Mg, 750 cps
448	80	2500	5500	0	0	10	250	Faujasite?	Na Ca zeolite

Table 3. Microprobe Determinations of Feldspars (expressed as mole percent An and Or)

Rock	Petrographic Notes	An	Or
267	Corroded phenocryst, centre	55	3.8
	" " , edge	52	2.8
	" " , centre	52	3.9
	Small groundmass grain	29	5.3
		40	2.9
271	Groundmass grain	51	2.6
	" "	52	3.5
	" "	30	5.9
	Microphenocryst	52	3.3
275	Corroded phenocryst (centre)	53	2.9
	" " (edge)	13	11.5
	(edge)	51	1.8
	Small groundmass grain	49	1.8
	" " "	54	1.7
	" " "	42	2.7
292	Large pitted phenocryst (centre)	45	3.8
	" " " (edge)	48	3.2
	Small groundmass grain	31	4.4
	" " "	33	4.6
	" " "	36	3.2
295	Large pitted phenocryst (centre)	74	2.8
	" " " (edge)	83	2.3
	" " " (centre)	62	5.0
	" " " (edge)	58	4.3
	Small groundmass grain	84	2.2
	" " anorthoclase	27	17.3
	" " "	43	6.2
312	Large zoned phenocryst;	48	2.1
	traverse from centre	48	2.0
	to rim	47	2.2
		46	2.0
		46	2.1
	Large lath; traverse	48	2.3
	from centre to rim	46	2.2
		39	2.4
	Centre of large lath	37	2.4
	Edge " " "	28	3.7
314	Corroded phenocryst, centre	28	5.4
	" " , edge	32	3.8
	" " , centre	45	2.6
	" " , edge	35	3.7
	" " , edge	34	6.0
	Large groundmass grain	36	3.3
	Small " "	31	4.4
	Small groundmass grain	21	7.1
	" " "	22	5.1
	Groundmass grain	33	3.3
334	Small euhedral phenocryst	41	3.8
	Small corroded phenocryst; (	38	3.6
	traverse from centre to (	43	3.1
	rim (	39	2.9
	Small corroded phenocryst, centre	38	4.3
	" " " , edge	37	3.6
	Groundmass sanidine	2	56
	Groundmass grain	32	4.2
	Groundmass grain	43	3.7
404	Euhedral phenocryst, centre	43	2.1
	" " , edge	37	3.1
	Small groundmass grain	59	1.2
	" " "	53	1.4
	Corroded groundmass grain	34	4.1
	Euhedral phenocryst, centre	73	0.7
	Euhedral phenocryst, edge	46	2.2
	Corroded groundmass grain	71	0.6
434	Groundmass anorthoclase	19	28
	Groundmass grain	52	28
	" "	57	1.6
	Phenocryst, centre	55	1.8
	" , edge	62	1.4
	Groundmass sanidine	9	32

Laboratory Report No. 39 13 June, 1974

Zinc Content of Molonglo River Water

by

B. Cruikshank, G. Willcocks, J. Price

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 23/5/74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn(ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	225	6.8	0.33	0.44	0.65'
Honeysuckle Crk (F2)	138	7.8	0.02	0.09	
Lake Burley Griffin at					
Scrivener Dam (H4)	109	6.9	0.08	0.12	24.87'

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 40 13 June, 1974

Zinc Content of Molonglo River Water

by

B. Cruikshank, G. Willcocks, J. Price

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 27/5/74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)					
Honeysuckle Crk (F2)					
Lake Burley Griffin at					
Scrivener Dam (H4)	110	6.5	0.05	0.17	25.10'

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 41

13 June 1974

Zinc Content of Molonglo River Water

by

G. Willcocks, B. Cruikshank, J. Price

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling: 1/6/74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at Burbong Weir (D2) (410705)	138	6.3	0.48	0.59	1.76
Honeysuckle Crk (F2)	113	6.5	0.07	0.12	-
Lake Burley Griffin at Scrivener Dam (H4)	78	6.1	0.06	0.14	24.87

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 42 13 June, 1974

Zinc Content of Molonglo River Water

by

B. Cruikshank, G. Willcocks, T. Price

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 6/6/74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved	Zn (ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	138	6.0	0.75	0.98	2.75'
Honeysuckle Crk (F2)	140	6.4	0.22	0.31	
Lake Burley Griffin at					
Scrivener Dam (H4)	70	6.3	0.07	0.14	25.05'

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 43

13 June 1974

Zinc Content of Molonglo River Water

by

B. Cruikshank, G. Willcocks, J. Price

The following results were obtained for the determination of specific conductance at 20°C, dissolved zinc and total zinc on water samples taken at 8 hourly intervals from the Molonglo River at Burbong Weir (D2-410705). All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling: 23/5/74 - 29/5/74

Date	Time	Sp. Cond. (umho/cm)	Zn (dissolved)	Zn (Total)	Gauge height
23-5	1505	223	0.51	1.25	-
	2305	225	0.65	1.42	-
24-5	0705	226	0.50	1.12	-
	1505	230	0.54	1.14	-
	2305	230	0.56	1.08	-
25-5	0705	175	0.61	1.12	2.95
	1505	120	0.44	1.10	3.15
	2305	108	1.27	2.48	5.18
26-5	0705	86	1.08	1.89	5.55
	1505	75	0.79	1.27	5.61
	2305	73	0.73	1.16	4.77
27-5	0705	80	0.66	1.00	3.95
	1505	86	0.69	0.98	3.72
	2305	89	0.64	0.96	3.64
28-5	0705	93	0.62	0.85	3.34
	1505	96	0.62	0.90	3.15
	2305	100	0.62	1.00	2.90
29-5	0705	No Sample			

Laboratory Report No. 44 21 June 1974

Zinc Content of Molonglo River Water

by

B. Cruikshank, C. Willcocks, J. Price.

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 13-6-74.

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	No sample				
Honeysuckle Crk (F2)	141	6.4	0.10	0.17	
Lake Burley Griffin at					
Scrivener Dam (H4)	77	6.3	0.07	0.12	24.93'

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 45 21 June 1974

Zinc Content of Molonglo River Water

by

B. Cruikshank, C. Willcocks, J. Price.

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 27-5-74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	92	5.7	0.38	0.52	3.80'
Honeysuckle Crk (F2)	57	5.7	0.01	0.03	10.95'
Lake Burley Griffin at					
Scrivener Dam (H4)	No sample				

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 46 23 July 1974

Zinc Content of Molonglo River Water

by

B.I. Cruikshank, J.C. Weekes & P.J. Swan

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 13/6/74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	166	6.6	0.52	0.59	1.48'
Honeysuckle Crk (F2)		No sample			
Lake Burley Griffin at					
Scrivener Dam (H4) (410732)		No sample			

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 47 23/7/74

Zinc Content of Molonglo River Water

by

B.I. Cruikshank, J.C. Weekes & P.J. Swan

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 20/6/74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn(ppm) (dissolved)	Zn(ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	200	7.0	0.45	0.58	0.97
Honeysuckle Crk (F2)	121	7.0	0.07	0.16	-
Lake Burley Griffin at					
Scrivener Dam (H4) (410732)	95	6.7	0.08	0.11	24.89

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 48 23 July, 1974

Zinc Content of Molonglo River Water

by

B.I. Cruikshank, J.C. Weekes & P.J. Swan

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee oh Mine Waste Pollution in the Molonglo River.

Date of sampling 27/6/74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn(ppm) (dissolved)	Zn(ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	205	6.7	0.44	0.57	0.82'
Honeysuckle Crk (F2)	137	6.7	0.09	0.16	-
Lake Burley Griffin at					
Scrivener Dam (H4) (410732)	101	6.8	0.10	0.13	24.88

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 49

23 July 1974

Zinc Content of Molonglo River Water

by

B.I. Cruikshank, J.C. Weekes & P.J. Swan

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling: 4/7/74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	238	6.8	0.55	0.63	-
Honeysuckle Crk (F2)	165	6.7	0.13	0.15	-
Lake Burley Griffin at					
Scrivener Dam (H4) (410732)	104	6.5	0.11	0.14	24.89

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 50 23 July, 1974

Zinc Content of Molonglo River Water

by

B.I. Cruikshank, J.C. Weekes & P.J. Swan

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 11/7/74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn(ppm) (dissolved)	Zn(ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	243	6.4	0.64	0.65	0.94
Honeysuckle Crk (F2)	176	6.8	0.12	0.15	-
Lake Burley Griffin at					
Scrivener Dam (H4) (410732)	109	6.6	0.08	0.10	24.88

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 51.

Zinc Content of Molonglo River Water

by

B.I. Cruikshank, J.C. Weekes & P.J. Swan

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 18/7/74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	358	7.0	0.34	0.45	1.68
Honeysuckle Crk (F2)	153	6.6	0.11	0.20	-
Lake Burley Griffin at					
Scrivener Dam (H4) (410732)	113	6.8	0.07	0.09	25.10

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No.52 6 August 1974

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK, J.C. WEEKES & P.J. SWAN

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 25/7/74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	205	6.4	0.53	0.63	1.04'
Honeysuckle Crk (F2)	178	6.7	0.13	0.23	-
Lake Burley Griffin at					
Scrivener Dam (H4)	124	6.8	0.05	0.08	24.89'

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 53 6 August 1974

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK, J.C. WEEKES & P.J. SWAN

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 1/8/74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	230	6.7	0.38	0.45	0.90'
Honeysuckle Crk (F2)		No sample			
Lake Burley Griffin at					
Scrivener Dam (H4)	149	6.7	0.08	0.13	24.86'

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

LABORATORY REPORT NO. 54 17th September 1974

CHEMICAL ANALYSIS OF ROCK SAMPLES FROM ALLIGATOR RIVER, COBURG PENINSULAR AND CLONCURRY

by

J.G. Pyke

One hundred and thirty two rock samples, one hundred and three from Alligator River N.T., twelve from Coburg Peninsular N.T. and seventeen from Cloncurry N.W. Qld were submitted by P.G. Wilkes for trace element analysis of uranium and thorium. The analyses were carried out by x-ray fluorescence, using unignited material pressed into boric acid pellets.

Sample No.	Th ppm	U ppm
73/163	59	13
73/164	21	76
73/165	15	5741
73/166	ND	16
73/167	ND	38
73/168	163	20
73/169	60	10
73/171	17	38
73/173	33	6
73/174	24	5
73/175	787	4581
73/176	ND	43
73/177	8	28
73/178	11	35
73/179	9	29
73/180	4	ND
73/181	19	32
73/182	9	203
73/183	4	258
73/184	4	4
73/185	3	29
73/186	3	6
73/187	17	17
73/188	14	18
73/189	18	16

Sample No.	Th ppm	U ppm
73/190	ND	17
73/191	38	10
73/192	20	40
73/193	11	4
74/42	8	ND
74/43	ND	55
74/44	ND	38
74/45	5	188
74/46	6	18
73121001	46	8
73121002	38	7
73121003	57	11
73121004	56	13
73121005	41	13
73121006	22	4
73121007	56	7
73121008	62	15
73121039	22	ND
73121040	17	ND
73121041	16	ND
73121045	6	ND
73121046	4	ND
73121047	3	ND
73121048	9	ND
73121049	3	ND
73121050	10	4
73121051	3	ND
73121058	15	ND
73121059	32	3
73121060	55	13
73121061	13	ND
73121065	13	4
73121066	9	ND
73121067	ND	ND
73121068	5	ND
73121074	4	ND
73121075	4	ND
73121076	5	ND
73121077	5	ND
73121173	ND	ND

Sample No.	Th ppm	U ppm
73121174	ND	ND
73121175	ND	ND
73121176	8	ND
73121177	ND	ND
73121178	7	ND
73121179	5	ND
73121289	ND	4
73121290	4	ND
73121291	ND	ND
73121292	5	ND
73121293	10	3
73121294	33	19
73121295	13	ND
73121296	ND	ND
73121297	5	ND
73121298	7	ND
73121299	7	ND
73121339	18	ND
73121340	14	4
73121341	10	ND
73121381	17	4
73121382	9	ND
73121383	9	ND
73121384	ND	ND
73121385	11	4
73121386	13	3
73121387	12	ND
73121388	13	ND
73121389	13	4
73121390	10	ND
73121445	32	53
73121446	21	ND
73121447	ND	ND
73121448	19	6
73121449	9	ND
73121450	19	5
73121451	9	ND
73121452	17	ND
73121453	12	3
73121454	38	5

Sample No.	Th ppm	U ppm
73121455	51	6
73121456	32	5
73121457	5	ND
73121458	4	ND
73121459	ND	ND
73121460	11	ND
73121461	21	6
73121462	4	ND
73121463	ND	ND
73121464	19	5
73121465	4	ND
73121466	50	5
73121467	11	ND
73121468	11	4
73050162	41	8
73050164	44	7
73050165	35	ND
73050168	39	ND
73050171	46	ND
73050178	46	12
73/056A	54	ND
73/056B	43	4
73/056C	16	ND
73/056D	6	4
73/056E	10	ND
73/069A	43	5
73/069C	29	4

NB. ND = Not Detected

Calculated detection limits are :- Thorium 3 ppm
Uranium 3 ppm

Laboratory Report No. 55

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK, P.J. SWAN AND J.C. WEEKES

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling .....10/10/74.....

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	214	5.9	0.27	0.34	1.45
Honeysuckle Crk (F2)	160	6.8	0.05	0.10	-
Lake Burley Griffin at					
Scrivener Dam (H4) (410732)	177	6.9	0.02	0.06	24.94

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 56

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK, J.C. WEEKES AND P.J. SWAN

The following results were obtained for the determination of specific conductance at 20°C, dissolved zinc and total zinc on water samples taken at 8 hourly intervals from the Molonglo River at Burbong Weir (D2 - 410705). All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling : 3/10/74 to 6/10/74

Date	Time	Sp. Cond. (umho/cm)	pH	Zn (dissolved)	Zn (Total)	Gauge height
3/10	1050	228	6.6	0.41	0.87	1.53'
4/10	1600	210	6.5	0.25	0.42	2.76'
5/10	1030	128	6.4	0.19	0.94	3.40'
5/10	1830	155	6.4	0.29	0.91	3.55
6/10	0230	160	6.3	0.42	0.86	3.40

Laboratory Report No.57 29 October 1974

Zinc Content of Molonglo River Water

by

B.I. Cruikshank, J.C. Weekes & P.J. Swan.

The following results were obtained for the determination of specific conductance at 20°C, dissolved zinc and total zinc on water samples taken at 8 hourly intervals from the Molonglo River at Burbong Weir (D2 - 410705). All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling: 17/10/74 to 19/10/74

Date	Time	Sp. Cond. (umho/cm)	pH	Zn (dissolved)	Zn (Total)	Gauge height
17/10	1030	288	6.8	0.14	0.40	2.50
18/10	1030	119	6.2	0.23	0.61	5.15
	1830	79	5.9	0.41	0.65	4.00
19/10	0230	89	6.0	0.34	0.52	3.40
	1030	100	6.2	0.40	0.45	3.10

Laboratory Report No. 58 29 October 1974

Zinc Content of Molonglo River Water

by

B.I. Cruikshank, J.C. Weekes & P.J. Swan

The following results were obtained for the determination of specific conductance at 20°C, dissolved zinc and total zinc on water samples taken at 8 hourly intervals from the Molonglo River at Burbong Weir (D2 - 410705). All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling: 11/10/74 to 13/10/74

Date	Time	Sp. Cond. (umho/cm)	pH	Zn (dissolved)	Zn (Total)	Gauge height
11/10	1015	219	6.8	0.34	0.70	1.51'
	1815	212	6.8	0.38	1.24	2.40
12/10	0215	200	6.8	0.32	0.76	2.39
	1015	195	6.5	0.30	0.70	2.05
	1815	200	6.7	0.25	0.58	1.72
13/10	0215	204	6.5	0.34	0.37	1.55

Laboratory Report No.59 29 October 1974

Zinc Content of Molonglo River Water

by

B.I. Cruikshank, J.C. Weekes & P.J. Swan

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 17/10/74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	274	6.5	0.16	0.30	2.43'
Honeysuckle Crk (F2)	138	6.5	0.04	0.10	-
Lake Burley Griffin at					
Scrivener Dam (H4)	141	6.5	0.03	0.06	25.28

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

26 November 1974

Laboratory Report No. 60.

Analysis of Basic Igneous Rocks And Lime-Magnesia Sediments Of North-Western Queensland

by

T.I. Slezak

Fifty-five samples from NW-Queensland submitted by Dr K.R. Walker were analysed by optical emission spectroscopy on the Hilger and Watts 3 metre Polychromator for the following elements: Fe, Mg, Mn, Cr, Co, Ni, V, Ca, Ti, Sr, Ba, Sc, Y, La, Zr, and Cu. The values for Fe, Mg, Mn, Ca, and Ti are given in per centum, whereas all others in parts per million.

The analytical method used was adopted from Ahrens and Taylor ("Spectrochemical Analysis", 1961, p. 189, Addison-Wesley Publishing Company). One part of sample was mixed with two parts of graphite (National Carbon Company Type L4160, Grade SP-2). The mix was loaded into a pre-formed graphite electrode (National Carbon Company Type 4206), and arced as the anode in a constant current (8 amps) D.C. arc for 130 seconds. Both internal and rock standard control were used. From previous experience with this method for the analysis of similar materials it is estimated that the values given for the elements are within 10% of the true value.

Sample No	Fe %	Mg %	Mn %	Cr p.p.m.	Co p.p.m.	Ni p.p.m.	V p.p.m.	Ca %
J601	8.0	3.8	0.10	66	30	46	205	6.6
1712	6.3	4.4	0.13	170	33	86	200	9.0
1772	4.1	2.9	0.16	86	21	38	90	6.2
B1941D	6.5	4.5	0.13	> 500	67	620	130	5.3
A1974	6.2	1.9	0.18	270	34	39	140	4.0
2004	5.4	2.3	0.14	410	20	23	72	9.0
2112	> 10.0	3.3	0.26	92	42	57	330	6.2
2114	8.6	4.3	0.26	180	39	94	260	7.8
2171	5.8	3.9	0.12	180	31	84	170	8.4
2173a	> 10.0	4.6	0.26	78	47	47	250	7.4
2149	4.7	2.8	0.17	100	17	32	150	2.9
2173b	> 10.0	3.9	0.13	76	52	66	310	6.0
2771	3.7	2.7	0.15	87	22	40	90	6.6
2850	8.8	3.8	0.11	110	39	70	260	5.0
2867	6.6	3.7	0.16	170	43	120	210	7.2
4001	> 10.0	2.8	0.14	250	31	39	340	7.0
4002	5.6	2.1	0.13	68	23	22	68	9.8
7503	> 10.0	2.1	0.12	47	40	49	240	6.2
7642B	3.2	2.9	0.02	47	12	29	36	5.0
7902	7.8	3.7	0.15	100	43	86	220	7.0

Sample No	Fe %	Mg %	Mn %	Cr p.p.m.	Co p.p.m.	Ni p.p.m.	V p.p.m.	Ca %
7911	8.2	4.4	0.15	200	39	94	260	7.2
7913aa	8.1	4.1	0.17	180	40	80	300	8.0
7945	7.1	4.5	0.16	150	35	100	200	6.0
7987	10.0	2.4	0.16	115	31	31	350	6.2
7990	5.2	1.8	0.10	56	20	25	78	8.3
8000	6.8	3.8	0.15	130	35	96	190	7.2
9518	> 10.0	2.7	0.19	105	33	44	270	5.5
9531	10.0	3.8	0.15	120	50	56	270	6.4
9578	> 10.0	3.4	0.14	74	32	31	280	6.4
9597	8.0	4.2	0.18	175	45	125	250	6.5
J204	9.0	3.7	0.15	170	46	110	230	6.6
403C	9.5	3.5	0.18	86	40	68	300	7.2
1556	6.7	3.1	0.12	74	30	47	190	6.8
1948	> 10.0	4.1	0.14	120	39	90	250	7.2
1975	> 10.0	3.6	0.20	100	52	92	320	6.6
2129	9.8	3.8	0.26	120	39	52	300	7.6
2164	9.4	3.9	0.10	190	33	66	310	7.8
2169	6.2	4.1	0.18	180	32	80	180	> 10.0
2170	6.0	5.0	0.15	170	41	140	150	8.0
2183	7.9	3.0	0.11	135	34	68	270	7.0
2636	2.8	1.8	0.15	64	16	26	88	4.5
2770	9.0	2.9	0.16	30	38	32	350	5.4
2829	8.0	3.4	0.15	135	44	78	260	6.0
2849	7.2	4.5	0.09	220	30	150	190	6.2
2857	> 10.0	3.8	0.18	110	44	85	290	5.6
2871	8.2	4.6	0.13	100	49	210	170	7.2
3198	9.0	2.9	0.13	83	48	115	180	4.2
4003A	6.0	4.2	0.12	270	40	135	160	7.0
4002B	7.0	4.3	0.13	170	46	160	230	6.6
4033	8.2	4.1	0.15	90	49	99	240	7.4
4040	10.0	2.3	0.13	89	42	64	180	4.0
7080	7.9	3.9	0.17	145	41	80	270	6.4
9521	8.3	2.9	0.18	25	39	88	260	6.2
9528	5.5	4.1	0.29	52	21	27	66	9.5
9529	6.2	3.7	0.10	240	41	88	220	8.0
9595	9.0	4.3	0.22	140	52	130	240	7.3

Sample No	Ti %	Sr p.p.m.	Ba p.p.m.	Sc p.p.m.	Y p.p.m.	La p.p.m.	Zr p.p.m.	Cu p.p.m.
J601	0.66	< 70	90	45	66	<100	150	<10
1712	0.62	240	230	37	32	<100	120	90
1772	0.40	390	670	17	35	<100	170	10
B1941D	0.40	120	165	27	27	<100	100	83
A1974	0.78	150	300	47	76	130	470	100
2004	0.33	180	210	17	33	<100	180	13
2112	1.00	210	390	38	52	<100	210	54
2114	0.74	290	580	35	41	<100	200	78
2171	0.50	220	215	34	27	<100	100	94
2173a	1.15	300	560	34	47	<100	200	68

Sample No	Ti %	Sr p.p.m.	Ba p.p.m.	Sc p.p.m.	Y p.p.m.	La p.p.m.	Zr p.p.m.	Cu p.p.m.
2149	0.54	< 70	160	21	29	< 100	190	< 10
2173b	0.81	160	135	43	43	< 100	200	180
2771	0.36	380	690	17	34	< 100	180	< 10
2850	0.62	110	145	38	29	< 100	< 100	260
2867	0.48	150	< 80	35	28	< 100	< 100	190
4001	1.40	160	210	39	60	100	280	43
4002	0.33	170	215	18	37	< 100	170	14
7503	0.34	160	470	38	58	120	250	200
7642B	< 0.10	< 70	250	10	32	< 100	270	50
7902	0.58	130	330	40	37	< 100	110	135
7911	0.68	210	200	42	37	< 100	130	170
7913aa	0.72	160	105	41	30	< 100	< 100	120
7945	0.45	140	250	44	23	< 100	< 100	175
7987	1.30	100	220	33	54	< 100	270	54
7990	0.30	160	130	17	30	< 100	160	< 10
8000	0.31	100	310	40	32	< 100	< 100	155
9518	0.80	150	80	36	50	< 100	190	56
9531	0.66	160	290	45	43	< 100	130	150
9578	1.10	170	120	39	58	< 100	240	42
9597	0.56	84	< 80	42	33	< 100	105	280
J204	1.05	270	350	35	42	< 100	< 100	88
403C	0.70	280	195	44	34	< 100	120	120
1556	0.57	180	190	32	30	< 100	140	72
1948	0.85	180	450	35	44	< 100	210	125
1975	1.15	152	425	45	80	140	300	142
2129	0.88	240	120	38	46	< 100	220	100
2164	0.71	160	< 80	42	43	< 100	160	29
2169	0.52	230	230	37	30	< 100	110	86
2170	0.50	180	250	37	28	< 100	< 100	130
2183	0.71	150	150	35	38	< 100	150	74
2636	0.37	160	640	24	32	< 100	200	31
2770	0.88	140	390	39	52	< 100	240	46
2829	0.62	150	< 80	41	40	< 100	140	130
2849	0.52	140	< 80	33	37	< 100	145	35
2857	0.78	160	96	44	43	< 100	150	205
2871	0.56	230	190	26	29	< 100	120	135
3198	0.92	170	865	36	59	110	220	94
4003A	0.34	120	200	37	33	< 100	110	92
4003B	0.52	180	185	35	38	< 100	100	140
4033	0.53	130	< 80	43	36	< 100	100	150
4040	1.03	270	740	34	68	105	345	145
7080	0.60	110	105	47	37	< 100	150	155
9521	0.72	120	< 80	35	49	< 100	270	28
9528	0.21	180	100	14	37	< 100	170	115
9529	0.54	260	96	40	32	< 100	100	115
9595	0.56	450	260	47	46	< 100	120	100

Laboratory Report No. 61 15 October 1974

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK, J.C. WEEKES & P.J. SWAN

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 1/8/74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)		—			
Honeysuckle Crk (F2)	196	6.4	0.15	0.30	-
Lake Burley Griffin at					
Scrivener Dam (H4)		—			

Bracketed number are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 62

15 October 1974

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK, J.C. WEEKES & P.J. SWAN

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 8/8/74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	275	6.8	0.40	0.44	0.66'
Honeysuckle Crk (F2)	216	6.7	0.07	0.13	-
Lake Burley Griffin at					
Scrivener Dam (H4)	157	6.6	0.09	0.13	24.66'

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 63 15 October 1974

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK, J.C. WEEKES & P.J. SWAN

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 15/8/74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	312	7.1	0.35	0.50	0.61'
Honeysuckle Crk (F2)	230	7.1	0.03	0.09	-
Lake Burley Griffin at					
Scrivener Dam (H4)	161	7.1	0.05	0.08	24.88'

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No.64 15 October 1974

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK, J.C. WEEKES & P.J. SWAN

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 22/8/74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	290	6.9	0.34	0.40	0.55'
Honeysuckle Crk (F2)	188	7.1	0.03	0.06	-
Lake Burley Griffin at					
Scrivener Dam (H4)	163	6.9	0.04	0.06	24.86'

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 65 15 October 1974

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK, J.C. WEEKES & P.J. SWAN

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 28/8/74

Sampling points	Time	SP.Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow (cusecs)
Molonglo River at :-						
Burbong Weir (410705)	2400	47	5.1	0.41	0.90	22,000*
	1315	60	6.1	0.29	0.42	3,500
Oaks Estate** (410729)	1500	46	6.2	0.02	0.06	24,300
Below Scrivener Dam (410718)	1430	40	6.0	0.14	0.20	30,600

* Value for river flow is approximate

** Sample from left bank and is predominantly water from the Queanbeyan River.

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 66 15 October 1974

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK, J.C. WEEKES & P.J. SWAN

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 29/8/74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow (cusecs)
Captains Flat, Mine					
Eastern Spring Northern Dump (000067)	2,600	2.5	146	146	0.8
Molonglo River at					
Burbong Weir (D2) (410705)	39	5.6	0.29	0.32	12,000

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 67

Zinc Content of Molonglo River Water

by

B.I. Cruikshank, J.C. Weekes & P.J. Swan

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling: 2/9/74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow (cusecs)
Molonglo River at					
Captain's Flat Road Bridge	108	4.8	3.10	3.10	80**
Hoskinstown Road (D) (410759)	104	5.9	0.41	0.45	200**
Burbong Weir (D2) (410705)	113	6.1	0.33	0.43	420
Oaks Estate* (410729)	78	6.4	0.01	0.04	2,250
Honeysuckle Ck. (F2)	90	6.4	0.06	0.11	-
Duntroon Bridge (G)	89	6.3	0.05	0.08	-
Lake Burley Griffin at****					
Kings Ave. (H2)	90	6.0	0.06	0.12	-
Commonwealth Ave. (H3)	80	5.9	0.07	0.78***	-
Scrivener Dam (H4) (410732)	59	5.7	0.11	0.12	-
Molonglo River Below					
Scrivener Dam (410718)	54	5.9	0.07	0.08	2,040

* Sample from left bank and is dominantly water from the Queanbeyan River.
** Values for river flow are approximate.
*** Value notably high - possibility of contamination since amount of sediment not noticeably different from other lake samples and there was evidence of staining in sample bottle.
**** Lake level was 25.04 ft. on 2/9/74.

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 68

15 October 1974

Zinc Content of Molonglo River Water

by

B.I. Cruikshank, J.C. Weekes & P.J. Swan

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of Sampling: 12/9/74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn(ppm) (dissolved)	Zn(ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)		No sample			
Honeysuckle Crk (F2)	142	6.3	0.08	0.12	-
Lake Burley Griffin at					
Scrivener Dam (H4)	104	4.5	0.08	0.09	24.95

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 69

Zinc Content of Molonglo River Water

by

B.I. Cruikshank, J.C. Weekes & P.J. Swan

The following results were obtained for the determination of specific conductance at 20°C, dissolved zinc and total zinc on water samples taken at 8 hourly intervals from the Molonglo River at Burbong Weir (D2 - 410705). All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling: 10/9/74 - 17/9/74

Date	Time	Sp. Cond. (umho/cm)	pH	Zn (dissolved)	Zn (Total)	Gauge height
10-9	1340	151	6.6	0.32	0.46	1.88
	2140	163	6.8	0.25	0.52	1.78
11-9	0540	166	6.8	0.28	0.43	1.74
	1340	168	6.8	0.28	0.47	1.70
	2140	174	6.8	0.31	0.47	1.67
12-9	0540	175	6.9	0.27	0.47	1.62
	1340	178	6.6	0.37	0.66	1.59
	2140	180	6.9	0.38	0.68	1.53
13-9	0540	180	6.9	0.37	0.58	1.48
	1340	182	6.9	0.42	0.82	1.46
	2140	185	6.9	0.33	0.75	1.41
14-9	0540	188	6.9	0.49	0.66	1.41
	1340	192	6.9	0.43	0.60	1.41
	2140	194	6.9	0.37	0.69	1.38
15-9	0540	196	6.9	0.42	0.64	1.35
	1340	200	6.9	0.42	0.82	1.42
	2140	197	6.9	0.39	0.84	1.39
16-9	0540	198	6.9	0.42	0.69	1.33
	1340	200	6.9	0.43	0.75	1.26
	2140	204	6.9	0.49	0.82	1.22
17-9	0540	202	6.9	0.50	0.85	1.19

Laboratory Report No. 70

Zinc Content of Molonglo River Water

by

B.I. Cruikshank, J.C. Weekes, & P.J. Swan

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling: 19/9/74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	-	-	-	-	-
Honeysuckle Crk (F2)	160	6.5	0.06	0.10	-
Lake Burley Griffin at					
Scrivener Dam (H4)	104	6.0	0.07	0.11	24.92

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 71

Zinc Content of Molonglo River Water

by

B.I. Cruikshank, J.C. Weekes & P.J. Swan

The following results were obtained for the determination of specific conductance at 20°C, dissolved zinc and total zinc on water samples taken at 8 hourly intervals from the Molonglo River at Burbong Weir (D2 - 410705). All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling: 17/9/74 - 20/9/74

Date	Time	Sp. Cond. (umho/cm)	Zn (dissolved)	Zn (Total)	Gauge height
17-9	1230	208	0.26	0.60	1.18
	2030	208	0.22	0.52	1.16
18-9	1230	210	0.25	0.45	1.12
19-9	1230	222	0.20	0.40	1.07
20-9	1000	222	0.27	0.42	1.04

Laboratory Report No. 72 15 October 1974

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK, J.C. WEEKES & P.J. SWAN

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 26/9/74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn(ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (Ds) (410705)	236	6.7	0.26	0.29	1.18'
Honeysuckle Crk (F2)	175	7.1	0.04	0.08	-
Lake Burley Griffin at					
Scrivener Dam (H4)	111	6.3	0.08	0.08	24.96'

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 73 15 October 1974

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK, J.C. WEEKES & P.J. SWAN

The following results were obtained for the determination of specific conductance at 20°C, dissolved zinc and total zinc on water samples taken at 8 hourly intervals from the Molonglo River at Burbong Weir (D2 - 410705). All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling: 24/9/74 to 26/9/74

Date	Time	Sp. Cond. (umho/cm)	pH	Zn (dissolved)	Zn (Total)	Gauge height
24/9	1010	230	6.5	0.38	0.47	1.10'
	1810	233	6.7	0.40	0.71	1.20'
25/9	0210	244	6.9	0.26	1.17	1.27'
	1010	240	6.7	0.38	0.84	1.26'
	1810	236	6.6	0.47	1.28	1.33'
26/9	0210	243	6.6	0.31	0.56	1.27'
	1010	243	6.8	0.25	0.89	1.15'

Laboratory Report No. 74 15 October 1974

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK, J.C. WEEKES & P.J. SWAN

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 3/10/74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn(ppm) (dissolved)	Zn(ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)		No sample			
Honeysuckle Crk (F2)	174	6.8	0.04	0.09	-
Lake Burley Griffin at					
Scrivener Dam (H4)	131	6.1	0.07	0.14	24.94'

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 75 15 October 1974

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK, J.C. WEEKES & P.J. SWAN

The following results were obtained for the determination of specific conductance at 20°C, dissolved zinc and total zinc on water samples taken at 8 hourly intervals from the Molonglo River at Burbong Weir (D2 - 410705). All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling: 2/10/74 to 3/10/74

Date	Time	Sp. Cond. (umho/cm)	pH	Zn (dissolved)	Zn (Total)	Gauge height
2/10	0345	262	6.7	0.21	0.89	2.55'
	1145	228	6.4	0.26	0.76	2.33'
	1945	226	6.4	0.40	0.85	1.93'
3/10	0345	221	6.4	0.40	0.58	1.65'

Laboratory Report No. 76 28 November, 1974

Zinc Content of Molonglo River Water

by

B.I. Cruikshank, J.C. Weekes & P.J. Swan

The following results were obtained for the determination of specific conductance at 20°C, dissolved zinc and total zinc on water samples taken at 8 hourly intervals from the Molonglo River at Burbong Weir (D2-410705). All samples were acidified with hydrochloric acid prior to the dtermination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling: 19/10/74 - 22/10/74

Date	Time	Sp. Cond. (umho/cm)	pH	Zn (dissolved)	Zn (Total)	Gauge height
19/10	1245	110	6.0	0.37	0.59	3.05'
	2045	120	6.2	0.27	0.43	2.84'
20/10	0445	140	6.3	0.29	0.47	2.66'
	1245	160	6.1	0.34	0.47	2.48'
21/10	1245	145	6.2	0.34	0.56	2.08'
22/10	1245	158	6.4	0.31	0.59	1.74'

Laboratory Report No. 77 2 November, 1974

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK, J.C. WEEKES & P.J. SWAN

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 24/10/74.....

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	195	7.1	0.19	0.25	1.75
Honeysuckle Crk (F2)	130	7.2	0.05	0.12	-
Lake Burley Griffin at					
Scrivener Dam (H4)	95	6.2	0.04	0.05	25.00

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 78 2 November, 1974

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK, J.C. WEEKES & P.J. SWAN

The following results were obtained for the determination of specific conductance at 20°C, dissolved zinc and total zinc on water samples taken at 8 hourly intervals from the Molonglo River at Burbong Weir (D2-410705). All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling: 29/10/74 to 30/10/74

Date	Time	Sp. Cond. (umho/cm)	pH	Zn (dissolved)	Zn (Total)	Gauge height
29/10	2215	235	6.9	0.13	0.19	1.27'
30/10	0615	251	6.9	0.12	0.19	1.61'

Laboratory Report No. 79 2 November, 1974

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK, J.C. WEEKES & P.J. SWAN

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling ...31/10/74.....

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	219	6.8	0.13	0.17	-
Honeysuckle Crk (F2)	155	6.9	0.04	0.04	-
Lake Burley Griffin at					
Scrivener Dam (H4)	96	7.0	0.05	0.05	-

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 80 2 November, 1974

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK, J.C. WEEKES & P.J. SWAN

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling ..7/11/74.....

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	205	6.6	0.17	0.25	1.56
Honeysuckle Crk (F2)	159	6.7	0.04	0.09	--
Lake Burley Griffin at					
Scrivener Dam (H4)	113	6.6	0.05	0.08	24.99

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 81

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Analysis of Water from Lake George, N.S.W.

B.I. Cruikshank

A water sample from Lake George, N.S.W., was tested for pH, specific conductivity and total dissolved solids. The sample was submitted by A.W. Schuett.

Date of sampling 21/10/74

pH - 6.4
sp. cond. - 1,860 umho/cm
T.D.S. (180°C)-1,120 p.p.m.

Laboratory Report No. 82. 3 December, 1974.

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK, P.J. SWAN & J.C. WEEKES

The following results were obtained for the determination of specific conductance at 20°C, dissolved zinc and total zinc on water samples taken at 8 hourly-intervals from the Molonglo River at Burbong Weir (D2-410705). All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling: 1/11/74 to 7/11/74.

Date	Time	Sp. Cond. (umho/cm)	pH	Zn dissolved	Zn (Total)	Gauge height (ft)
1-11-74	1710	231	6.5	0.02	0.23	1.58
2-11-74	0110	250	7.1	0.03	0.25	2.27
	0910	251	7.1	0.05	0.23	2.65
3-11-74	0110	236	7.3	0.05	0.32	2.90
	0910	198	6.6	0.17	0.45	2.96
	1710	179	7.0	0.11	0.38	2.75
4-11-74	0910	181	6.9	0.19	0.45	2.29
	1710	176	6.9	0.07	0.56	2.05
5-11-74	0110	182	6.3	0.18	0.46	1.79
	0910	184	6.5	0.17	0.41	2.00
	1710	186	6.9	0.19	0.66	1.65
6-11-74	0110	192	6.8	0.11	0.31	1.64
	0910	197	7.3	0.19	0.35	1.80
	1710	213	7.0	0.17	0.56	1.64
7-11-74	1415	212	6.7	0.11	0.27	1.55

Laboratory Report No. 83. 3 December, 1974.

Zinc Content of Molonglo River Water

by

P.J. SWAN, J.C. WEEKS & B.I. CRUIKSHANK

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 14-11-74.

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	226	6.3	0.16	0.20	2.37'
Honeysuckle Crk (F2)	193	6.4	0.02	0.05	-
Lake Burley Griffin at					
Scrivener Dam (H4)	137	6.6	0.02	0.04	25.0'

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 84 3 December 1974

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK, P.J. SWAN & J.C. WEEKES

The following results were obtained for the determination of specific conductance at 20°C, dissolved zinc and total zinc on water samples taken at 8 hourly intervals from the Molonglo River at Burbong Weir (D2-410705). All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling: 14/11/74 to 15/11/74

Date	Time	Sp. Cond. (umho/cm)	pH	Zn (dissolved)	Zn (Total)	Gauge height
14/11	0935	228	6.5	0.21	0.60	2.37
	1735	242	7.1	0.06	0.54	1.94
15/11	0135	233	7.0	0.11	0.50	1.62
	0935	250	6.7	0.12	0.37	1.45

Laboratory Report No. 85 3 December, 1974.

Zinc Content of Molonglo River Water

by

P.J. SWAN, B.I. CRUIKSHANK, & J.C. WEEKES

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 21-11-74.

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flo
Molonglo River at					
Burbong Weir (D2) (410705)	252	7.1	0.07	0.15	0.7
Honeysuckle Crk (F2)	174	7.2	0.01	0.02	-
Lake Burley Griffin at					
Scrivener Dam (H4)	150	6.5	0.03	0.06	24.9

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 86

7 January 1975

Zinc Content of Molonglo River Water

by

B.I. Cruikshank, P.J. Swan

The following results were obtained for the determination of specific conductance at 20°C, dissolved zinc and total zinc on water samples taken at 8 hourly intervals from the Molonglo River at Burbong Weir (D2-410705). All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling: 28/11/74

Date	Time	Sp. Cond. (umho/cm)	pH	Zn (dissolved)	Zn (Total)	Gauge height
28/11	1330	225	6.4	0.21	0.43	1.67

Laboratory Report No. 87

7 January 1975

Zinc Content of Molonglo River Water

by

B.I. Cruikshank and P.J. Swan

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling: 5.12.74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (total)	Flow
Molonglo River at Burbong Weir (D2) (410705)	235	6.7	0.07	0.15	0.66
Honeysuckle Crk (F2)	169	6.1	0.02	0.06	-
Lake Burley Griffin at Scrivener Dam (H4)	175	6.6	0.02	0.04	24.92

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 88

7 January 1975

Zinc Content of Molonglo River Water

by

P.J. Swan & B.I. Cruikshank

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling: 12/12/74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at Burbong Weir (D2) (410705)	250	6.6	0.09	0.12	0.58
Honeysuckle Crk (F2)	215	6.7	0.03	0.04	-
Lake Burley Griffin at Scrivener Dam (H4)	180	7.6	0.02	0.04	-

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 89

7 January 1975

Identification of refractory minerals in Kerogen samples from South Africa

by

G.W.R. Barnes

The mineralogy of 22 Kerogen samples submitted by Z. Horvath was determined by X-ray diffraction.

The results are as follows:

Sample No.		Minerals Identified
72240083	A	Graphite, Rutile
	B	Graphite, Rutile
	C	Graphite, Rutile
	D	Graphite, Rutile
72240084	A	Graphite, Rutile
	B	Graphite, Rutile
	C	Graphite, Rutile
	D	Graphite, Rutile
	E	Pseudoanatase, Pyrite, Feldspar
	F	Pyrite, (? Co-) pentlandite, Pseudoanatase, Feldspar
72240085	1	Graphite, Rutile, ?Tourmaline
	2	Tourmaline, Graphite
	3	Graphite, Rutile
	4	Quartz, Graphite, Anatase, Rutile, Tourmaline
72240090	1	Brookite, Rutile, Graphite, Tourmaline, ?Anatase, Zircon
	2	Rutile, Anatase, Graphite, Zircon
	3	Rutile, Anatase, Graphite, Zircon, ?Opal
	4	Rutile, Opal
72240098	4	Tourmaline, Rutile, Pyrite, Sphalerite, Hematite, ?Pseudoanatase, ?Graphite
	Mc 19/2	Pyrite
72240099	H 41	?Opal
	T 68	Quartz, Anatase, Rutile, Tourmaline, ?Graphite

Laboratory Report No. 90

9 January 1975

Identification (including semi-quantitative analysis) of minerals in tuffs, shales & dolerites from Woodlawn, N.S.W.

by

G.W.R. Barnes

The Woodlawn ore body is a massive base-metal sulphide deposit within felsic tuffs of Upper Silurian age.

The samples obtained are generally unmineralised but some do contain disseminated mineralisation.

105 total rock powders were submitted by Dr. I.B. Lambert for mineral identification by X-ray diffraction and, if possible, quantitative mineralogical analysis. The first task was relatively easy, but only an approximation to the second could be obtained.

The method involved making up multi-minerallic mixtures of varying but known mineral composition and obtaining diffraction charts from these samples, comparing selected peak heights for each mineral with those on the unknowns, and extrapolating where necessary.

The following results were obtained (see following pages):

N.B. (a) Numbers are in percent (accuracy is ± 5-9% absolute for major minerals).

(b) a ? indicates that the mineral may be present, but that positive identification was not possible.

(c) m indicates that the mineral is present but in quantities generally less than 1-5%.

(d) X indicates that a mineral is present, but that % estimates could not be made, eg. within members of the plagioclase group.

The locality of Woodlawn is marked on the Canberra 1:250 000 sheet, SI55-16.

Quartzo-feldspathic Tuffs with no, or minor sulphide

BMR Registered Number	Quartz	Albite	Oligoclase	Andesine	Plagioclase Composition	Microcline	Intermediate Microcline	Orthoclase	Indeterminate K-feldspar	Muscovite	Sericite	Chlorite	Mg-chlorite (clinochlore)	Montmorillonite	Kaolinite	Talc	Tremolite	Indeterminate Amphibole	Pyrite	Sphalerite	Galena	Chalcopyrite	Epidote	Calcite	Sphene	Apatite	Zircon	Stilpnomelane
74420011-1	84									5	?	3		11									3		3			
74420011-3	89	m								1	3	3		10														
74420011-4	95									1		4															3	
74420011-5	92									1	1	6			?					3								
74420011-6	94									1										5	?			?			3	
74420011-7	96									2		1								3			?				3	?
74420011-9	94									1	1	4															3	
74420011-10	83	1								4		11															3	
74420011-12	94									1		5		3													3	
74420011-14	92									1		6		3						3								
74420011-15	90	m								3		7			3												3	
74420011-16	95									1		4		3														
74420011-17	86									3		14				?											3	
74420011-18	96									1		3															3	
74420011-26	87									3		13															?	
74420010-2	87									3		10			3				?	3							?	
74420010-3	87									2		11									?						3	
74420010-8	93									3		7		?		?					m							
74420009-1	92								m	3		4		3					3	1								
74420009-4	92									3		4							3	1							?	

Quartzo-feldspathic Tuffs with no, or minor sulphide (cont.)

BMR Registered Number	Quartz	Albite	Oligoclase	Andesine	Plagioclase Composition	Microcline	Intermediate Microcline	Orthoclase	Indeterminate K-feldspar	Muscovite	Sericite	Chlorite	Mg-chlorite (Clinochlore)	Montmorillonite	Kaolinite	Talc	Tremolite	Indeterminate Amphibole	Pyrite	Sphalerite	Galena	Chalcopyrite	Epidote	Calcite	Sphene	Apatite	Zircon	Stilpnomelane
74420009-10	95									3	3	1			3				3	?								
74420009-11	85	3								3		5							.7	?	3			3			3		
74420009-12	94									6		3			?					3	?			?	?				
74420009-13	93										3	7													3		?		
74420009-16	92									1	?	7								3	3								
74420012-1	42	x	54		An_{12}					1		3								3		?							
74420012-5	43	56			An_{2-4}					3		1				?				3		?							
74420003-1	54	42			An_4					3		2		?					2			3							
74420003-3	12	74	x		An_0					1		13								3									
74420003-5	78	x	15		An_{22}					1		5																	
74420003-7	48		50		An_{12} ?					3		2																	
74420003-8	78	12	x							3		7															3		
74420003-9	63	34			An_3					1		2								?									
74420002-1	40	38			An_0		21			3				3					1								?		
74420002-2	14	46	x		An_8			3		3		9											?	31			3		
74420002-3	18	68			An_4							14				?									3		?	?	
74420002-4	17	70			An_{10}			3				13			3					?	3				?	?	?		
74420004-1	88		11		An_{21}	3				1										3									
74420004-2	89									2		9			3														
74420004-3	78	10						3		2		10			3														

Quartzo-feldspathic Tuffs with no, or minor sulphide (cont.)

BMR Registered Number	Quartz	Albite	Oligoclase	Andesine	Plagioclase Composition	Microcline	Intermediate Microcline	Orthoclase	Indeterminate K-feldspar	Muscovite	Sericite	Chlorite	Mg-chlorite (Clinochlore)	Montmorillonite	Kaolinite	Talc	Tremolite	Indeterminate Amphibole	Pyrite	Sphalerite	Galena	Chalcopyrite	Epidote	Calcite	Sphene	Apatite	Zircon	Stilpnomelane
74420004-5	68	27			An_9		m			m		m		m					5								m	
74420004-7	97	m			An_8					m		3							m	?							?	
74420008	85	15			An_0		m			m									m									
Shales & Tuffs with fairly high sulphide content																												
74420009-7	21									50		11				?			18	m							m	
74420009-14	6	m										35							30	12	m	17						
74420009-15	70	?								m		11				m			10	4	m			5		m	?	
74420009-18	3											20			?	m			20			57				m	m	
74420010-9	3											71				m			26	?				m			?	
74420011-20	80									1		5				m			13		m					?	m	
74420011-21	61									m		7				m			32									
74420011-23	46									m	?	35							19		m						m	
74420011-25	61											m							39									
74420011-28	3									3		39							55							?		
74420011-29	75									m		5			?			m	20	?							?	
74420003-4	38	58			An_2					m		m							4	x	m	m					?	
74420003-6	72	11			An_2				?	m	?	2							15									

Black Shales with minor pyrite

BMR Registered Number	Quartz	Albite	Oligoclase	Andesine	Plagioclase Composition	Microcline	Intermediate Microcline	Orthoclase	Indeterminate K-feldspar	Muscovite	Sericite	Chlorite	Mg-chlorite (Clinochlore)	Montmorillonite	Kaolinite	Talc	Tremolite	Indeterminate Amphibole	Pyrite	Sphalerite	Galena	Chalcopyrite	Epidote	Calcite	Sphene	Apatite	Zircon	Stilpnomelane
74420013-1	96									3	?	3							1									
74420013-2	94					?				2		1		3					3									
74420014-1	34	18							?	20		28							3		?		?				?	
74420014-2	54	21								1		24			3													
74420009-2	89									5		6							?	3								
74420009-9	72								3	8		8							12	?	?			?			?	
74420009-6	81									5		14								3	?						?	
74420012-4	77		20		An_{12}					1		2		3						?		?		?			3	
74420005-1	68								3	15		16			3						?							
74420005-2	85	5							?	8		3		3					2	?							?	
74420007-2	78	15							?	4		2		3	3	3			1									
74420002-5	70	15							?	7		7									?							
74420002-6	74	12							?	5		8				?					?			1			3	
74420002-7	78	5							3	10		7			3					3				?				
74420001-1	93									2		2							2									
74420001-3	64									35		1		3	3								?				?	
74420001-4	92									3		8			3					3			3				?	

To accompany Lab. Report No. 90

Shales & Tuffs with moderate pyrite content

BMR Registered Number	Quartz	Albite	Oligoclase	Andesine	Plagioclase Composition	Microcline	Intermediate Microcline	Orthoclase	Indeterminate K-feldspar	Muscovite	Sericite	Chlorite	Mg-chlorite (Clinochlore)	Montmorillonite	Kaolinite	Talc	Tremolite	Indeterminate Amphibole	Pyrite	Sphalerite	Galena	Chalcopyrite	Epidote	Calcite	Sphene	Apatite	Zircon	Stilpnomelane
74420011-2	84	3								8	?					3			8	x			3		3			
74420011-8	17		48		An_{17}			?		3		31							4	3				3			3	
74420011-11	84	3								4		6							4	2	3			3				
74420011-19	91									3		6			3				?	?		?	3				?	
74420011-22	95	3								1		2							2	x								
74420011-24	91									3		8							1	3							3	
74420011-27	96									1		3							3		3						?	
74420006-1	94								?	5		1			3	?			3	3	?				3		3	
74420006-2	90									6		4		?	3				3				?				?	
74420007-1	95		3							2		2		?	?				3				3				?	
74420012-3	90		3		An_{15}		3			6		4		3	3							?						
74420003-2	86	2			An_{0}					1		3			?				8	3							?	
74420001-2	92									5		3		?	3				3		3				?		3	
74420001-5	92								3	2		6		3	?					3								
74420001-6	95	1								3		1		3		?	?		3								3	
74420001-7	96	3								3		1				3			3	3								
74420001-8	87	3								8		5							3	3					3			
74420001-9	81								?	14		5		3		?			3								3	
74420009-3	91	3								4		4		?					3								3	
74420009-8	80									7		13							3							?	3	

Shales & Tuffs with moderate pyrite content (cont.)

BMR Registered Number	Quartz	Albite	Oligoclase	Andesine	Plagioclase Composition	Microcline	Intermediate Microcline	Orthoclase	Indeterminate K-feldspar	Muscovite	Sericite	Chlorite	Mg-chlorite (Clinochlore)	Montmorillonite	Kaolinite	Talc	Tremolite	Indeterminate Amphibole	Pyrite	Sphalerite	Galena	Chalcopyrite	Epidote	Calcite	Sphene	Apatite	Zircon	Stilpnomelane
74420010-4	65									7		23							m	m	5			m				
74420010-5	85									6		8			?				1	x	m			m	?		?	
74420010-6	83									1		11		?					2	2					m			
74420010-7	83									4		13							m	m	m					?		
Tuffs with high chlorite & low sulphide content																												
74420009-5	53									31		9							6	m	m						m	
74420009-17	84										?	16	x			m				m	m							
74420011-13	5									37		48							10									
74420010-10	81									m		16							3								?	
74420004-6	86									4		5	?						5								m	
Dolerites																												
74420010-1	4		26	An_{16}				6	1			8			?		55		m						?			
74420004-4	14	67		An_3				7	?			12												m		?	m	
74420012-2	m			27	An_{60}		9					4					60											

Laboratory Report No. 91 10 January 1975

Mineralogical analysis of granites from the Barberton Mountain Land, South Africa

by

G.W.R. Barnes

17 powdered rock samples from South Africa were submitted by Dr. A.Y. Glikson for mineral determination (including quantitative analysis) by X-ray diffraction (see Laboratory Report No. 90 for discussion).

The results are set out in the following table.

N.B. (a) Numbers are in percent (accuracy is ± 5-9% absolute for major minerals).

(b) m indicates that the mineral is present but in quantities generally less than 1-5%.

(c) a ? indicates that a mineral may be present, but peaks are not of sufficient intensity for absolute confirmation.

Notes:

Muscovite was not detected in 07, but the percent is high in 34 and 37 and ranges from less than 1% to about 10% in the other samples. If the 10Å peak of muscovite is carefully examined and the total height of the peak designated A, then the height of the secondary peaks on the low angle flank of the peak can be measured, and designated B; the A/B ratio increases with the degree of metamorphism, since metamorphism results in the closing of the expanded layers, (Weaver, 1960).

Values for samples 34 and 37 were 8.4 and 11.7 respectively, (corresponding to weak to low grade metamorphism). The sharpness ratio for the other samples ranged from 1.3 to 3.6 (mean ~2.3). It appears then that the muscovites in rocks with a high A/B ratio are different to those with the lower A/B ratio. In fact, 34 and 37 are sericite schists - the rest are granites.

To determine whether or not the chlorites were all the same type, the (00ℓ) reflections (ℓ=1-5) were examined. For iron-rich chlorites, strong (002) and (004) with weak (001), (003) and (005) reflections are present; this was the case with these samples.

The ratio of the intensity of (001) to (004) was taken as a measure of the similarity within the chlorites of structural type related to the degree of replacement of Si by Al in tetrahedral sites. This ratio ranged from 0.37 to 0.69 (mean ~0.50) and appears to indicate that they are all of a similar chlorite type.

3 K-feldspar phases were recognised - orthoclase, microcline and, in places, an intermediate member.

Plagioclase was not detected in 34 and 37 but of the other samples, albite was present in all but 106, 117 and 118 - here oligoclase (An_{16} and An_{21}) was present.

Reference:

Weaver, C.E., 1960. Possible uses of clay minerals in the search for oil. "Clay and clay minerals (8th Nat'l Conf., 1958)", pp. 214-17.

Granites & sericite Schists from the Barberton Mountain Land, South Africa

BMR Registered Number	Quartz	Albite	Oligoclase	Plagioclase composition	Microcline	Intermediate Microcline	Orthoclase	Indeterminate K-feldspar	Muscovite	chlorite	Hornblende	Hastingsite	Tremolite-Actinolite	Indeterminate Amphibole	Epidote	Apatite	Sphene	Zircon
73325007	1	21		An_4						5			73		m		?	
73325029	40	50		An_4					1	9								m
73325034	80							?	20									
73325037	62								38									
73325078	28	70	m	An_4						2								m
73325090	24	63		An_0		6	4		m	3						?		m
73325098	20	70		An_3					5	5						?		m
73325100	22	65		An_3		4			m	3			6			?	?	m
73325104	20	56		An_4		19			1	3	?				m			
73325105	34	41		An_0	8	12			2	3								?
73325106	31		50	An_{15}	6		3		1	2		7						?
73325108	35	36		An_6		14	11		m	4								?
73325109	38	47		An_7	13				m	2					m			
73325114	29	39		An_7	20				10	2					m			m
73325115	16	47		An_3	19				5	m		13						?
73325117	29		62	An_{21}		5			m	3				?	?			m
73325118	38		48	An_{21}		7			6	m					?			

To accompany Lab. Report No. 91

Laboratory Report No. 92

14 January 1975

Heavy minerals from stream sediments, Westmoreland area and Georgetown, Queensland

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by

G.W.R. Barnes

2 heavy mineral concentrates from the Westmoreland area and 6 from Georgetown, Qld, were analysed for A.G. Rossiter, by X-ray diffraction.

Sample numbers and results are tabulated below:

Sample No.	Locality	Minerals Identified
73760278	Cobar 2 Uranium mine, Westmoreland area.	Pitchblende
73760237	Crystal Hill tin mine	Topaz
73301023	Georgetown	Sphene, Quartz, ?Cerussite
73301158	Georgetown	Quartz, Goethite, Hematite
73301219	Georgetown	Cassiterite, ?Ilmenite
73301247	Georgetown	Ilmenite, Epidote, Quartz, ?Spessartit
73301501	Georgetown	Grossularite, Quartz, Sphene, Zircon
73301505	Georgetown	Quartz, Sphene, Hematite, Anglesite, Cerussite, ?Goethite.

73760278 and 73760237 are from the Calvert Hills 1:250,000 sheet, SE53-8. The remainder are from the Georgetown 1:250,000 sheet, SE54-12.

Date of Experiment	Expt. No./Starting material	Results
	brown	$CaCO_3.H_2O$
220373	A	Halite, Calcite, Aragonite, ?$CaCO_3.H_2O$?Dolomite
130273	B	Halite, Calcite, Dolomite Aragonite
	PA[3] (washed-distilled water)	$CaCO_3.H_2O$, Nesquehonite, Dolomite, Quartz
	(washed-acetone)	$CaCO_3.H_2O$, Nesquehonite, Dolomite, Quartz
	SW[3] (washed-distilled water)	$CaCO_3.H_2O$, Nesquehonite
	(washed-acetone)	$CaCO_3.H_2O$, Nesquehonite
230774	2B Ca	Calcite, Halite
	3 Ca	Calcite, minor Halite
	4 Ca	Calcite, Halite
	5 Ca	Calcite, Halite
	2B Ne	Calcite, m[4]. Halite, ?Magnesite
	3 Ne	Nesquehonite, m. Halite m. $CaCO_3.H_2O$
	4 Ne	Nesquehonite, m. Halite, m. $CaCO_3.H_2O$
	5 Ne	Nesquehonite, Halite, m. $CaCO_3.H_2O$
	4 'crust'	Nesquehonite, Halite, $CaCO_3.H_2O$
	5 'crust'	Nesquehonite, $CaCO_3.H_2O$, Halite
251174	2B Ca	Calcite, tr. Halite
	3 Ca	Nesquehonite, Halite, $CaCO_3.H_2O$, ?Calcite
	4 Ca	Calcite, tr. Halite
	5 Ca	Calcite, tr. Halite
	2B Ne	Calcite, tr. Halite
	3 Ne	Nesquehonite, Calcite
	4 Ne	Nesquehonite, Calcite
	5 Ne	Nesquehonite, Halite, $CaCO_3.H_2O$, ?Calcite

NB. 1. Ne indicates that a sample has been taken from a nesquehonite ($MgCO_3.3H_2O$) starting material layer & Ca indicates that a sample has been taken from a calcite ($CaCO_3$) starting material layer.

2. tr = trace amount

3. PA refers to Port Alma brine
SW refers to sea water

4. m = minor amount (generally < 1-5%)

Conclusions reached as a result of these experiments:

(a) Organic material helps in the precipitation of carbonate and in the localisation and reconcentration of Pb & Zn.

(b) Mg carbonate hydrates form a thermodynamically unstable phase in the formation of dolomite.

(c) Organic material helps in dolomite synthesis.

(d) High bicarbonate concentration is a prerequesite to the formation of dolomite.

Laboratory Report No. 93

16 January 1975

X-ray diffraction identification of minerals from experiments investigating the co-precipitation of metals with carbonate, in saline systems

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by

G.W.R. Barnes

Experiments, forming the basis of several papers by Drs P.J. Davies, J. Ferguson & B. Bubela, have been carried out on the co-precipitation of metals with carbonate in saline systems and the co-precipitation of dolomite with Mg & Ca carbonate hydrates. Mineral phases present from each experimental run have been analysed by X-ray diffraction; the results are displayed below.

Date of Experiment	Expt. No./Starting material	Results
	Calcite + Nesquehonite- algae	Nesquehonite
	Calcite + Nesquehonite + algae	Nesquehonite, Calcite, Halite
120674	2Ne[1]	Nesquehonite, Halite, Dolomite, ?$CaCO_3.H_2O$
	2BNe	Nesquehonite, Halite
	3Ne	Nesquehonite, Halite, ?$CaCO_3.H_2O$
	4Ne	Nesquehonite, Halite
	2BCa[1]	Calcite, Halite
	3Ca	Calcite, tr[2]. Halite
	4Ca	Calcite, tr. Halite
	5Ca	Calcite, Halite
	49	$CaCO_3.H_2O$, Aragonite
	50	$CaCO_3.H_2O$, Aragonite
	51	$CaCO_3.H_2O$, Calcite, ?Barringtonite
	52	$CaCO_3.H_2O$, Aragonite, Magnesian-calcite
	53	Lansfordite, Barringtonite
	54	$CaCO_3.H_2O$, Aragonite, ?Vaterite
	55	Magnesian-calcite, Vaterite
	57 white	$CaCO_3.H_2O$, tr. Aragonite

Laboratory Report No. 94

17 January 1975

Evaporites from the Ngalia Basin, W.A.

by

G.W.R. Barnes

3 evaporites and 5 core extractions from the Ngalia Basin, W.A. were analysed by X-ray diffraction for A.T. Wells.

Sample numbers, localities and minerals identified are tabulated below:

Sample Number	Locality	Minerals Identified
72130066	E shore of Gregory salt lake near Len's bore; 0-0.003 m; Lucas 1:250 000 sheet, SF52-2	Halite, Quartz, Gypsum
73121571	W shore of Gregory salt lake; 0-0.003 m; Cornish 1:250 000 sheet, SF52-1	Quartz, Halite Gypsum
73121572	E shore of Gregory salt lake; 0-0.003m; Lucas 1:250 000 sheet, SF52-2	Halite, Quartz, Gypsum, Calcite
74880017	Core extraction from 74.37 m; BMR Browne No. 1; Browne 1:250 000 sheet, SG51-8	Quartz, Gypsum, ?Kaolinite
74660004A	Core extraction from 21.3 m; BMR Mt. Doreen No. 1; Mt. Doreen 1:250 000 sheet, SF52-12	Quartz, Dolomite, Muscovite, Chlorite, Orthoclase
74660004B	Core extraction from 21.3 m; BMR Mt. Doreen No. 1; Mt. Doreen 1:250 000 sheet, SF52-12	Pyrite, Quartz, minor Dolomite, ?Chlorite
74660005	Core extraction from 22.56 m; BMR Mt. Doreen No. 1; Mt. Doreen 1:250 000 sheet, SF52-12	Quartz, Dolomite, Muscovite, Chlorite, Orthoclase, Gypsum, Anhydrite
74660006	Core extraction from 99.9 m; BMR Mt. Doreen No. 3; Mt. Doreen 1:250 000 sheet, SF52-12	Quartz, Kaolinite, ?Montmorillonite, ?Anhydrite

Laboratory Report No. 95

17 January 1975

Mineralogical analysis of sulphide samples used in the isotopic determination of sulphur

by

G.W.R. Barnes

3 galena (PbS) samples from the Laisvall area, Boliden sulphide deposit, Sweden and 4 sulphide extracts from the Lunnon Shute area, Kambalda, W.A. were submitted by T. Donnelly and analysed by X-ray diffraction. The results are tabulated below:

Number & Remarks	Locality	Mineralogy
1	Sweden	Galena, Quartz, minor Muscovite, ?Barite
3	Sweden	Galena, Quartz, Fluorite, ?Rutile
4	Sweden	Galena, Quartz, Barite, ?Rutile
acid treated	Kambalda (Widgiemooltha 1:250 000 sheet, SH51-14)	Pentlandite, Ilmenite, Pyrite, Quartz, ?Hematite
Background	Kambalda (Widgiemooltha 1:250 000 sheet, SH51-14)	Pyrrhotite, Pentlandite
Yellow Bands	Kambalda (Widgiemooltha 1:250 000 sheet, SH51-14)	Pentlandite, Pyrrhotite
White Blebs	Kambalda (Widgiemooltha 1:250 000 sheet, SH51-14)	Pyrite, Pyrrhotite, Pentlandite, Chalcopyrite, ?Calcite

Laboratory Report No. 96 16 January 1975

Evaporites from the Lucas and Stansmore sheet areas, Western Australia.

by

G.W.R. Barnes

3 core extractions and one evaporite sample were submitted by Dr. D.H. Blake for X-ray diffraction analysis.

Sample numbers, localities and results appear below.

Sample Number	Locality	Mineralogy
73495032	BMR Lucas No. 32, Lucas 1:250 000 sheet SF52-2	Dolomite, Quartz, Illite, ? Microcline
73495035	BMR Lucas No. 35, Lucas 1:250 000 sheet, SF52-2	Quartz, Kaolinite, Muscovite
73495038	BMR Lucas No. 38, Lucas 1:250 000 sheet, SF52-2	Gypsum, Bassanite
72490413	'Salt' crust from SE shore of L. Wills. Stansmore 1:250 000 sheet, SF52-6	Quartz, Halite, Gypsum, Glauberite

Laboratory Report No. 97 16 January 1975

Identification of minerals from Antarctica & Africa

by

G.W.R. Barnes

8 minerals from Antarctica and 3 from Africa were submitted by Dr. J.W. Sheraton for identification by X-ray diffraction. The results are set out below.

Registered Number	Locality	Mineral
R11371	Mt. Bayliss, Sthn Prince Charles Mtns, Antarctica. Mt. Menzies 1:250 000 sheet SS40-42/6	Allanite
73281396	Mt. Dummet, Prince Charles Mtns., Antarctica. Compston Massif 1:250 000 sheet SS40-42/7	Chalcocite
73281595	Manning Massif, Nthn Prince Charles Mtns., Antarctica. Beaver Lake 1:250 000 sheet, SR41-42/11	Natrolite
73281710	Keyser Ridge, Sthn Prince Charles Mtns , Antartica. Compston Massif 1:250 000 sheet, SS40-42/7	Allanite, Quartz, Albite, K-feldspar
73281916	Mt. Twigg, Prince Charles Mtns , Antarctica. Mt. Twigg 1:250 000 sheet, SS40-42/12	Fluorapatite
73281946	Mawson Escarpment, Antarctica. Mawson Escarpment South 1:250 000 sheet SS40-42/8	Dolomite, Tremolite
73281947	Mawson Escarpment, Antarctica. Mawson Escarpement South 1:250 000 sheet, SS40-42/8	Tremolite
A	Victoria Falls, Zambia	Scolecite
B	Isimila, Tanzania	Goethite
C	L. Nakuru, Kenya	High-sanidine

Laboratory Report No. 98

17 January 1975

Heavy minerals from the Georgina Basin, Qld, and Lake Frome, S.A.

by

G.W.R. Barnes

10 heavy mineral concentrates, extracted from sediments, were submitted by J.J. Draper and analysed by X-ray diffraction.

The results are tabulated below:

Registered Number	Locality	Minerals Identified
74710108	Georgina Basin, Qld. Boulia 1:250 000 sheet, SF54-10	Quartz, Goethite, Muscovite, ?Arsenopyrite
74710108A	"	Quartz, Muscovite, K-feldspar, Kaolinite
74710108B	"	Quartz, Microcline, Muscovite, ?Kaolinite, Zircon, Rutile
74710109	"	Tourmaline, Hematite, ?Epidote ?Apatite
74710126	"	Calcite
74711060	"	Goethite pseudomorphing pyrite
74712235	"	Calcite
74712237	"	Quartz, K-feldspar, Fluorite, Calcite
73010001A	L. Frome, S.A. Frome 1:250 000 sheet, SH54-10	Magnetite, Ilmenite, Zircon Hematite, Quartz, ?Rutile
73010001B	"	Zircon, Quartz, Ilmenite, Rutile
73010121	Core extraction from L. Frome, S.A. Frome 1:250 000 sheet, SH54-10	Gypsum, Halite

Laboratory Report No. 99

17 January 1975

Miscellaneous heavy mineral determinations

by

G.W.R. Barnes

Heavy mineral concentrates from various localities were submitted by K.A. Heighway for mineral determination by X-ray diffraction.

Some samples were entire concentrates, others were hand-picked mineral grains. The results appear below:

Remarks	Mineralogy
Queensland locality	Zircon, Barite, Labradorite, Andalusite, Quartz
Unknown locality	Quartz
"	Epidote
"	Corundum
New Zealand No. 1 Beach sand	Quartz, Labradorite, Diopside, Tremolite, ?Magnetite
Bawley Pt., N.S.W. Ulladulla 1:250 000 sheet, SI56-13	Magnetite, Zircon, Ilmenite, Rutile, Sphene, Corundum, Goethite
Norah Head, N.S.W. Newcastle 1:250 000 sheet, SI56-2	Zircon, Rutile, Ilmenite, Spinel, Critchtonite, ?Garnet

Laboratory Report No. 100

17 January 1975

Identification of refractory minerals in kerogens from black shales, Woodcutters' prospect, Rum Jungle, N.T.

by

G.W.R. Barnes

6 kerogens, their host shales and one kerogen extract from a chert were submitted by Dr J. Oehler for mineral identification by X-ray diffraction. The results are set out below:

Sample No.	Locality	Mineralogy
A	Woodcutters' prospect, Rum Jungle, N.T. Darwin 1:250 000 sheet, SD52-4	Graphite, Rutile
B	"	Anglesite
C	"	Anglesite, Graphite, ?Jarosite, ?Pseudorutile
D	"	Anglesite, Brookite, Rutile
E	"	Rutile, Graphite
F	"	Graphite, Rutile, ?Dolomite, ?Stolzite
Black Shales		
1	"	Quartz, Dolomite, Muscovite
2	"	Quartz, Sphalerite, Pyrite, Galena, Siderite, ?Epidote
3	"	Quartz, Pyrite, Sphalerite, Galena, Muscovite
4	"	Galena, Sphalerite, Quartz, Muscovite, Pyrite, K-feldspar
5	"	Dolomite, Quartz, Muscovite minor Pyrite, ?K-feldspar
6	"	Quartz, Dolomite, Muscovite, ?Pyrite, ?K-feldspar
Chert	Paradise Ck Formation, Mount Isa 1:250 000 sheet, SF54-1	Pyrite, Brookite

Laboratory Report No. 101 16 January 1975

Mineralogical analysis of rocks from Tabar, Tatau & Lihir Islands, Papua-New Guinea

by

G.W.R. Barnes

3 samples of thermally altered volcanic rocks from Tabar & Lihir islands (off the NE coast of New Ireland) and one from Tatau island, were analysed for Dr. R.W. Johnson, by X-ray diffraction.

The samples were crushed and the 90 - 500 μm fraction was put through a heavy mineral separation. Both the light and the heavy fraction were x-rayed. The combined results are tabulated below.

Sample Number	Locality	Mineralogy
G2006	Tatau Is., PNG. Mabua 1:250,000 sheet, SA56-10	Quartz, Hematite
G2011/WTB 23	Tabar Is., PNG. Mabua 1:250 000 sheet SA56-10	Quartz, Oligoclase (An_{16}), Dolomite, Chlorite, Muscovite, Pyrite, Spinel (possibly Titan-magnetite)
G2011/WTB 24	Tabar Is., PNG. Mabua 1:250 000 sheet, SA56-10	Quartz, Pyrite
G2011/WL 1	Lihir Is., PNG. Samo 1:250 000 sheet, SA56-15	Alunite, Pyrite, K-feldspar (?Sanidine), Marcasite, Galena

Laboratory Report No. 102

17 January 1975

Minerals from near Broken Hill, N.S.W.

by

G.W.R. Barnes

5 samples - 4 from near Broken Hill, N.S.W. and one from near Maldon, Vic. were submitted by Mr G.C. Meatheringham (a resident of Broken Hill). The minerals were identified by X-ray diffraction and results follow:

1. Magnetite, Hematite
2. Magnetite, Hematite, Quartz
3. Quartz, Plagioclase (An_{8-12}), K-feldspar, Muscovite, Epidote
4. Epidote
5. Safflorite, Pyrite

Laboratory Report No. 103

17 January 1975

I. X-ray diffraction determination of detection limits for aragonite in aragonite/calcite mixtures.
II. Curves for quantitative analysis

by

G.W.R. Barnes

8 mixtures of varying proportions of calcite: aragonite were prepared:

A	Calcite
B	95% calcite + 5% aragonite
C	90% calcite + 10% aragonite
D	80% calcite + 20% aragonite
E	70% calcite + 30% aragonite
F	60% calcite + 40% aragonite
G	50% calcite + 50% aragonite
H	40% calcite + 60% aragonite

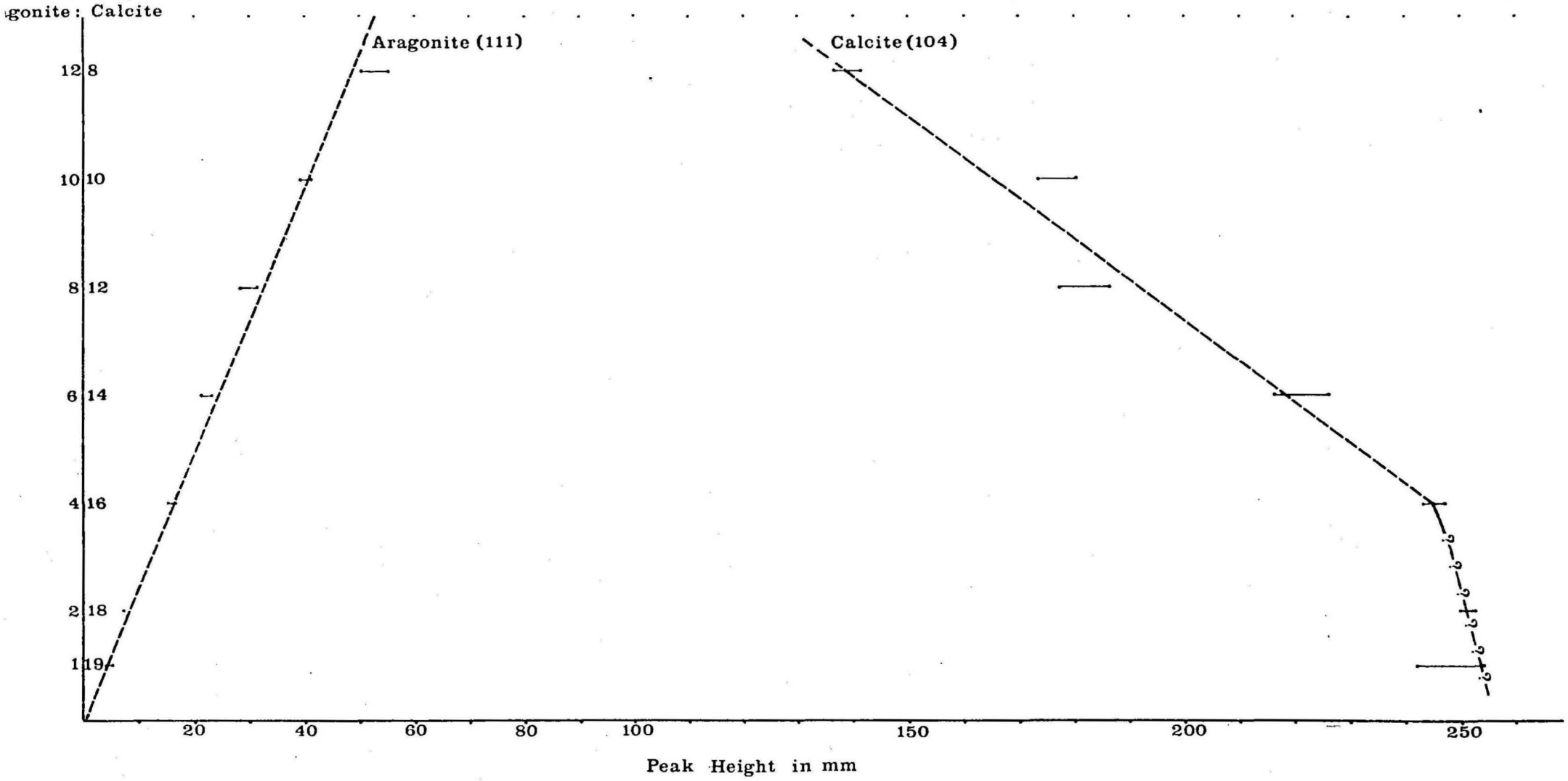
A graph was drawn plotting peak heights in mm (for calcite the (104) reflection was used and for aragonite the (111) reflection was used) against the ratio of aragonite to calcite in the mixture (see graph next page). The minimum detection limits for aragonite were determined to be about 2-3%.

Operating conditions of Philips PW1051 X-ray diffractometer:

Cu K_α radiation with Ni K_β filter. 1500 W tube; 1092 W operating power.

Divergence slit 1°, Receiving slit 0.2°, Scatter slit 1°. EHT supply 1670 V. Goniometer speed 1°/minute; Chart speed 10 mm/minute. Amplification factor 1 x 10^3 counts/second; Attenuation 2^4; Time constant 1.

I. X-ray diffraction determination of detection limits for aragonite in mixtures of aragonite and calcite. II. Curves for quantitative analysis



To accompany Lab. Report No.1

Laboratory Report No. 104 23 January 1975

Laterites & calcretes from the Canning Basin, W.A.

by

G.W.R. Barnes

8 samples from the Canning Basin, W.A. were submitted by A.N. Yeates for mineral determination by X-ray diffraction. The results are set out below.

Sample No.	Locality	Mineralogy
L519 Cainozoic breccia	Sth Bishop Range, Lucas 1:250 000 sheet, SF52-2	Quartz, Kaolinite
S104 Pisolitic laterite	Near Pt. Moody, Stansmore 1;250 000 sheet SF52-6	Hematite, Quartz
S105	W. edge of Stansmore 1:250 000 sheet, SF52-6	Gypsum
S110 Calcrete	(Eastern) Helana 1:250 000 sheet, SF52-5	Quartz, Dolomite, Calcite,
S114 Calcrete	(Western) Stansmore 1:250 000 sheet, SF52-6	Calcite, Quartz
S314 Calcrete	(Western) Stansmore 1:250 000 sheet, SF52-6	Calcite, Quartz
S321 Calcrete	(Western) Stansmore 1:250 000 sheet, SF52-6	Calcite, Quartz
S614 Calcrete	Near Lake Hevern, Stansmore 1:250 000 sheet, SF52-6	Calcite, Quartz

Laboratory Report No. 105 6 December 1974

Zinc Content of Molonglo River Water

by

P.J. SWAN, B.I. CRUIKSHANK & J.C.W. WEEKES

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 28 November 1974

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	221	6.7	0.09	0.20	1.94'
Honeysuckle Crk (F2)	157	6.7	0.03	0.06	-
Lake Burley Griffin at					
Scrivener Dam (H4)	162	6.9	0.03	0.07	24.98'

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 106 30 January 1975

Zinc Content of Molonglo River Water

by

B.I. CRUIKSHANK & J.C.W. WEEKES

The following results were obtained for the determination of specific conductance at 20°C, pH, dissolved zinc and total zinc on water samples as listed below from the Molonglo River/Lake Burley Griffin system. All samples were acidified with hydrochloric acid prior to the determination of total zinc.

Samples were collected by the Department of Housing and Construction for the Joint Government Technical Committee on Mine Waste Pollution in the Molonglo River.

Date of sampling 19/12/74

Sampling points	Sp. Cond. (umho/cm)	pH	Zn (ppm) (dissolved)	Zn (ppm) (Total)	Flow
Molonglo River at					
Burbong Weir (D2) (410705)	272	6.7	0.13	0.15	0.56'
Honeysuckle Crk (F2)	204	7.0	0.02	0.03	-
Lake Burley Griffin at					
Scrivener Dam (H4)	198	6.7	0.02	0.03	24.85'

Bracketed numbers are Department of Housing and Construction stream gauge reference numbers.

Laboratory Report No. 107 5 February 1975

Investigation of museum mineral species

by

G.W.R. Barnes & D.H. McColl

During 1974, as in previous years, investigation of mineral specimens (by X-ray diffraction), from the museum, was an important component of the work of the section. This work involves identity confirmation of known materials from reference collections, with comparison to unknown specimens collected in the field or from other sources.

Interesting and unusual results include the discovery of rare species (e.g. Gerhardite from the Great Australia Mine, Cloncurry, Qld) and investigation of unusual varieties (e.g. the dark red variscite from Iron Knob in S. Aust.).

Powder diffraction photography was also introduced to facilitate the use of very small sample quantities, especially for scarce and valuable samples. The cameras are a specially modified type allowing exposure periods to be reduced to as little as 10 minutes.

Investigation of mineral suites from the copper-lead carbonate deposits at Brown's Deposit, Rum Jungle, N. Territory, and of oxidised mineralisation of various kinds from the current open cut mining at Broken Hill, NSW, is still proceeding.

A summary of the X-ray work undertaken for the BMR museum is presented in tabulated form below.

Registered No.	Identification	Locality
Arc 179	Grossularite	Broken Hill, NSW
Doo 1583	Axinite, Chlorite	Dauphine, FRANCE
BMR 472	Manganosite	Längban, SWEDEN
BMR 926	Hausmannite, Braunite	Ilmenau, Thuringia, GERMANY
BMR 1242	Muscovite	SWITZERLAND
BMR 1852	Galaxite, Hausmannite	Bald Knob Mtns, Allegahany County, N. Carolina, USA
BMR 1863	Hollandite	Virgin Valley, Nevada, USA
R 839	Ferritungstite, Quartz, Kaolinite	Black Andrew Mine, Wee Jasper, NSW
R 996	Muscovite	Williamstown, SA
R 1297	Sphene	Radium Ck, Mt Painter, SA
R 1314	Limonite/Goethite	10 m NE Mt Ida, NT
R 2610	Stibnite	1000' level, Lake View Shaft, Kalgoorlie, WA
R 4309	Scapolite, Emplectite	Broken Hill, NSW
R 4800	Hibschite	"Bauple", via Tiaro, QLD
R 13783	Chalcopyrite, Chalcocite	Ruddygore Mine, Chillagoe, N QLD
R 17518	Axinite	2 m N Ravenshoe Tin
R 18100	RE oxide mixture (?Davidite)	Poseidon Mines NL, WA
R 18346	Pyromorphite	Brown's Deposit, Rum Jungle, NT

Registered No.	Identification	Locality
R 18454	Alabandite	Broken Hill, NSW
R 19012	Natrolite	Ardglen, NSW
R 19040	Muscovite	Wauchope, NT
R 19183	Sphene	Capelinna, Minas Gerais, BRAZIL
R 19329	Cerussite, Malachite	Cordillera Mine, Crookwell, NSW
R 19729	Manganite	Cumberland, UK
R 19755	Franklinite	Franklin Furnace, New Jersey, USA
R 20774	Pyromorphite	Brown's Deposit, Rum Jungle, NT
R 20815	Topaz	Petersen's Lode, Mt Garnet, QLD
R 20962	Mn - Diopside	Grabben Gullen, NSW
R 21099	Mimetite	Mt Bonney Mine (10 m E Hays Ck, NT)
R 21288	Pb/Zn slag, isostructural with Diopside	Broken Hill, NSW (North Mines)
R 21295	Wavellite	Iron Monarch Quarry, Iron Knob, SA
R 21296) R 21303) R 21308)	Calcite	Iron Monarch Quarry, Iron Knob, SA
R 21309	Gypsum, ?Arcanite	Iron Monarch Quarry, Iron Knob, SA
R 21310	Pyrolusite, Hematite	Iron Monarch Quarry, Iron Knob, SA
R 21318	Pyrolusite	Iron Monarch Quarry, Iron Knob, SA
R 21420	Calcite, Quartz, Sphalerite, Galena, Pyrrhotite	NBHC Mine, Broken Hill, NSW
R 21421	Anhydrite, Gypsum	NEW ZEALAND
R 21423	Mimetite	Mt Bonney Mine, NT
R 21424	Mimetite, Duftite	Mt Bonney Mine, NT
R 21425	Mimetite	Mt Bonney Mine, NT
R 21426	Phosphatian Mimetite, Mimetite	Mt Bonney Mine, NT
R 21454	Pyromorphite	Peelwood copper mine, Crookwell, NSW
R 21455	Cerussite	Peelwood copper mine, Crookwell, NSW
R 21456	Siderite	Broulee Pt, NSW
R 21469	Graphite	WESTERN AUSTRALIA
R 21470	Galena, Tetrahedrite	Broken Hill, NSW
R 21471	Arsenopyrite, Löllingite, Pyrite, ?Safflorite	Maldon, VIC
R 21482	Triplite - Wolfeite	Egebek Rd, Thackaringa, NSW
R 21489	Pyrargyrite	Level 12, Junction Mine, Broken Hill, NSW
R 21500	Maghemite, Pyrolusite	21 level, NBHC Mine, Broken Hill, NSW
R 21505	Pyrite, Chlorite, Quartz	Level 12, Junction Mine, Broken Hill, NSW
R 21506	Silver, Sphalerite, ?Xanthoconite	Level 12, Junction Mine, Broken Hill, NSW
R 21507	Clinoptilolite	Wollongong Mine, (Council Dump near Berkley)
R 21508A	Microcline	17 level 7 S.W., Zinc Corp'n Mine, Broken Hill, NSW
R 21508B	Johannsenite	17 level 7 S.W., Zinc Corp'n Mine, Broken Hill, NSW

Registered No.	Identification	Locality
R 21509	Ilvaite	Zinc Corp'n Mine, Broken Hill, NSW
R 21510	Ilmenite	Bert's Prospect, Serpentine Hills, Thackaringa, NSW
R 21511	Rutile	
R 21512	Rutile	
R 21524	Pyromorphite	New Open Cut, Blackwood's Shaft, South Mine, M.M.M., Broken Hill, NSW
R 21527	Pyromorphite	100' level, Retallick's Shaft, Junction Mine, Broken Hill, NSW
R 21531A	Spessartite, Muscovite, Feldspar	Nearest to Marsh's shaft, 200' level, Retallick's shaft, Broken Hill, NSW
R 21531B	Smithsonite, Cerussite, Quartz	
R 21531C	Cerussite, Smithsonite, Galena	
R 21532	Hyaline Opal	Blackwood's shaft, South mine, M.M.M. Open Cut, Broken Hill, NSW
R 21533A	Pyromorphite	200' level, Retallick's shaft, Junction Mine, Broken Hill, NSW
R 21533B	Cerussite, Kaolinite, ?Pyrrhotite	
R 21589	Fe & Mn oxides, Quartz, Halloysite	5000 m deep, near Marshall Is, Pacific Ocean
R 21591	Marcasite, Pyrite	Ertsberg copper mine, West Irian
R 21619	Olivenite-Libethenite	Colereina copper mine, Nymagee, NSW
R 21747	Variscite (dark red var.)	Iron Knob, SA
R 21771	Dolomite	3.5 m W of Stapleton Siding, Rum Jungle, NT, Drill Hole R32/74
R 21776	Jarosite-Natrojarosite	Londonderry, WA
R 21789A	Calcite	Mashhad, Khorasan, IRAN
R 21789B	Chalcedony	
R 21789C	Calcite	
R 21789D	Pyrolusite	
R 21802	Smithsonite	Broken Hill, NSW
R 21884	Wavellite	Bodalla, NSW
R 21886	Turquoise	Bodalla, NSW
R 21887	Turquoise	Bodalla, NSW
R 21888	Wavellite	Bodalla, NSW
R 22053	Pyrolusite, Ramsdellite	Casa Grande, Arizona, USA
R 22056	Pyrolusite	Iron Knob, SA
R 22060	Hausmannite	Thuringia, GERMANY
R 22071	Pyrolusite	Northbourne Ave, Canberra, ACT
R 22134	Boulangerite	Zeehan, TAS
R 22148	Boulangerite	MEXICO
R 22196	Calcite	Paremea, SPAIN
R 22214	Brochantite	Grand Canyon, Arizona, USA
R 22299	Dolomite	Pamplona, SPAIN
R 22451	Gibbsite	Dundas, TAS
R 22554	Hydrated Mg, K phosphate, isostructural with Struvite	Skipton Caves, Ballarat, VIC
R 22555	Newberyite	
R 22557	Eosphorite	Jacqueral, Minas Gerais, BRAZIL
R 22559	Hydroxyapatite	Mapimi, MEXICO

Registered No.	Identification	Locality
R 22748	Hemimorphite	SARDINIA
R 22970	Gmelinite, Analcite	Flinders, VIC
R 22972	Herschelite	Flinders, VIC
R 22974	Chabazite, ?Okenite	Nova Scotia, CANADA
R 22989	Scolecite, ?Hillebrandite	Poona, INDIA
R 22996	Datolite	possibly Poona, INDIA
R 23048	Natrolite	Oregon, USA
R 23171	Azurite, Malachite	Arizona, USA
R 23285	Chalcostibite, Malachite, Azurite, Tetrahedrite	probably USA
XRD 74/758	Gerhardite, Atacamite, Malachite	Great Boulder Mine, Cloncurry, QLD
File 74/512	Cassiterite	unknown
File 74/858 (JEJ-612)	Pyrolusite	Iron Knob, SA
File 74/858 (JEJ-883)	Pyrolusite	Iron Knob, SA
File 74/858 (JEJ-1037)	Pyrolusite	Iron Knob, SA
File 74/858 (JEJ-1052)	Pyrolusite	Iron Knob, SA
File 74/858 (JEJ-1058)	Lepidocrocite, Goethite	Iron Knob, SA

Laboratory Report No. 108

Black Shales from Mt Isa, Qld.

by

G.W.R. Barnes

5 February, 1975

13 black shales were analysed by X-ray diffraction for B.A. Duff. The results are tabulated below

Registered No.	Mineralogy
73201608	Quartz, Gypsum, Pyrite, Anhydrite, Muscovite, Anorthoclase
73201612	Quartz, Muscovite, Pyrite, Sphalerite
73201619	Quartz, Muscovite, Pyrite, Pyrrhotite
73201621	Quartz, Muscovite, Augite, Anorthoclase, ?Digenite
73201633	Quartz, Pyrrhotite, Calcite
73201639	Quartz, Muscovite, Pyrrhotite, Bytownite
73201645	Quartz, Muscovite, Pyrrhotite, Bytownite
73201646	Quartz, Muscovite, Labradorite
73201657	Quartz, Muscovite, Labradorite
73201660	Quartz, Calcite, Bytownite
73201665	Quartz, Muscovite, Andesine, ?Sphalerite
73201666	Quartz, Calcite, Bytownite
73201675	Quartz, Muscovite, Andesine

Laboratory Report No. 109

6 February 1975

Carbonates from Naracoorte, S. Australia

by

G.W.R. Barnes

12 samples from Naracoorte, S.A. were submitted by Dr. P.J. Cook for X-ray diffraction analysis. The results are displayed below.

Registered No.	Mineralogy
74636100	Dolomite[1], Magnesian-calcite[2], Halite, Quartz, ?Nesquehonite, ?Illite
74636101	Dolomite, Magnesian-calcite, Quartz, Halite, ?Aragonite
74636102	Dolomite, Halite, Quartz, Illite, Nesquehonite, Magnesian-calcite
74636103	Dolomite, Quartz, Halite, Illite
74636104	Dolomite, Quartz, Halite, Magnesian-calcite, Illite
74636105	Dolomite, Quartz, Halite, Illite
74636106	Aragonite, Halite, Calcite, Magnesian-calcite, Quartz
74636107	Halite, Aragonite, Magnesian-calcite, Quartz, Dolomite, ?Illite
74636108	Quartz, Illite, Calcite, Magnesian-calcite, Montmorillonite
74636109	Quartz, Illite, Montmorillonite, Magnesian-calcite
74636110	Quartz, Magnesian - calcite, Dolomite, ?Illite
74636111	Magnesian-calcite, Quartz, Aragonite, Halite, ?Orthoclas

Notes:

1. Dolomite - the (104) reflection for pure dolomite, $CaMg(CO_3)_2$, has a d-spacing of 2.886 Å. The dolomite present in these samples appears to be a more calcic variety; d(104) varies from 2.898 Å to 2.913 Å.

2. Calcite - pure rhombohedral $CaCO_3$ (calcite) has d (104) = 3.035 Å. Two calcites were close enough to this value to be called 'calcite', viz. 74636106, d(104) = 3.031 Å & 74636108, d(104) = 3.030 Å. The magnesian-calcite has a (104) d - spacing varying between 2.986Å and 3.025 Å.

Laboratory Report No. 110 7 February 1975

Heavy minerals from Connors Range, W of Mackay, Qld

by

G.W.R. Barnes

A heavy mineral concentrate was submitted by Mr T.H. McFadzen (a resident of Mackay) for mineral determination (particularly rare earth phosphates).

The sample was put through a magnetic separation and various fractions were analysed by X-ray diffraction.

Heavy minerals identified included rutile, zircon, pyrite, scheelite and sphene. Quartz and muscovite were minor constituents.