2/3 REO

MULTIELEMENT GEOCHEMISTRY

OF THE

MEAGER CREEK GEOTHERMAL SYSTEM

PREPARED FOR

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Summary

The geochemistry and mineralogy of drill core and discharge sinters from the Meager Creek geothermal field suggest that at least two hydrothermal events have affected this area. The earliest of these events is characterized by chalcopyrite mineralization and widespread propylitic alteration of the quartz diorite and metamorphic rocks. A younger event resulted in the deposition of sphalerite, pyrite, clays, carbonates, and chlorite in the hypabyssal dikes of the Meager Mountain Volcanic Complex and appears to be related to the present geothermal system.

The distribution of the geochemical association Hg + Zn + As and of Hg appears to provide the clearest expression of geothermal activity at Meager Creek. The distribution of Sr is not yet well understood, but enrichments in the high-temperature portion of the field suggest that it may be a useful pathfinder element as well.

Concentrations of Hg + Zn + As occur in the altered dikes in the highest temperature portion of the thermal anomaly and are associated with sphalerite mineralization. The distribution of these elements suggests that fractures related to the dikes have been important fluid channels in the past. In contrast the concentrations of these elements in the Mesozoic quartz diorite and metamorphic rocks are limited to a few widely spaced fracture zones. These observations indicate that permeabilities in the upper parts of the geothermal system have characteristically been low.

The depositon of chalcopyrite is associated with enrichments in Hg, Zn, Pb, Ba, K and depletions in Sr in the quartz diorite and older metamorphic rocks. This geochemical association is also typical of the porphyry copper deposits of the Guichon Creek batholith described by Olade and Fletcher (1976).

Introduction

Significant quantities of many rock forming and trace elements are frequently found in the discharge sinters and thermal fluids of high-temperature geothermal systems. Recent studies of the Broadlands geothermal field in New Zealand and of Basin and Range geothermal systems in the western United States indicate that these elements are also redistributed at depth and that the distribution of these elements can be correlated with the physical and chemical properties of the geothermal systems.

Ewers and Keays (1977) published the first comprehensive study of trace element distributions in an active geothermal system. Their work, based principally on the chemistry of hot spring deposits, well bore precipitates and geothermally altered rocks from two drill holes in the Broadlands geothermal area of New Zealand, documented a crude metalliferous zoning characterized by enrichments of As, Sb, Au and Tl in the near-surface parts of the field and higher concentrations of Ag, Se, Te, Bi, Pb, Zn, Cu and Co at depth. More recent studies have substantially expanded upon this earlier work. For example, Bamford and others (1980) and Christensen and others (1980) showed that concentrations of Hg, As and Li are diagnostic of geothermally altered granitic and metamorphic rocks of the Roosevelt Hot Springs thermal system in Utah, and that the dispersion patterns of these elements at depth can provide information on temperatures and the distribution of fluid channels in the reservoir rocks. This information can aid in drill completion decisions. Trace element distribution studies of deep wells in The Geysers (J.N. Moore, unpublished data) and in geothermal systems throughout the Basin and Range have now confirmed the application of multielement studies in a variety of geologic terrains.

Trace element analyses of the hot spring deposits, discharge precipitates and the thermal waters, collected during 1981, showed that many of these same elements were also actively being redistributed by the geothermal fluids at Meager Creek. This paper presents the results of a reconnaissance geochemical investigation of core from the Meager Creek thermal system. The investigation was designed to test the applicability of using trace element distributions in the reservoir rocks to help quide the ongoing exploration programs. The investigation was commissioned by Nevin/Sadlier-Brown/Goodbrand Ltd., for the B.C. Hydro and Power Authority.

Analytical Procedures

The analytical work described here was directed mainly toward documenting trace element distributions developed within rocks of the Meager Creek thermal field. Whole-rock trace element determinations were made on 270 samples of drill core taken at 10 or 20 m intervals from wells M7-79D, M8-79D, M9-80D, M10-80D, M12-80D and M13-81D. Each sample represents 0.5 m of core. These data are supplemented by chemical analyses of the thermal waters, deposits formed by fluids discharged from the hot springs and well M1-79D, and veins contained within the core.

The solid samples were prepared for analysis by pulverizing to -200 mesh in a tungsten carbide shatter box. The concentrations of Na, K, Ca, Mg, Fe, Al, Ti, P, Sr, Ba, V, Cr, Mn, Co, Ni, Cu, Mo, Pb, Zn, Cd, Ag, Au, Sb, Bi, U, Te, Sn, Li, Be, Zr, La, Ce, and Th, were determined by inductively coupled argon plasma (ICP) spectrometry after digestion in a mixture of hydrofluoric, perchloric, hydrochloric and nitric acids. In addition, the solid samples were analyzed for Hg using a gold film detector and As was determined colorimetrically. The concentrations of V, Mo, Cd, Au, Sb, Bi, U, Te, Sn, and Th were below detection in most samples. The detection limits are presented in Table 1. Analytical data for W and B in the solid samples are not reported because of possible contamination during sample preparation and loss of B during sample analysis. In general, analytical precision for the trace elements is ±10% at ten times the detection limit. Analytical precision for the major elements is ±15%.

Geology

The country rocks of the Meager Creek geothermal system consist predominantly of fractured crystalline and metamorphic rocks of the Mesozoic Coast Range Plutonic Complex. Isolated outcrops of the basement rocks occur in the geothermal area but elsewhere they are overlain by lava flows, breccias and tuffs of the Pliocene to Recent Meager Mountain Volcanic Complex. The geological relationships, illustrated in Figure 1, have been described by Read (1979) and Fairbank and others (1981). The subsurface geology has been studied and summarized by Read (unpublished data) and Nevin/Sadlier-Brown/Goodbrand Ltd. (unpublished lithologic logs).

To date, fifteen diamond drill holes and one deep rotary well have tested various portions of the geothermal field. The six diamond drill holes chosen for this study provide an illustrative cross section of the thermal anomaly. Two of these wells (M7-79D and M10-80D) are located in the central portions of the anomaly, two (M13-81D and M9-80D) are located on the high-temperature margins, and two (M8-79D and M12-80D) are located

Table 1. Detection Limits

Element	Working Detection Limit (ppm) SOLIDS	WATERS
Na	100	1.25
K	100	2.5
Ca	100	0.25
Mg	100	0.5
Fe	100	0.025
Al	100	0.625
Si	-	0.25
Ti	5	0.125
P	25	0.625
Sr	1	0.013
Ba	25	0.625
V	150	1.25
Cr	2	0.05
Mn	10	0.25
Co	1	0.025
Ni	5	0.125
Cu	5	0.063
Mo	50	1.25
Pb	10	0.25
Zn	5	0.125
Cd	5	0.063
Ag	2	0.05
Au	4	0.1
As	25	0.625
Sb	1	0.75
Bi	100	2.5
U	2000	6.25
Te	50	1.25
Sn	5	0.125
W	10	0.125
Li	2	0.05
Be	.5	0.005
B	400	0.125
Zr	5	0.125
La	5	0.125
Ce	10	0.25
Th	150	2.5
Hg	5 (ppb)	-

in the cooler, peripheral portions of the anomaly. The temperature distribution in these wells is presented in Figure 2. Well M7-79D recorded the highest temperature (202°C), and both M7-79D and M12-80D produced small quantities of thermal fluid.

The country rocks penetrated in the wells consist predominantly of variably foliated Cretaceous quartz diorite. Mesozoic metamorphic rocks, intruded by the quartz diorite, comprise the bulk of the samples in well M8-79D, on the western edge of the field, and occur near the base of M9-80D. The metamorphic rocks include gneiss, migmatite, greenstone and amphibolite. The lithologies of the chemically analyzed samples are summarized in Figure 3.

The quartz diorite and metamorphic rocks have been intruded by silicic to intermediate composition dikes. These dikes occur widely throughout the field and are probably of several different ages. Fairbank and others (1981) have suggested that dikes of dacite, feldspar porphyry and rhyolite are related to Quaternary volcanism and are correlative with the volcanic rocks on Pylon Peak. Other dikes, such as the quartz-feldspar porphyry sampled in M10-80D at a depth of 860 m, contain chalcopyrite and may be related to intrusion of the quartz diorite. No attempt, however, was made to correlate the dikes on the basis of chemistry or lithology in this study.

Hydrothermal activity has resulted in widespread propylitic and argillic alteration at depth and the deposition of quartz, clays, gypsum, barite, base-metal sulfides, calcite and hematite in fractures within the reservoir rocks. Detailed descriptions of the hydrothermally altered rocks at depth have not yet been published. The mineralogic relationships discussed in this paper are based on the unpublished data of Read, the lithologic logs of the wells prepared by geologists of Nevin/Sadlier-Brown/Goodbrand Ltd., and our own observations.

Surface deposits related to the active thermal system at Meager Creek include carbonate and siliceous sinters associated with hot springs located along Meager Creek between Meager Main Springs and well M1-74D, carbonate deposits formed from fluids discharged from well M1-74D, and carbonate deposits formed around the Carbonate Springs (Fig. 1). The composition of these deposits and the associated fluids are given in Tables 2 and 3. The concentrations of Sr, Ba, Mn, Zn, Pb, As and Hg, although variable are significant and similiar in magnitude to the concentrations of these elements found in discharge precipitates from other high-temperature thermal systems (Table 2).

Analytical Results

The trace and major element concentrations of the country rocks penetrated in the wells are given in Appendix 1. The distributions of many of the elements present in the discharge sinters are summarized in Figures 4-12. These diagrams were prepared for the quartz diorite by plotting the distribution of samples whose concentrations differed from local "background" means by more than one standard deviation. In general, three intervals of elemental concentration are shown for the quartz diorite. The threshold values for the lower two intervals are mean + one standard deviation and mean + 1 + two standard deviations. The highest interval represents values within the upper 2½% of the data.

Local background values, calculated from the analytical data of the

Table 2. Geochemistry of Sinters

Element	1	2	3	4	5	6	7	8	9	10
Na_2O (%)			.7	.6	.2	1.4	1.35	0.2	2.4	
K_2O (%)						.6	.5	0.2	3.8	
CaO (%)	60.2	63.0	52.8	58.07	53.8	11.1	24.6	0.2	0.5	
MgO (%)	.2	.2	.2	.1	1.2	2.9	2.1	<0.02	0.2	
Fe_2O_3 (%)			6.9	.8		2.6	2.9	< .03	1.1	
Al_2O_3 (%)	.1			.1	.1	8.1	5.5	0.2	9.8	
TiO_2 (%)			.1			.3	.3	< .01	.09	
P_2O_5 (%)						.1	.1		.15	
Sr (ppm)	707	664	13800	14500	5250	1890	2520	33	386	
BaO (%)	.012	.009	.009	.010	.009	.074	.030		5.47	
V (ppm)										
Cr (ppm)							6		9	
MnO (%)	.004		.034	.114	.004	1.58	.076	.05	24.3	
Co (ppm)					4	24	11		28	
Ni (ppm)										
Cu (ppm)						17	9		231	
Mo (ppm)									5	
Pb (ppm)			24						68	25
Zn (ppm)	14	35	58	15		28	28	1	23	70
Cd (ppm)									4	
Ag (ppm)									1	500
Au (ppm)								4	.1	85
As (ppm)		5	8750	375	80	100	60	145	858	400
Sb (ppm)								243	291	-10%
Bi (ppm)	238	252		263	230					
U (ppm)										
Te (ppm)										
Sn (ppm)										
W (ppm)									2940	
Li (ppm)			6	6	9	17	18	11	17	
Be (ppm)			3.9			.6		99.8	18.6	
B (ppm)										
Zr (ppm)	23	23	68	24	22	11	16		17	
La (ppm)	72	74		71	65				37	
Ce (ppm)									42	
Th (ppm)										
Hg (ppb)	48	7	7	17	15	77	80	352	2210	2000

1) Travertine, Carbonate Springs, Meager Creek

2) Travertine, Carbonate Springs, Meager Creek

3) Travertine, discharge precipitate, well M1-74D (74-H-1), Meager Creek

4) Travertine, discharge precipitate, well M1-74D (74-H-1), Meager Creek

5) Travertine, hot spring between Meager Main Springs and 74-H-1 (M1-74D), Meager Creek

6) Siliceous Sinter, Meager Main Springs, Meager Creek

7) Siliceous Sinter, Meager Main Springs, Meager Creek

8) Siliceous Sinter, Roosevelt Hot Springs, Utah (Bamford and others, 1980)

9) Manganese-cemented alluvium, Roosevelt Hot Springs, Utah (Bamford and others, 1968)

10) Siliceous Sinter, Broadlands, New Zealand, parital analysis (Weissberg, 1969)

A blank in columns 1-9 = not detected

Table 3. Fluid Chemistry

Element	1 PPM	2 PPM	3 PPM
Na	2103	348	393
K	93	44	48
Ca	380	98	100
Mg	93	26	39
Fe	3.3		0.5
Al			
SiO_2	31	92	119
Ti			
P			
Sr	11.8	3.0	3.2
Ba			
V			
Cr			
Mn	0.6		1.0
Co			
Ni			
Cu			
Mo			
Pb			
Zn			
Cd			
Ag			
Au			
As			
Sb			
Bi			
U			
Te			
Sn			
W			
Li	3.5	1.1	1.1
Be			
B	26.6	4.1	4.7
Zr			
La			
Ce			
Th			
Hg			
Temp	58°C	35°C	58°C

1) Well 74-H-1 (M1-74D)
2) Hot spring between 74-H-1 (M1-74D) and Meager Main Springs
3) Well EMR-301-1

least altered samples of quartz diorite, are tabulated in Table 4. These samples were selected on the basis of lithologic descriptions given in the geologic logs and on low metal and Hg values. Background values for the other rock types were not calculated because of the small number of samples and the extreme chemical and lithologic variability among the samples. Consequently, the concentration intervals were qualitatively chosen.

The chemical analyses of the quartz diorite indicate that the altered samples are characterized by higher concentrations of metals, Ba, Hg, and K, and lower concentration of the major and minor elements. The concentrations of Mg, Fe, Ti, P, Co, Ni, Be, are similiar in both the altered and unaltered rocks.

Mercury

Mercury is an important pathfinder element in many high-temperature geothermal systems because of its widespread occurrence and high mobility, even at relatively low temperatures. At Meager Creek, trace amounts of Hg are widely distributed in the discharge sinters (Table 2), soils (Fairbank and others, 1981), and the country rocks at depth (Fig. 4a and 4b). Mercury concentrations in the country rocks range from less than 5 ppb to 1000 ppb. Because of the extreme range in the concentration of Hg, the distribution of intermediate values between 120 and 700 ppb is also shown on Figure 4. A threshold value of 120 ppb was determined from an evaluation of the distribution of Hg concentrations in the quartz diorite (Lepeltier, 1969; Sinclair 1976).

The distribution of Hg appears to be independent of rock type. In general, the highest concentrations of Hg occur in wells near the central

Table 4. Summary of Geochemical Data

Fresh Quartz Diorite (n = 112)

Element (ppm)	Minimum	Maximum	Mean	Standard Deviation
Na	16,000	28,100	24,760	1,948
K	2,460	18,000	6,546	1,658
Ca	31,600	53,200	45,100	4,567
Mg	4,980	11,800	9,589	1,334
Fe	23,800	38,500	33,020	2,585
Al	65,100	113,000	95,830	8,512
Ti	1,910	3,130	2,648	200
P	638	1,030	891	68
Sr	430	904	754	70
Ba	233	911	509	108
Cr	2	4	2	.2
Mn	713	1,710	983	111
Co	23	67	41	9
Ni	< 5	6	5	.1
Cu	< 5	43	7	5
Pb	10	35	10	2
Zn	40	369	62	31
Li	3	23	8	3
Be	.8	1.9	1.1	.1
Zr	< 5	< 5	< 5	
La	6	34	12	4
Ce	10	44	14	6
As	1	6	1	.7
Hg (ppb)	< 5	35	6	4

Altered Quartz Diorite (n = 88)

Element (ppm)	Minimum	Maximum	Mean	Standard Deviation
Na	1,030	29,100	21,030	6,045
K	2,470	31,900	9,819	5,967
Ca	15,400	74,900	41,470	10,070
Mg	1,510	22,300	9,114	2,911
Fe	6,450	62,300	32,180	7,829
Al	44,000	114,000	88,960	11,360
Ti	335	4,140	2,509	583
P	44	1,530	840	226
Sr	147	1,600	634	222
Ba	135	2,030	611	316
Cr	2	13	3	2
Mn	459	23,100	1,663	2,634
Co	6	101	40	16
Ni	< 5	18	6	2
Cu	< 5	765	24	85
Pb	10	1,120	31	125
Zn	24	21,500	329	2,284
Li	4	28	10	6
Be	.7	1.5	1.1	.1
Zr	< 5	28	6	3
La	< 5	27	12	4
Ce	10	33	13	5
As	1	3	3	4
Hg (ppb)	< 5	1,000	62	170

portion of the thermal anomaly. Wells located on the margins of the field are, in contrast, characterized by relatively low concentrations of Hg. For example, samples from well M12-80D contain less than 40 ppb, whereas only one sample from well M8-79D has a Hg concentration that exceeds 10 ppb (Fig. 4a, 4b). Concentrations of Hg in veins containing high concentrations of base metals frequently exceed several hundred ppb and provide a possible explanation for the high Hg content in some of the samples (Table 5; Appendix 2). For example, veins intersected in well M12-80D are characterized by low concentrations of Hg, whereas veins penetrated in wells M7-79D and M10-80D are associated with high Hg contents.

The chemistry of the veins, although highly variable, also suggests a close relationship between Hg and Zn. This relationship is perhaps more clearly displayed by the strong correlation between Hg and Zn in the hypabyssal dikes (r=+.9). Olade and Fletcher (1976) have observed a similar relationship between Hg and Zn in sphalerite-bearing rocks associated with a fault zone near the Lornex porphyry copper deposit in the Guichon Creek batholith of Canada.

Arsenic

Despite the very low quantities of As in the fluids discharged from the wells and hot springs, effective concentrating mechanisms have resulted in locally high concentrations of As in the discharge sinters (Table 2). These concentrations are up to several orders of magnitude higher than those in the reservoir rocks and veins. The enrichment of As in the surface deposits compared to the rocks at depth is characteristic of many geothermal systems. At depth, concentrations of As greater than 4 ppm

Table 5. Geochemistry of Veins

Well	M7-79D	M10-80D	M10-80D	M12-80D
Depth	180 m	860 m	880 m	420 m
Element				
Na_2O (%)	<.1	.1	2.4	2.5
K_2O (%)	1.2	2.1	0.9	0.7
CaO (%)	34.5	17.4	9.2	10.9
MgO (%)	0.7	1.5	0.2	1
Fe_2O_3 (%)	1.4	4.3	5.0	6.5
Al_2O_3 (%)	6.2	8.8	17.7	19.9
TiO_2 (%)	0.06	0.18	0.17	0.35
P_2O_5 (%)	0.01	0.08	0.06	0.19
Sr (ppm)	205	391	588	881
BaO (%)	0.03	0.03	0.04	0.04
V (ppm)	< 250	< 250	< 250	< 250
Cr (ppm)	< 2	< 2	< 2	< 2
MnO (%)	0.94	2	0.24	0.12
Co (ppm)	42	64	63	43
Ni (ppm)	< 5	8	< 5	< 5
Cu (ppm)	7	400	6	29
Mo (ppm)	< 50	< 50	< 50	< 50
Pb (ppm)	433	< 10	< 10	< 10
Zn (ppm)	811	23000	25	40
Cd (ppm)	< 5	133	< 5	< 5
Ag (ppm)	< 2	12	7	< 2
Au (ppm)	< 4	< 4	< 4	< 4
As (ppm)	14	< 1	< 1	< 1
Sb (ppm)	< 30	< 30	< 30	< 30
Bi (ppm)	< 100	< 100	< 100	< 100
U (ppm)	< 2500	< 2500	< 2500	< 2500
Te (ppm)	< 50	< 50	< 50	< 50
Sn (ppm)	< 5	< 5	< 5	6
W (ppm)	< 1200	< 1200	< 1200	< 1200
Li (ppm)	22	15	2	8
Be (ppm)	0.8	1.1	1.0	1.1
B (ppm)	< 400	< 400	< 400	< 400
Zr (ppm)	22	< 5	< 5	< 5
La (ppm)	< 5	10	11	8
Ce (ppm)	< 10	13	< 10	10
Th (ppm)	< 150	< 150	< 150	< 150
Hg (ppb)	700	815	200	20

Table 5. (cont.) Geochemistry of Veins

Well Depth	M13-81D 80 m	M13-81D 360 m (a)	M13-81D 360 m (b)
Element			
Na_2O (%)	2.9	0.1	< 0.1
K_2O (%)	0.3	0.5	1.1
CaO (%)	8.4	38.4	4.0
MgO (%)	3.2	1.3	1
Fe_2O_3 (%)	7.5	2.2	8.3
Al_2O_3 (%)	20.7	2.5	5.0
TiO_2 (%)	0.85	0.06	0.10
P_2O_5 (%)	0.37	0.03	0.05
Sr (ppm)	867	399	50
BaO (%)	0.02	0.05	0.01
V (ppm)	< 250	< 250	< 250
Cr (ppm)	15	< 2	< 2
MnO (%)	0.21	0.74	2.83
Co (ppm)	50	16	31
Ni (ppm)	11	< 5	9
Cu (ppm)	304	242	7937
Mo (ppm)	< 50	< 50	< 50
Pb (ppm)	< 10	316	2000
Zn (ppm)	83	4830	11.5 (%)
Cd (ppm)	< 5	26	406
Ag (ppm)	< 2	4	56
Au (ppm)	< 4	< 4	< 4
As (ppm)	< 1	8	12
Sb (ppm)	< 30	< 30	31
Bi (ppm)	< 100	< 100	< 100
U (ppm)	< 2500	< 2500	< 2500
Te (ppm)	< 50	< 50	< 50
Sn (ppm)	< 5	< 5	< 5
W (ppm)	< 1200	< 1200	< 1200
Li (ppm)	6	8	16
Be (ppm)	1.2	0.7	0.9
B (ppm)	< 400	< 400	< 400
Zr (ppm)	7	7	< 5
La (ppm)	14	< 5	7
Ce (ppm)	16	< 10	< 10
Th (ppm)	< 150	< 150	< 150
Hg (ppb)	115	660	3850

occur in the Mesozoic crystalline and metamorphic rocks in wells M7-79D, M8-79D, M10-80D and M13-81D and in the hypabyssal dikes in wells M7-79D and M10-80D (Fig. 5a, 5b). The highest concentration (30 ppm) is associated with the hypabyssal dike penetrated at 150 m in well M7-79D.

Arsenic displays a sympathetic relationship with Hg (r=+.7) in the hypabyssal dikes but, in contrast to Hg, is not strongly correlated with Zn. These observations suggest that the distribution of As and Hg may be controlled by different mechanisms. Pyrite, for example, is an important carrier of trace amounts of As in many geothermal and hydrothermal systems. At Roosevelt Hot Springs, electron microprobe analyses indicate that pyrite related to the geothermal system contains up to 2% As in places (Bamford and others, 1980). The distribution of As in pyrite, however, is extremely variable, and some pyrite is characterized by low concentrations of As. Pyrite is also widespread in the altered rocks at Meager Creek. Its association with samples characterized by high As concentrations suggests that pyrite is also a likely host for As here.

Lithium

Lithium is frequently used as a pathfinder element in geochemical studies of geothermal systems because of its extreme mobility in the thermal fluids. In the reservoir rocks Li is characteristically associated with clays and micas that form during hydrothermal alteration in the fluid channels (Bamford and others, 1980). At Meager Creek, trace amounts of Li occur in both the thermal fluids (Table 3) and in the sinters (Table 2) formed from fluids discharging from well M1-74D and the hot springs located along Meager Creek. At depth, concentrations of Li greater than 24 ppm form widely scattered geochemical anomalies, primarily in wells M9-80D, M10-80D and M13-81D (Fig. 6). No strong correlations are, however, apparent between the distribution of Li and the other elements studied in detail or to the shape of the thermal anomaly.

Strontium

Strontium is an important trace constituent in all of the discharge sinters and occurs in measurable quantities in the thermal waters. Although the relationship between Sr and geothermal activity is not well known, the occurrence of Sr in sinters formed by relatively low-temperature thermal waters suggests that it may also be a useful pathfinder element at Meager Creek. At depth both enrichments (mean + one standard deviation and upper 2½% of the data) and depletions (mean - one standard deviation, mean - 1 - two standard deviations and lower 2½% of the data) in the Sr contents of the quartz diorite are apparent (Fig. 7). For example, substantial depletions in Sr occur in well M13-81D and M10-80D. Enrichments in Sr occur erratically throughout the thermal field but are most abundant in the weakly altered interval between 190 and 320 m of well M7-79D.

Zinc

Trace quantities of Zn are characteristic of the discharge sinters. At depth, Zn forms isolated geochemical anomalies in the Mesozoic crystalline and metamorphic rocks in wells M7-79D, M8-79D, M10-80D and M13-81D (Fig. 8a). Concentrations of Zn in excess of 125 ppm occur only in the hypabyssal dikes penetrated in wells M7-79D, M10-80D and at the base of M9-80D (Fig. 8b), despite their widespread occurrence in the thermal area.

Concentrations of Zn in the country rocks are locally associated with sphalerite. In the Mesozoic basement rocks, sphalerite is frequently accompanied by chalcopyrite, galena, and pyrite. Chemical analyses of the base metal-bearing veins are presented in Table 5 (M13-81D, 360 m a, b; M7-79D, 180 m; M10-80D, 860 m). In contrast, sphalerite is associated with pyrite, carbonate, clays, and chlorite in the hypabyssal dikes penetrated in well M7-79D (Read, pers. comm.). Detailed mineralogical data is not yet available for the other wells. However, the low Cu concentrations of the dikes and the lithologic descriptions suggest that, with the exception of a quartz-feldspar porphyry sampled at 860 m in well M10-80D, chalcopyrite is not an important phase in the hydrothermally altered dikes. The differences between mineralization hosted by the quartz diorite and by the hypabyssal dikes, as well as the probable difference in ages between most of the dikes and the intrusive rocks, suggest that at least two distinct episodes of sphalerite mineralization have affected the Meager Creek area. The youngest of these episodes appears to have resulted in the deposition of sphalerite in the dikes.

Concentrations of Zn related to sphalerite mineralization may also be more common than are indicated by the geochemical data. For example, Read (pers. comm.) has identified sphalerite in the altered quartz diorite penetrated at depths of 204 and 302 m in well M7-79D. The similarity between the mineralization in the quartz diorite and in the hypabyssal dike penetrated at 225 m in this well suggests that sphalerite deposition may be related to the same event.

Copper

Despite its low concentration in most of the surface precipitates, Cu is broadly distributed at depth, particularly in wells M8-79D, M13-81D and M10-80D (Fig. 9a, b). The highest concentrations of Cu are associated with the quartz diorite and older metamorphic rocks. Chalcopyrite occurs widely in the basement rocks and is probably the major source of Cu in these samples. Copper is strongly correlated with Pb in the altered rocks (r=+.7), reflecting the deposition of chalcopyrite and galena in many of the base metal veins. This relationship is highlighted by the chemistry of the veins penetrated in well M13-81D and at a depth of 360 (b) m (Table 5).

Barium

Trace amounts of Ba occur in all of the discharge sinters sampled. At depth, Ba is broadly distributed in the quartz diorite in the lower parts of M10-80D but its distribution is erratic in other parts of the thermal field (Fig. 10).

The lithologic logs of the wells suggest that the distribution of Ba may be controlled by several different processes. In well M7-79D, for example, enrichments in Ba at 290 m appear to reflect barite mineralization in the quartz diorite (Read, pers. comm.). In contrast, barite does not appear to be a common hydrothermal mineral in the lower portions of well M10-80D. Here, the country rocks are characterized by locally intense alteration, enrichments in K and Cu (Fig. 11), and depletions in Sr. The distribution of Ba in these rocks may be related to the strong geochemical affinity between Ba and K and the formation of potassium-bearing minerals in these rocks.

The distribution of Ba with respect to Sr is not uniform. In well M10-80D, enrichments in Ba are associated with depletions in Sr. Enrichments in Ba in well M9-80D at a depth of 690 m are, in contrast, associated with high concentrations of Sr.

Manganese

Manganese reaches concentrations of nearly 1.6% (as MnO) in the discharge sinter from Meager Main Springs. At depth, Mn is broadly enriched in the quartz diorite penetrated in wells M8-80D, M10-80D and M13-81D (Fig. 12) but is not strongly correlated with any of the other elements. The distribution of Mn in the other wells is erratic.

Discussion

The geochemistry and mineralogy of the reservoir rocks and veins indicate that, at depth, the elements enriched in the discharge sinters can be grouped into several distinct geochemical associations. These include:

Hg + Cu + Zn + Pb + Ba + K + (Sr depletions)

Hg + Zn + As

Hg + low metal values

Sr + low metal values

The association Hg + Cu + Pb + Pb + Ba + K is characteristic of the altered quartz diorite and metamorphic rocks, which display widespread propylitic and argillic alteration. Lithologic logs suggest that the alteration is most intense in wells M10-80D and M13-81D where base metal mineralization is common. Similarly altered rocks occur in wells M12-80D and M8-79D on the margins of the thermal field. These observations and the absence of significant Cu enrichments in most of the hypabyssal dikes suggest that Cu mineralization preceded emplacement of the dikes.

The trace element distributions in the altered quartz diorite at Meager Creek are similar to those found in the copper porphyry deposits of the Guichon Creek batholith of British Columbia by Olade and Fletcher (1976). There, the dispersion patterns of K, Sr, Ba, Zn, and Mn were strongly influenced by the type and intensity of wall-rock alteration. In general, Sr, Zn, and Mn were depleted in zones of intense alteration involving the destruction of plagioclase and mafic minerals and redeposited on the periphery of the system. Potassium was enriched as a result of feldspar, sercite formation. The distributions of Ba tended to be erratic, decreasing in concentration toward the core of intense alteration in some deposits and increasing in others.

The geochemical association Hg + Zn + As is characteristic of the mineralized hypabyssal dikes. The distribution of these elements is presented in Figure 13. This diagram suggests that these elements are crudely zoned with respect to the present thermal anomaly. Dikes characterized by enrichments in Hg + Zn + As occur in the high-temperature portion of the thermal anomaly in wells M7-79D and M10-80D, whereas dikes enriched only in Zn and Hg occur in well M9-80D. Only two samples of quartz diorite enriched in these elements and containing low concentrations of Cu (<18) were found. One containing high concentrations of Hg + As + Zn was sampled at a depth of 220 m in M7-79D. The other, from 360 m in M10-80D, is enriched in Hg + Zn. The chemistry of these samples is, however, compatible with the chemistry of the dikes.

Sphalerite is associated with the dikes in M7-79D and is a common base metal sulfide in other high-temperature systems. Its distribution and occurrence in the Broadlands thermal field of New Zealand have been studied in detail by Browne (1971). There, sphalerite is the most abundant base metal sulfide at depth and is typically associated with pyrite, pyrrhotite, galena, calcite, chlorite, illite, quartz and adularia. Chalcopyrite is rare, occurring primarily as inclusions within the spalerite. Homogenization temperatures of fluid inclusions occurring in sphalerite and quartz at Broadlands indicate that sphalerite deposition occurred between 201 and 293°C. Downhole temperatures associated with base metal mineralization at Broadlands presently range from 120-298°C but are typically between 265-298°C.

Although the age of Zn mineralization is not known at Meager Creek, its occurrence in dikes of probable Late Cenozoic age, the close similarity between the present temperature distribution and distribution of mineralized dikes in the wells, and a temperature regime compatible with the deposition of sphalerite all suggest that deposition of Hg + Zn + As could be related to the present geothermal system.

Mercury is extremely mobile in active geothermal systems and has proven to be an important indicator of permeability in crystalline reservoir rocks. Christensen and others (1980) have shown that, despite the high mobility of mercury in high-temperature systems, its distribution at depth may be severely limited by low permeabilities of the reservoir rocks. At Roosevelt Hot Springs, this has resulted in generally low Hg contents of the crystalline and metamorphic basement rocks in some of the wells, while other wells with similar temperatures (200°C) were broadly enriched. No relationship between the productivity of the wells and Hg enrichments has been recognized.

A similiar relationship between permeability and Hg concentrations in the reservoir rocks at Meager Creek is suggested by the results of the thermal gradient program and geochemical investigations. For example, weak enrichments of Hg characterize broad intervals of the country rock containing fluid channels in well M7-79D (220-240 m) and M12-80D (420-450 m). The fluid channels in these zones occur at a depth of 233 m in M7-79D and at 441 m in M12-80D. The rocks in wells M9-80D and M10-80D are unproductive but characterized by relatively high temperatures. The limited distribution of Hg in these wells is consistent with their low permeabilities. Well M13-81D is also dry but characterized by high Hg enrichments throughout its length, suggesting that this portion of the reservoir may have been more permeable in the past.

Weak enrichments of Sr occurring in relatively unaltered quartz diorite also define a broad geochemical halo in the upper portion of the thermal anomaly. The origin of these enrichments is, however, not yet well understood. Although a relationship to Cu mineralization cannot be discounted, the broad enrichment in M7-79D and the extreme mobility of Sr in the geothermal fluids suggest that the distribution of Sr may at least in part be related to the geothermal system.

Recommendations

The geochemical data and the lithologic logs suggest a close relationship between the trace element geochemistry of the reservoir, the present thermal anomaly, the mineralogy of the hydrothermal alteration assemblages, and the ages of the various hydrothermal and intrusive events. Sufficiently detailed data, however, are not yet available to clearly relate the trace element geochemistry to either megascopic properties of the country rocks or to their ages. It has been our experience that the integration of this data can rapidly lead to an improved understanding of the geothermal system and a more cost-effective exploration and development program. Consequently, we suggest the following: 1) complete petrologic studies designed to characterize the mineralogy of the alteration assemblages related to geothermal activity, 2) identify the mineralogic hosts for the trace element signatures defined in this investigation, 3) complete petrologic and geochemical correlations of the hypabyssal dikes encountered in the wells, 4) date selected dikes and alteration assemblages using K-Ar and fission track techniques.

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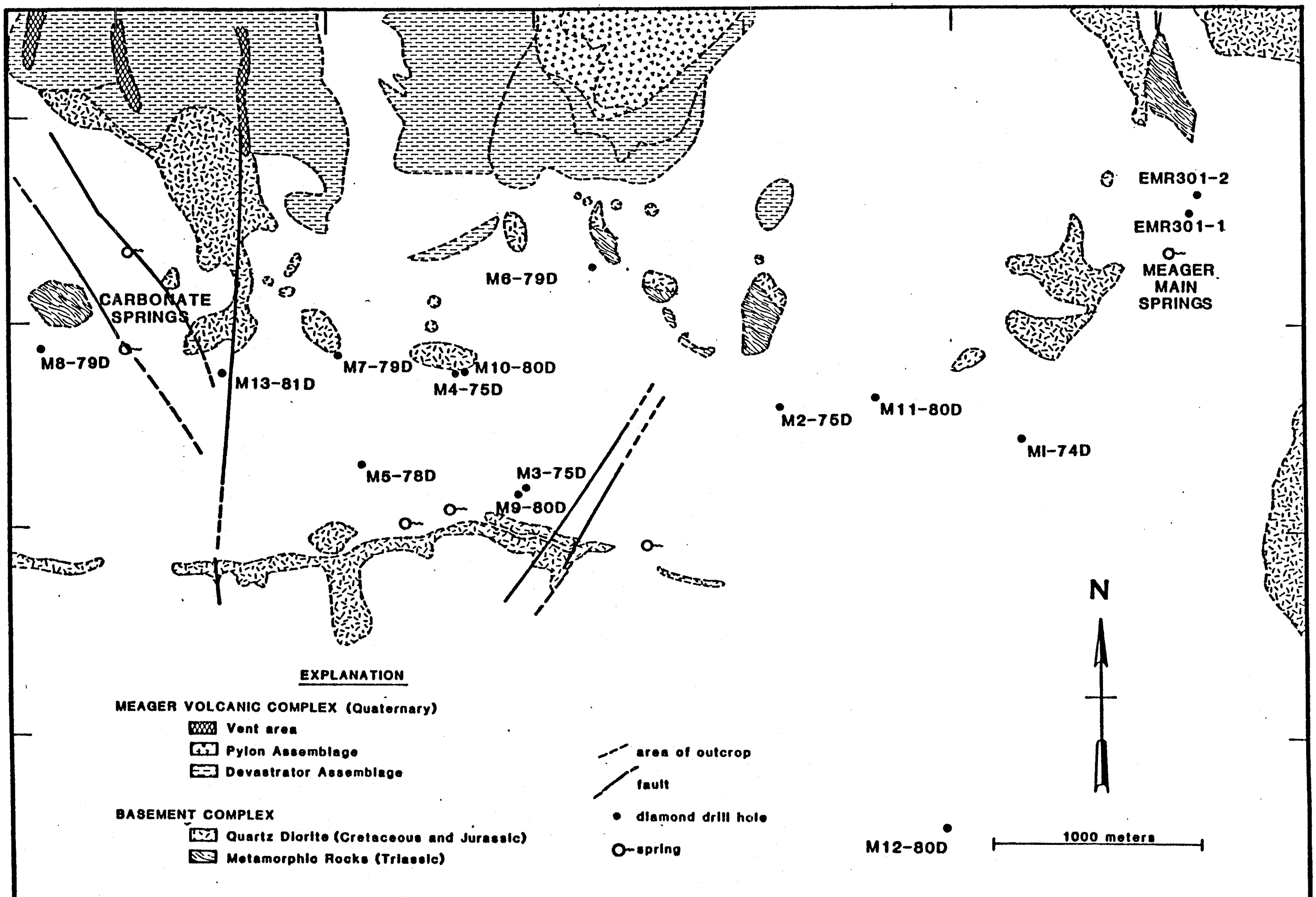


Fig. 1. Generalized geology and location of wells and springs in the Meager Creek geothermal field (from Nevin/Sadlier-Brown/Goodbrand Ltd)

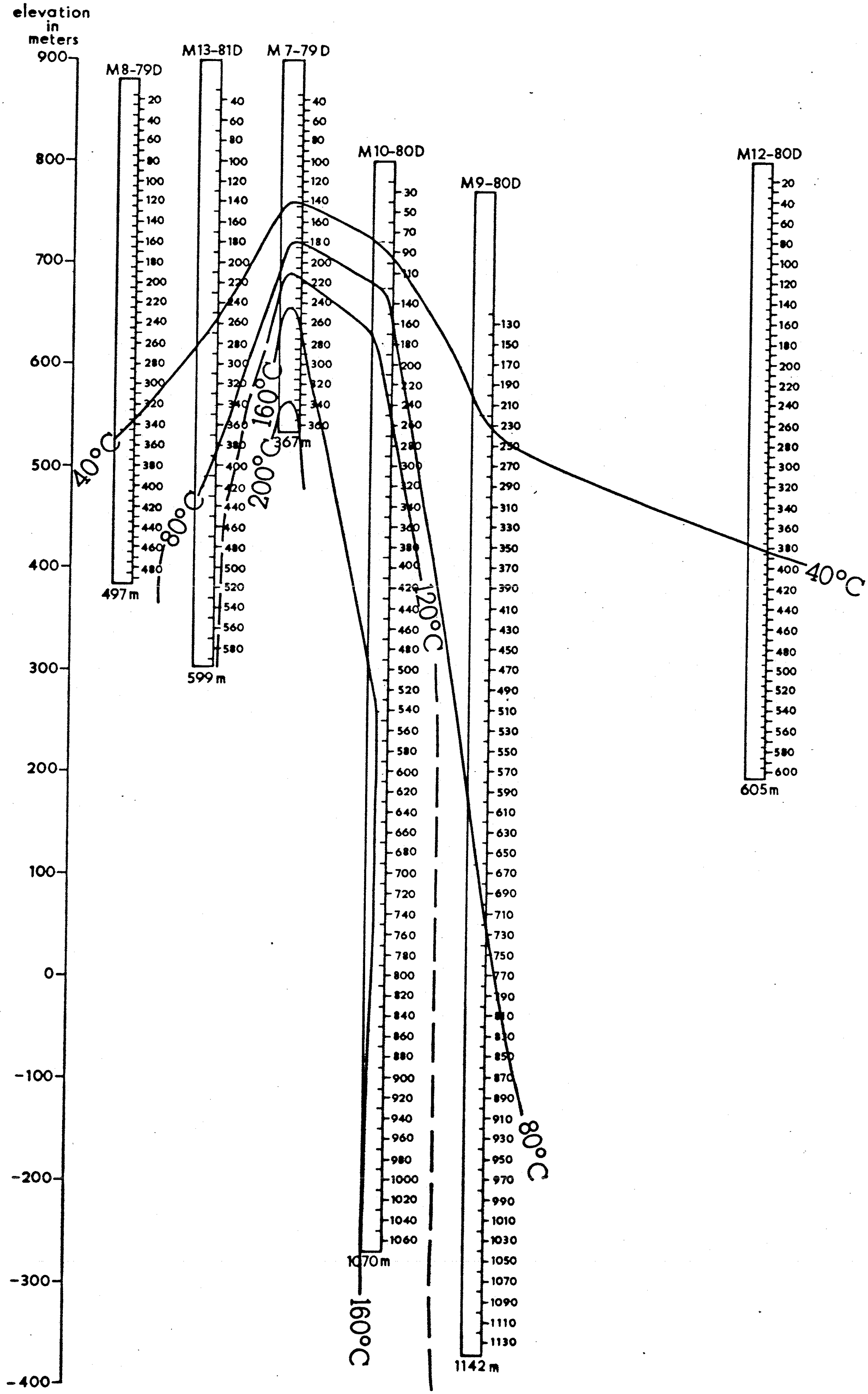
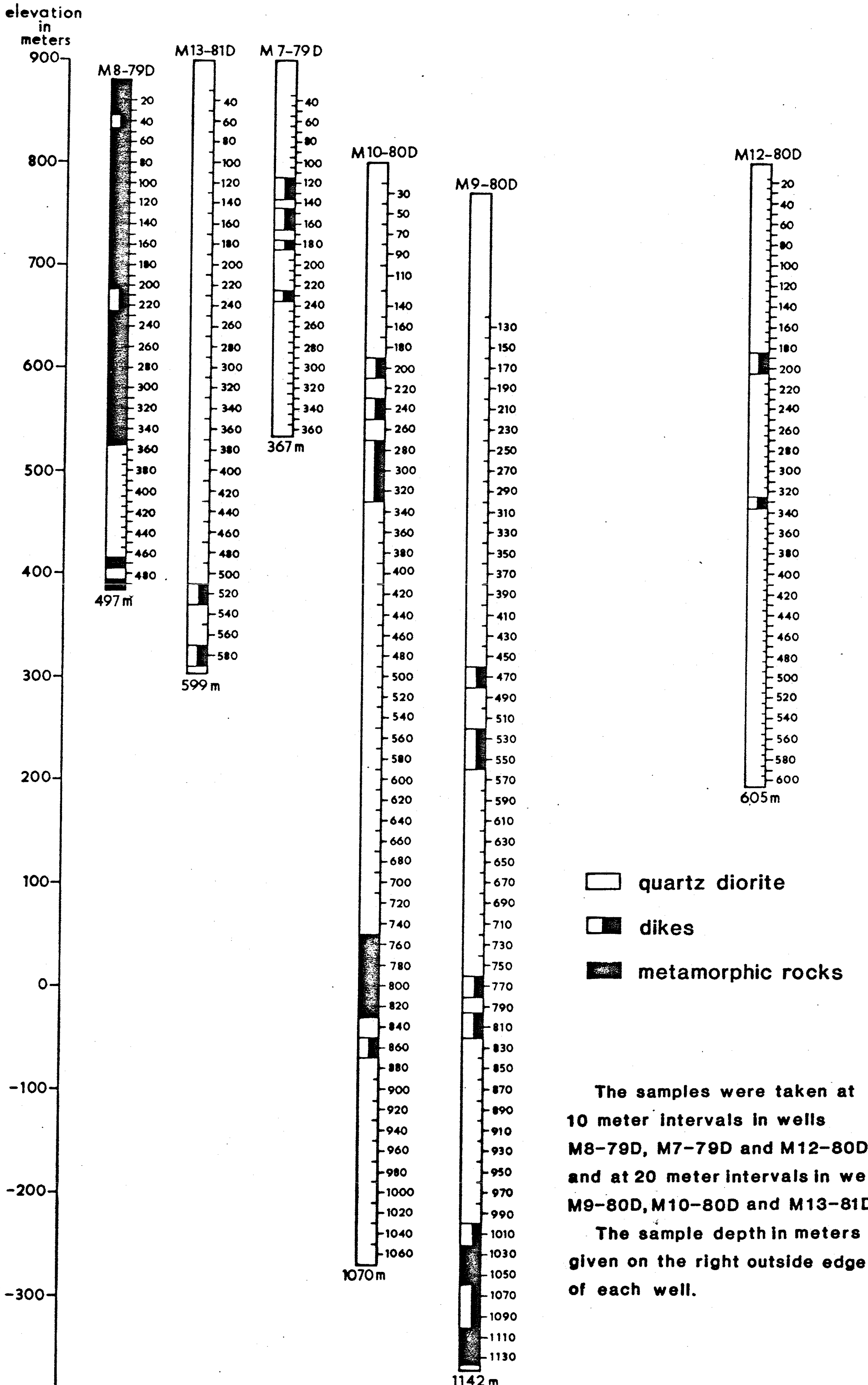


Fig. 2 Temperature distributions in thermal gradient wells M7-79D, M8-79D, M9-80D, M10-80D, M12-80D, and M13-81D.



The samples were taken at 10 meter intervals in wells M8-79D, M7-79D and M12-80D, and at 20 meter intervals in wells M9-80D, M10-80D and M13-81D. The sample depth in meters is given on the right outside edge of each well.

Fig. 3. Distribution of lithologies sampled in thermal gradient wells

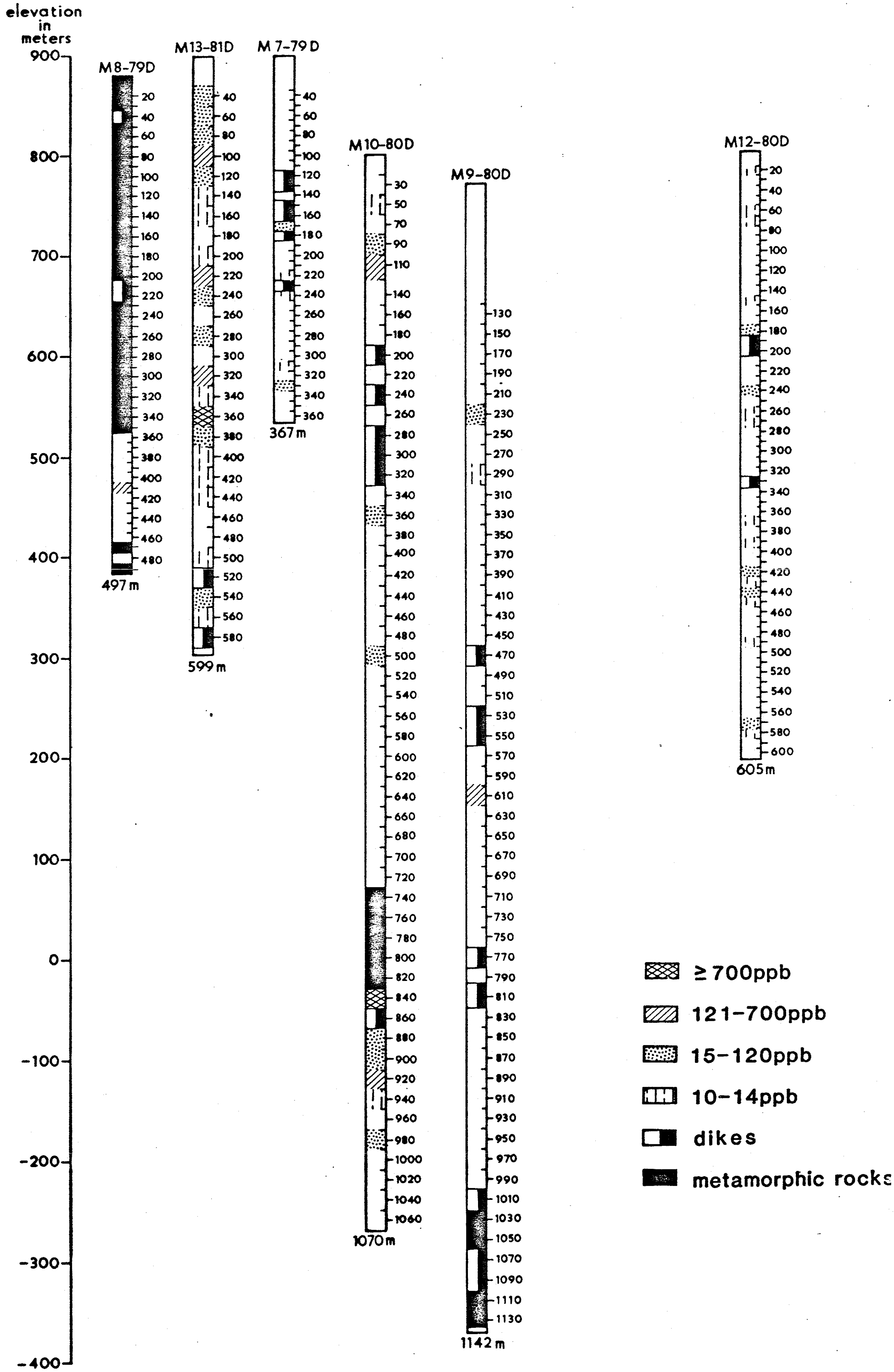


Fig. 4a. Distribution of Hg in the quartz diorite

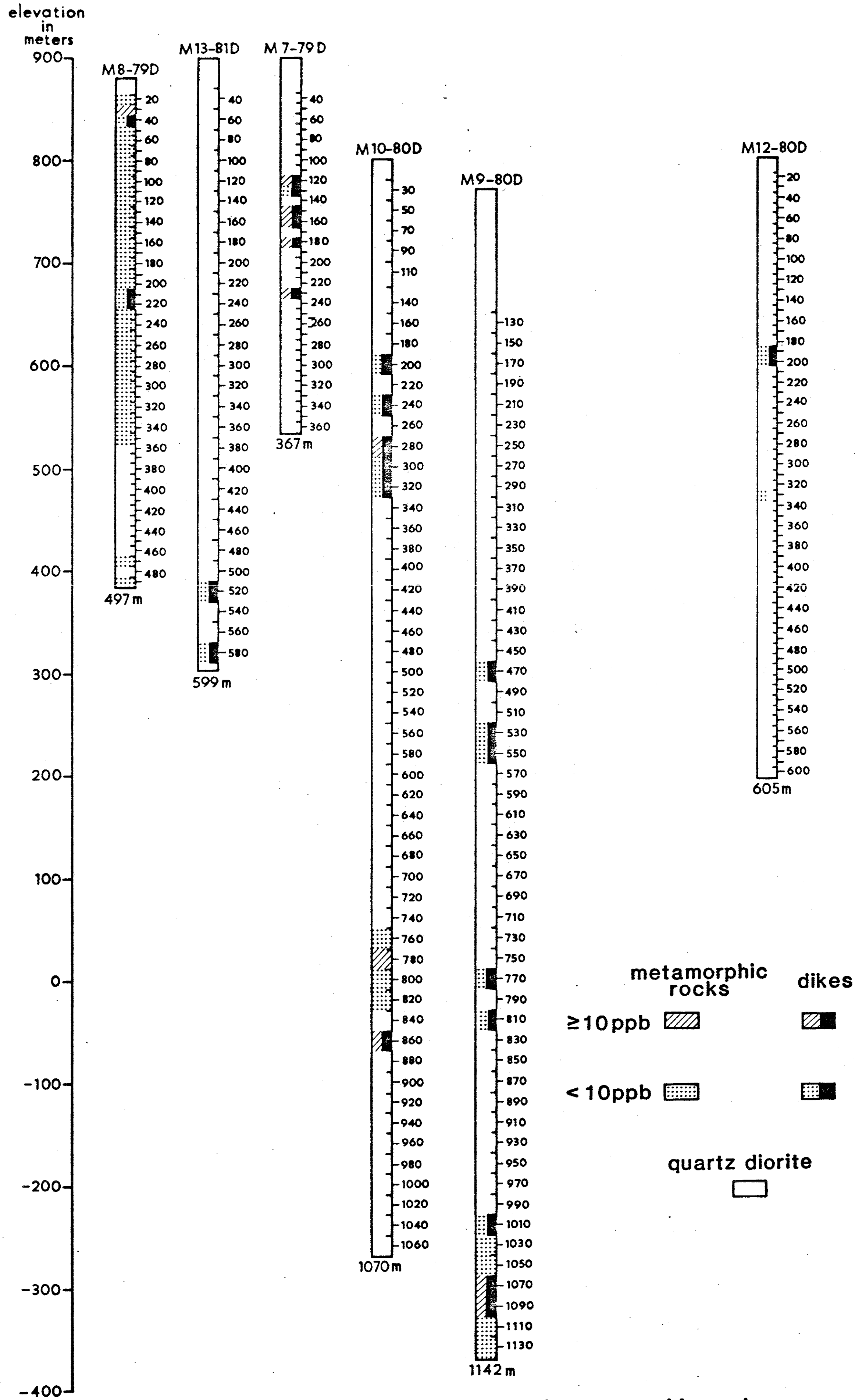


Fig. 4b. Distribution of Hg in dikes and metamorphic rocks

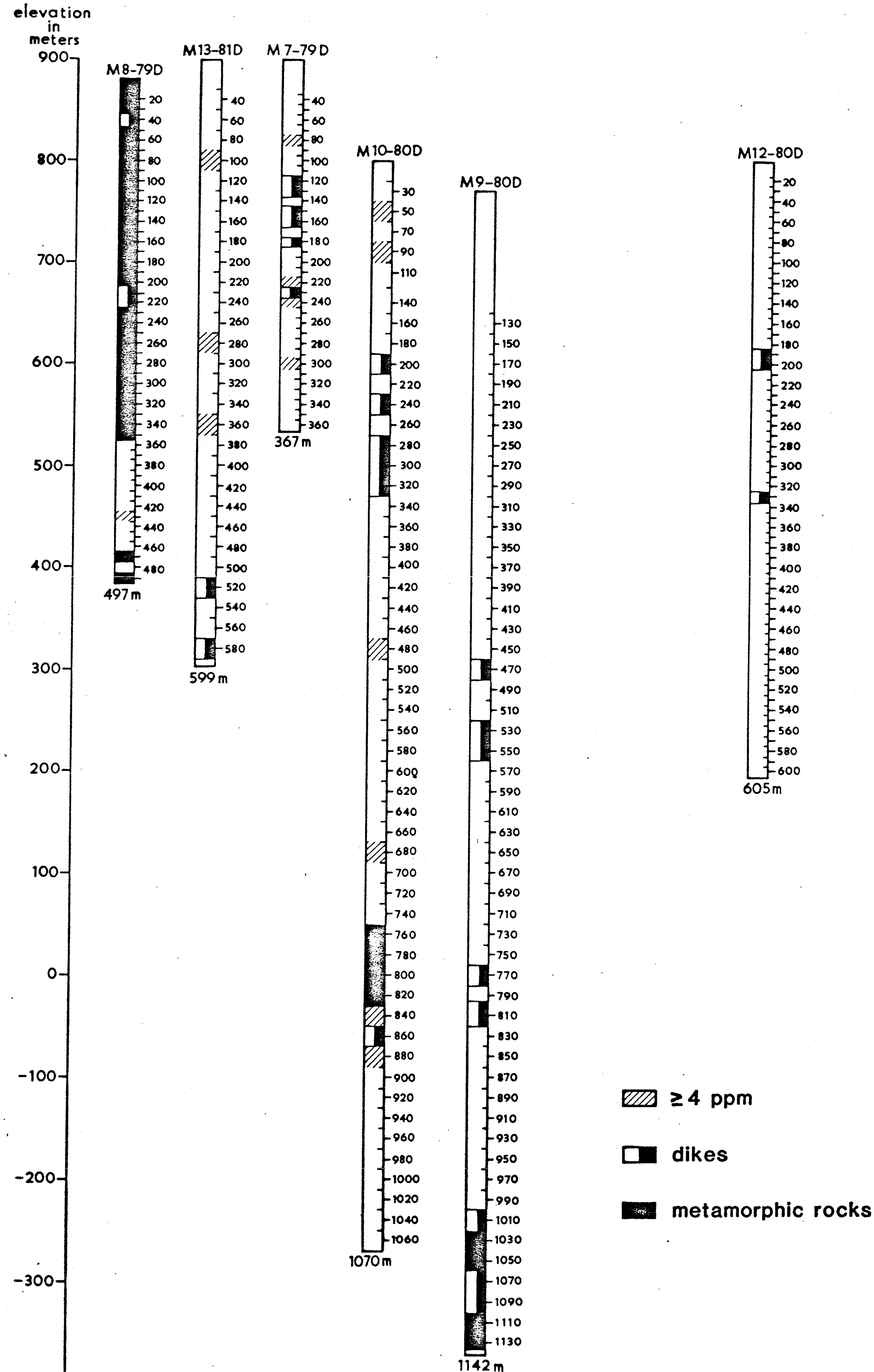


Fig. 5a. Distribution of As in quartz diorite

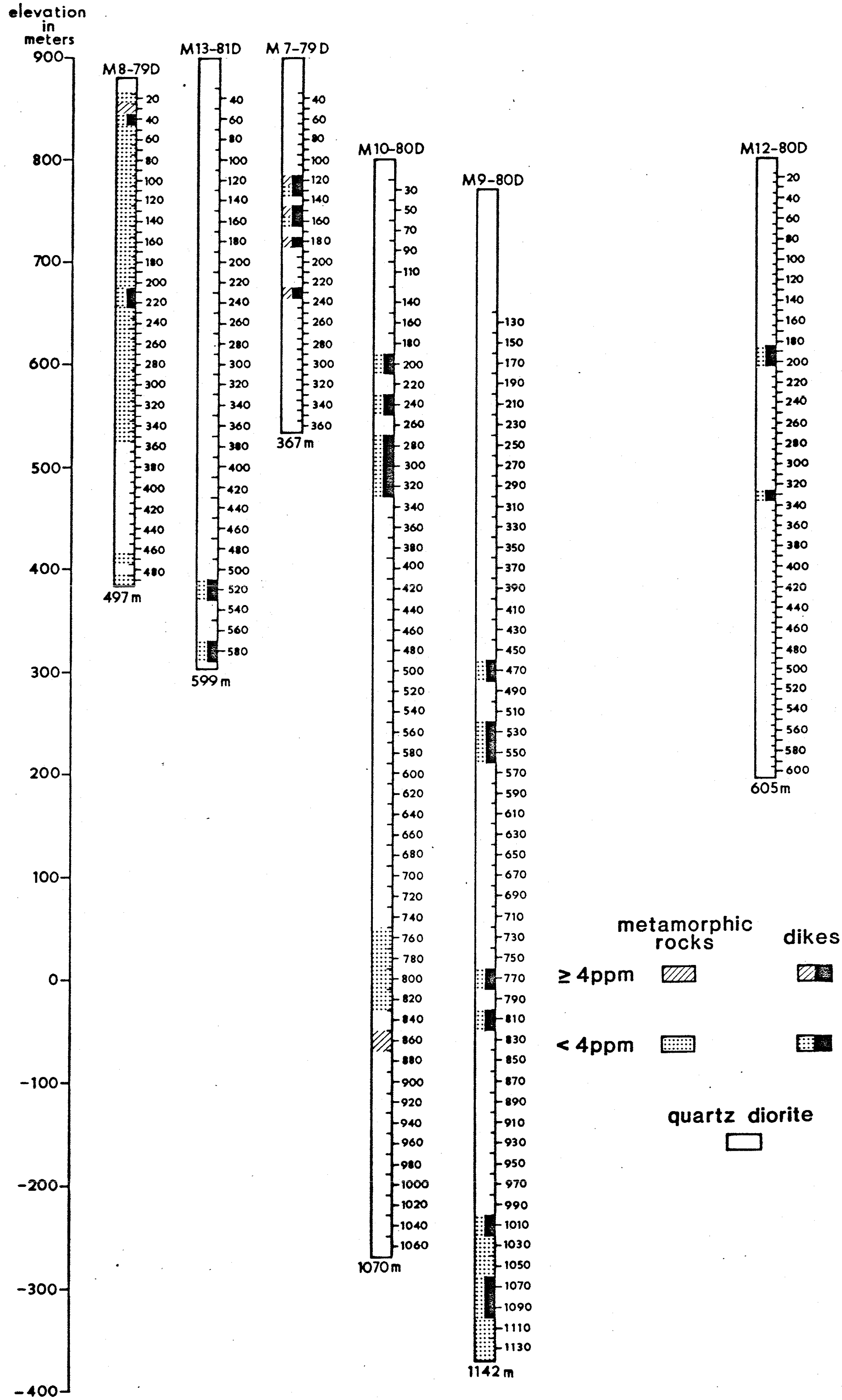


Fig. 5b. Distribution of As in dikes and metamorphic rocks

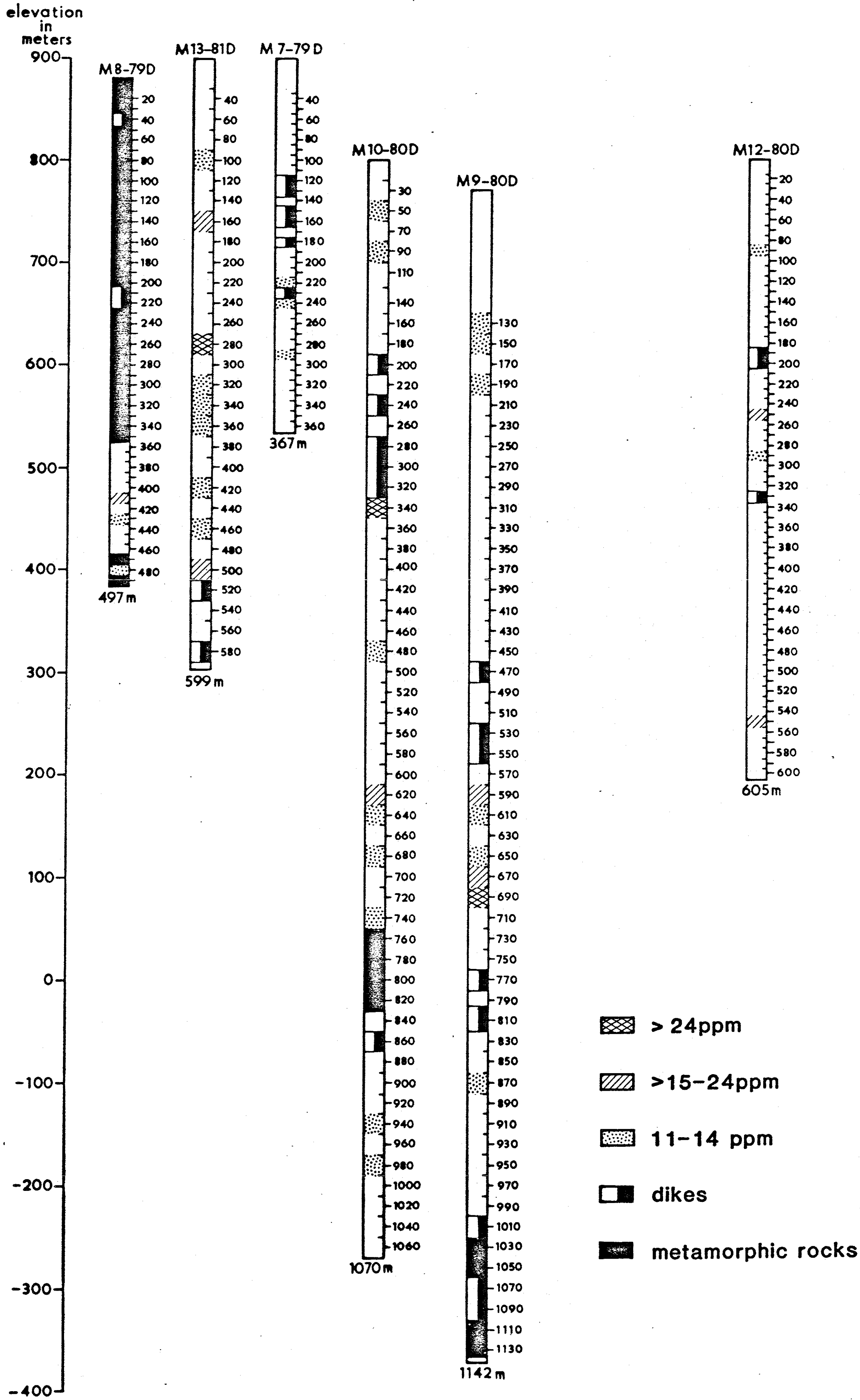


Fig. 6. Distribution of Li in quartz diorite

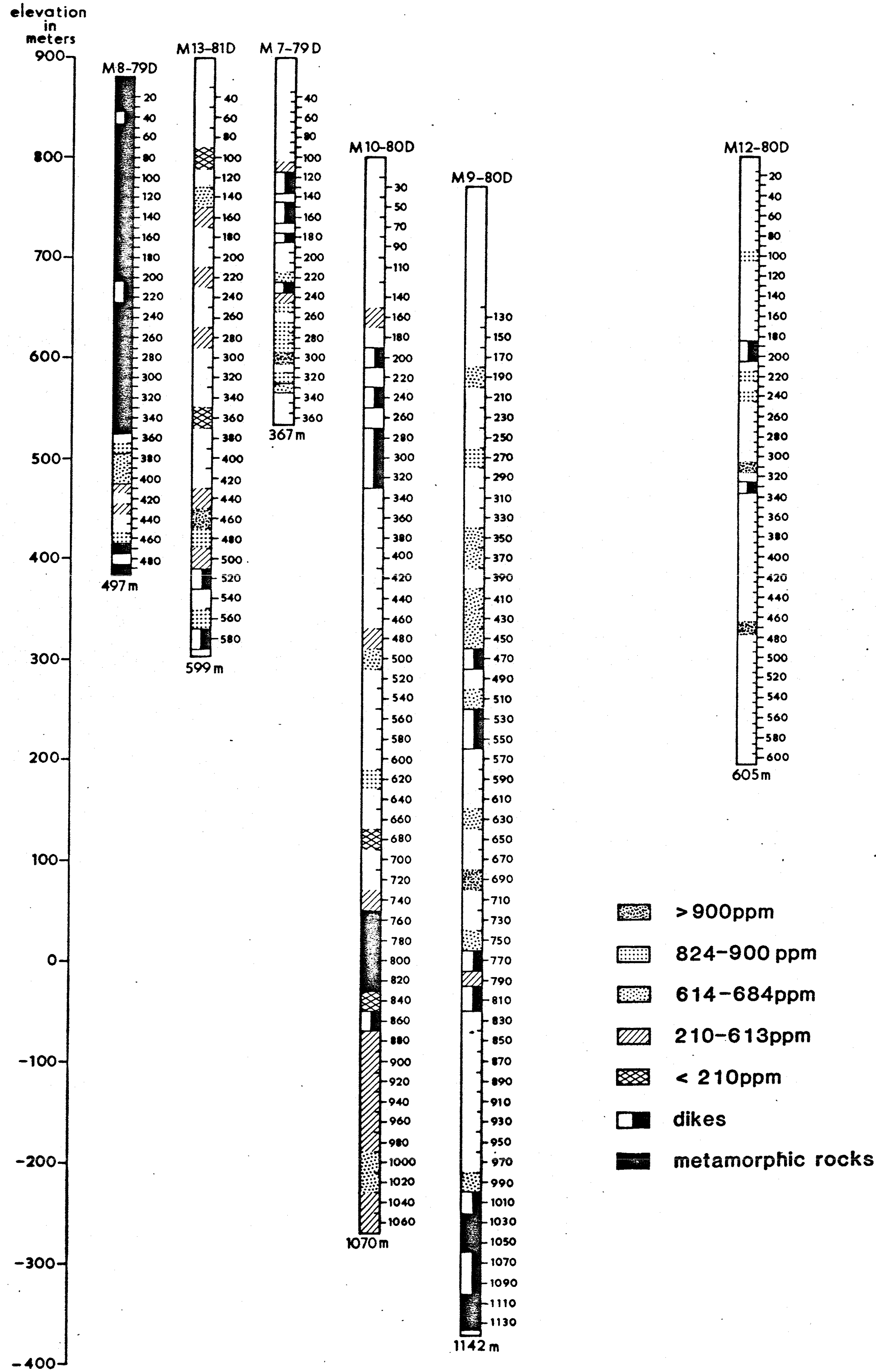


Fig. 7. Distribution of Sr in quartz diorite

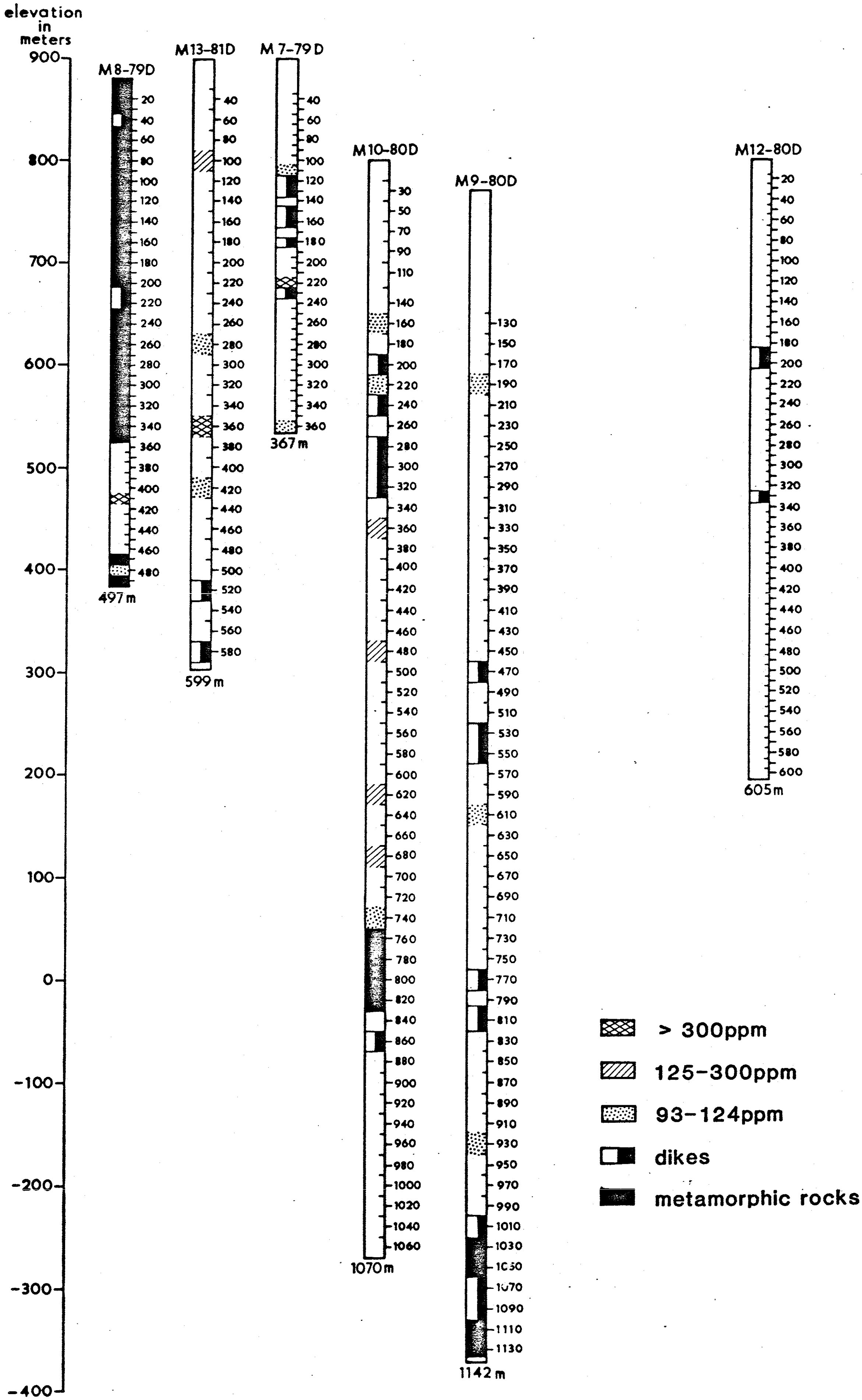


Fig. 8a. Distribution of Zn in quartz diorite

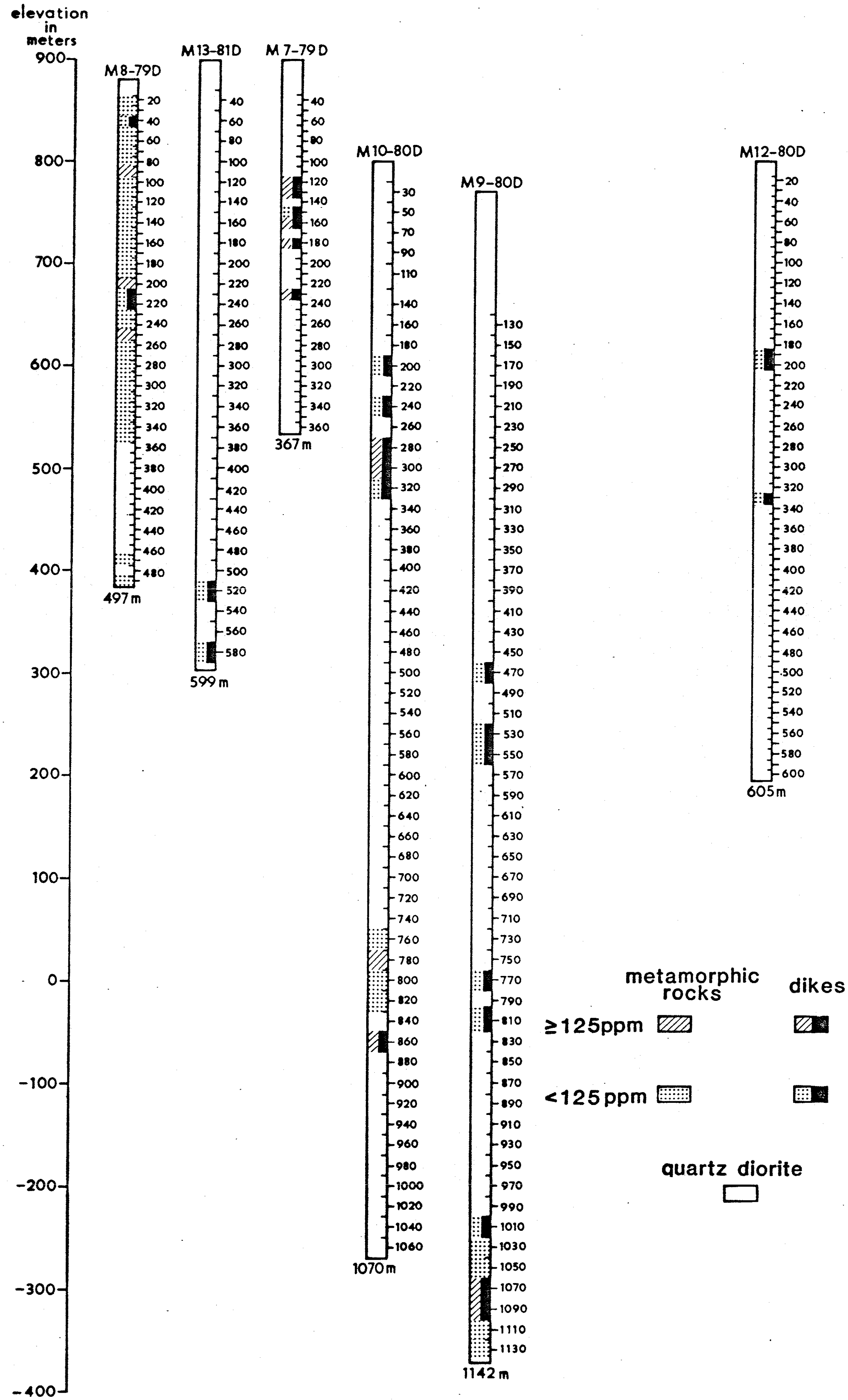


Fig. 8b. Distribution of Zn in dikes and metamorphic rocks

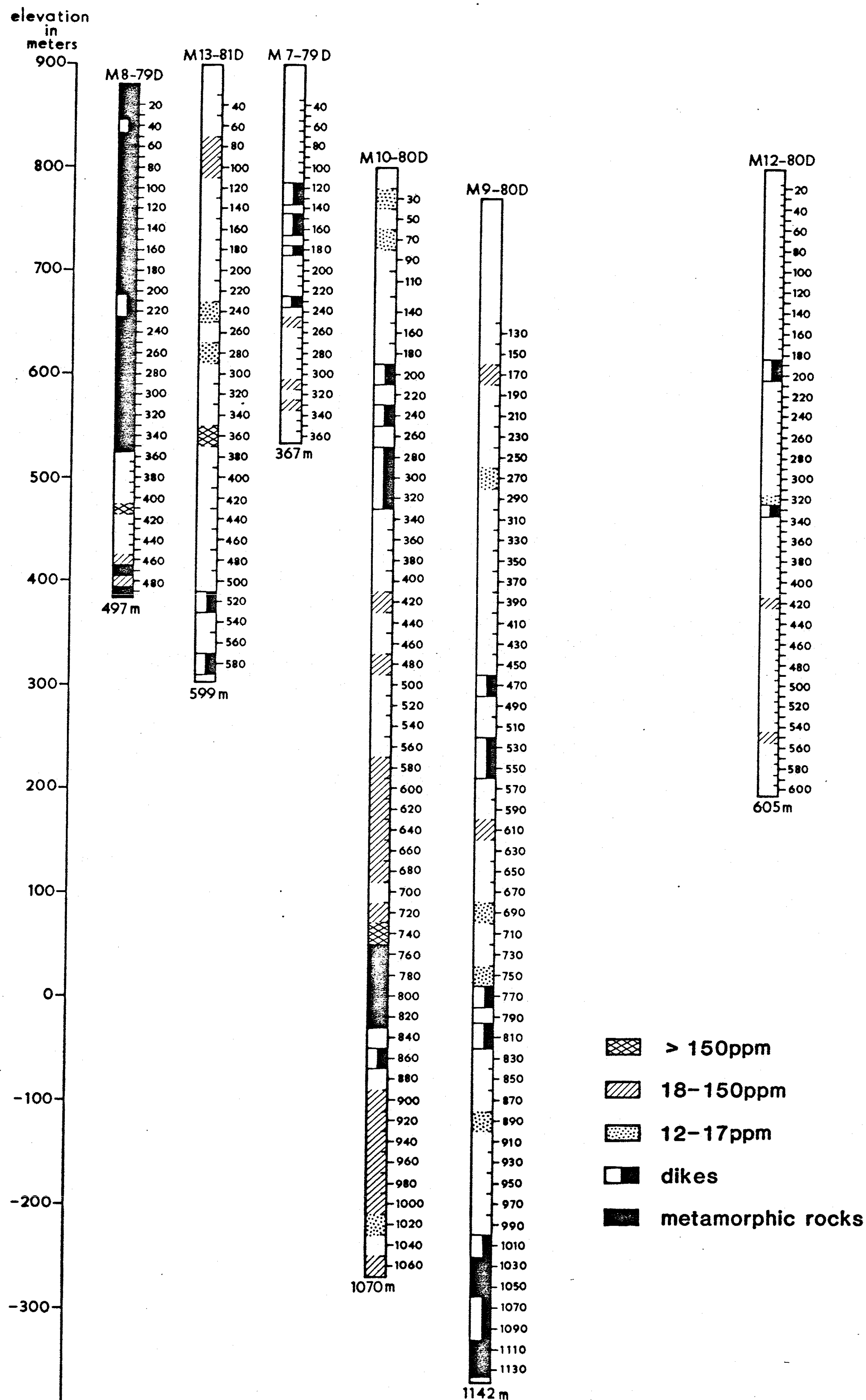


Fig. 9a. Distribution of Cu in quartz diorite

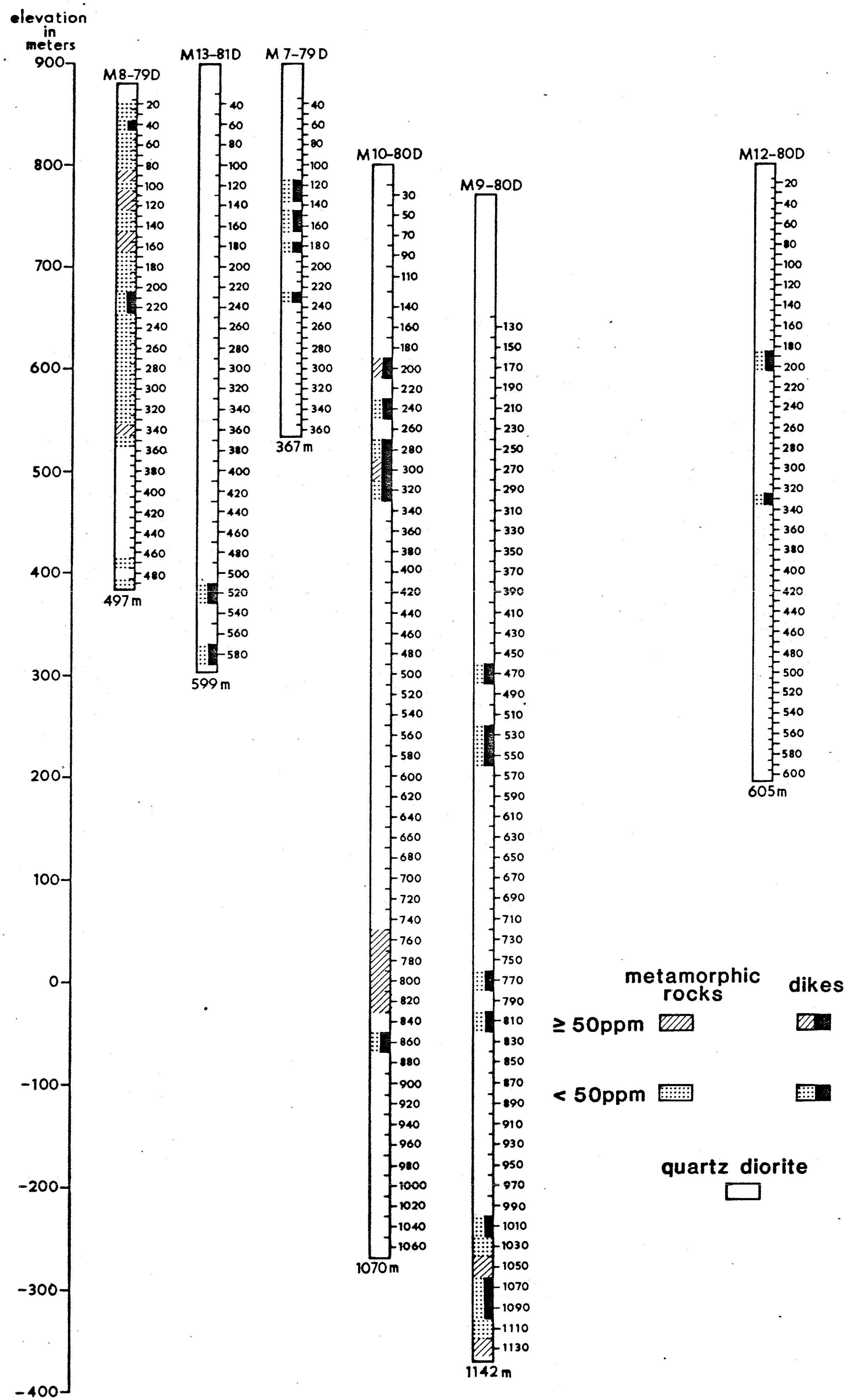


Fig. 9b. Distribution of Cu in dikes and metamorphic rocks

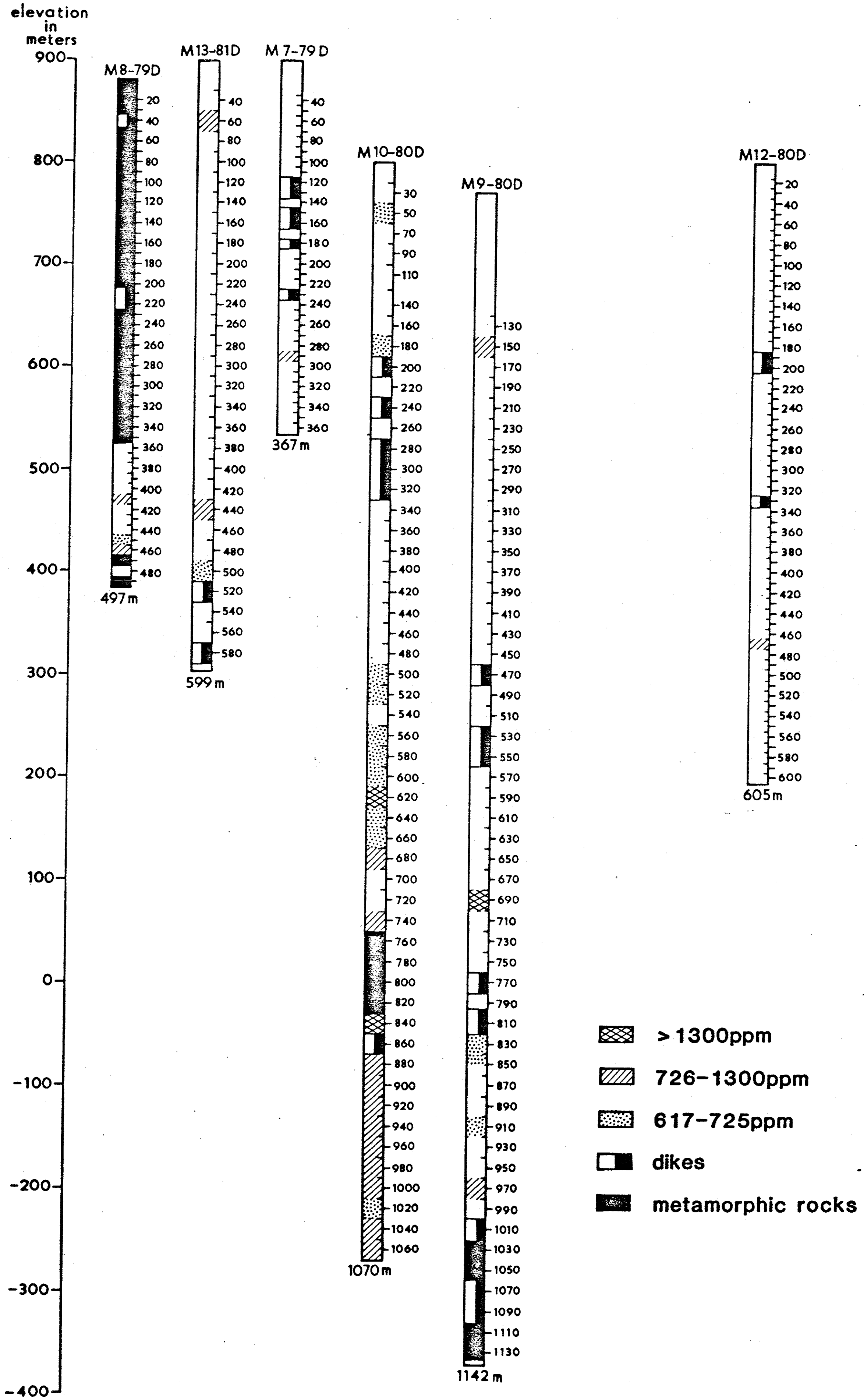


Fig. 10. Distribution of Ba in quartz diorite

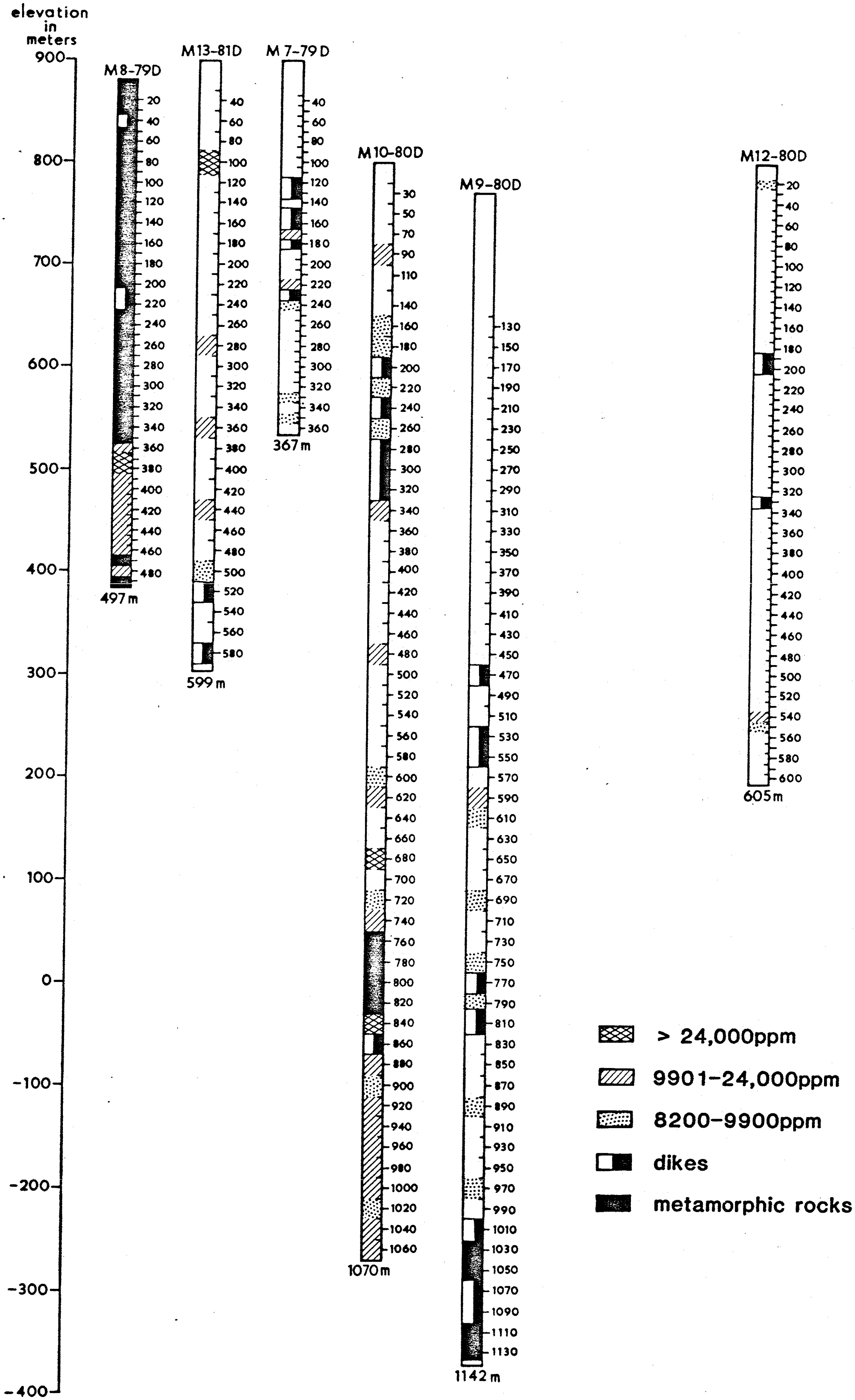


Fig. 11. Distribution of K in quartz diorite

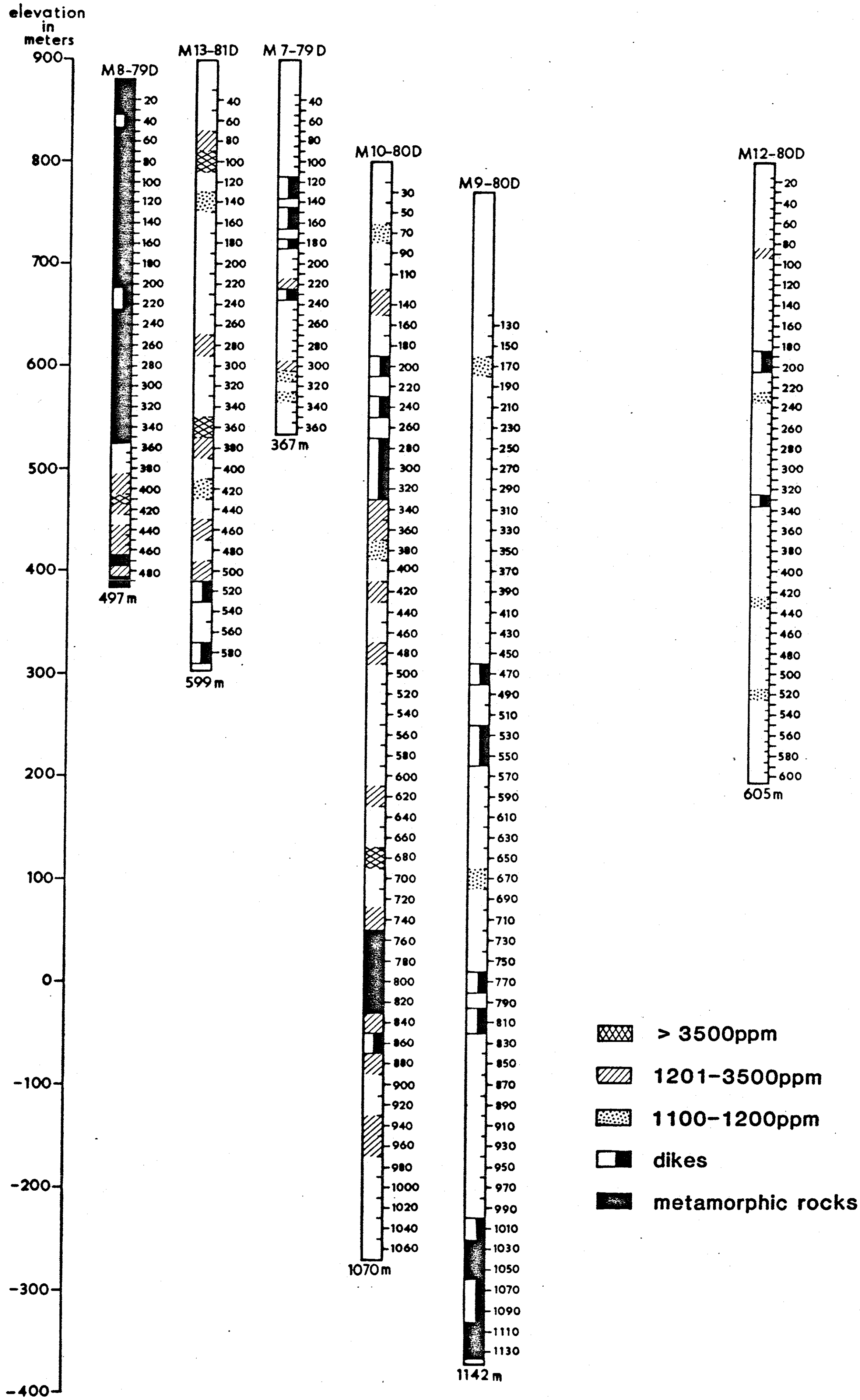


Fig. 12. Distribution of Mn in quartz diorite

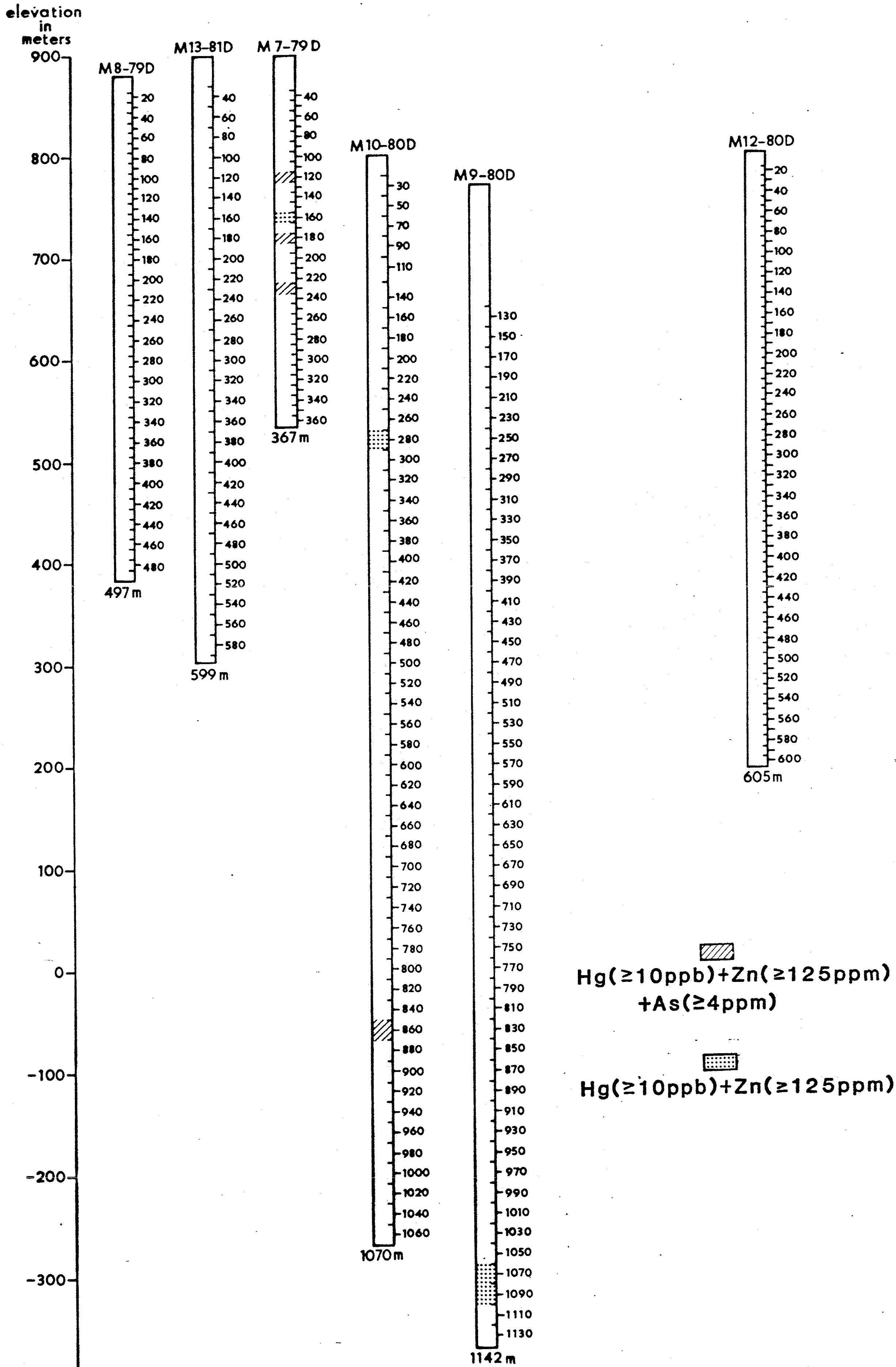


Fig. 13. Distribution of Hg, Zn, and As in the dikes.

Appendix I

Geochemical Analyses of Drill Core

DH M7-79D

MEAGER CREEK
BRITISH COLUMBIA, CANADA

FIGURE 1/M7-79D

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 20.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)

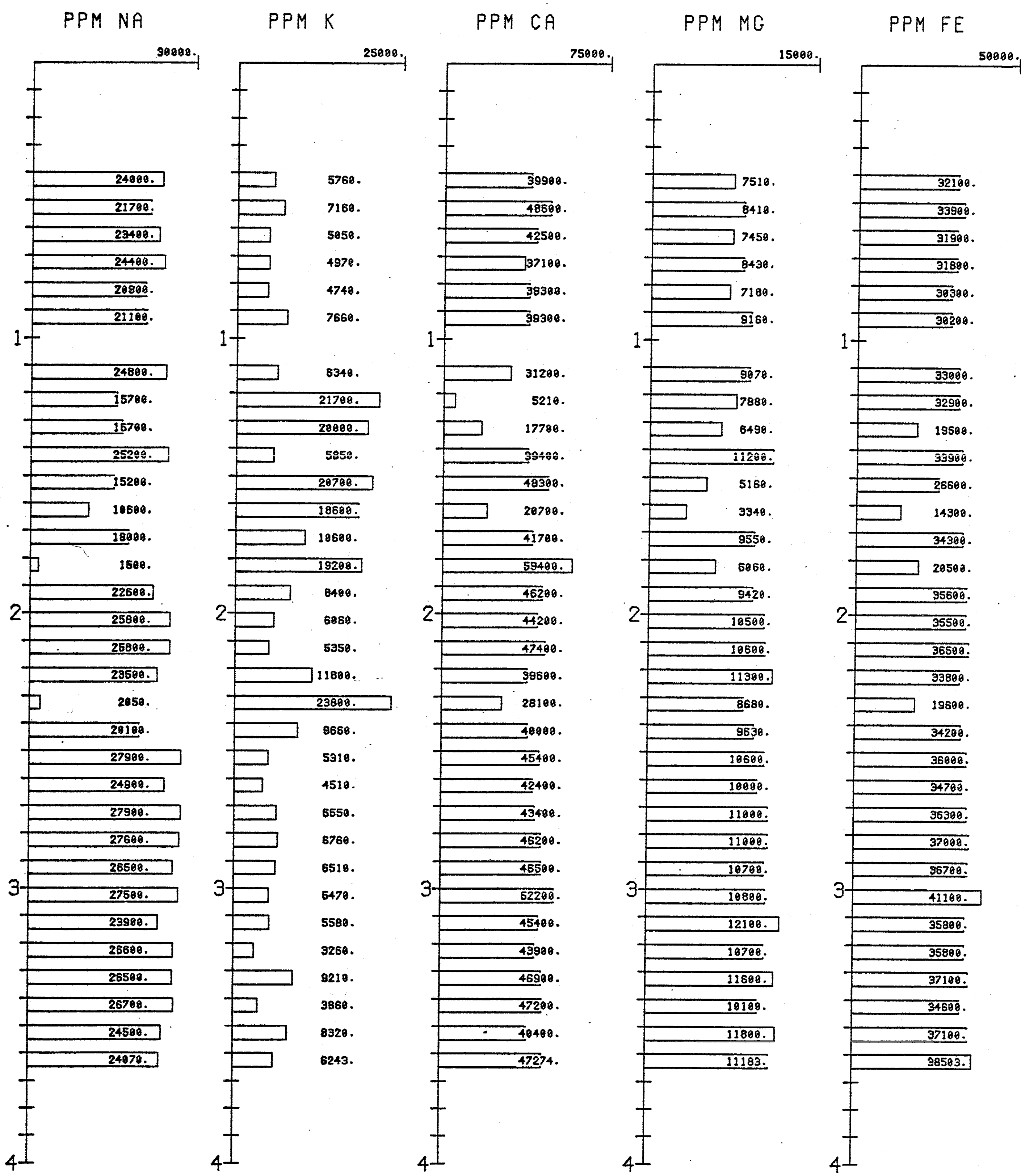


FIGURE 2/M7-79D

DH M7-79D

MEAGER CREEK
BRITISH COLUMBIA, CANADA

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 20.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)

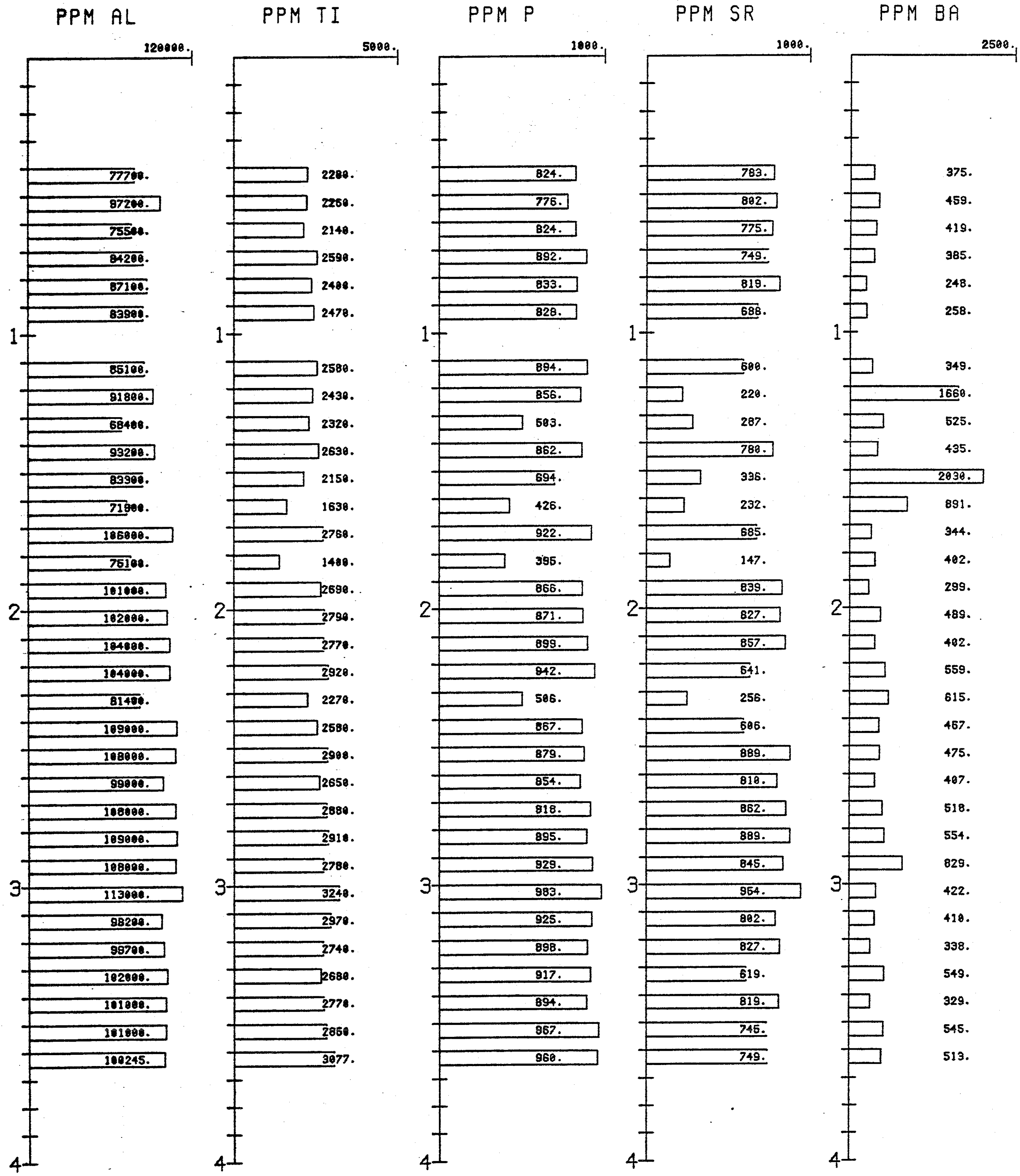
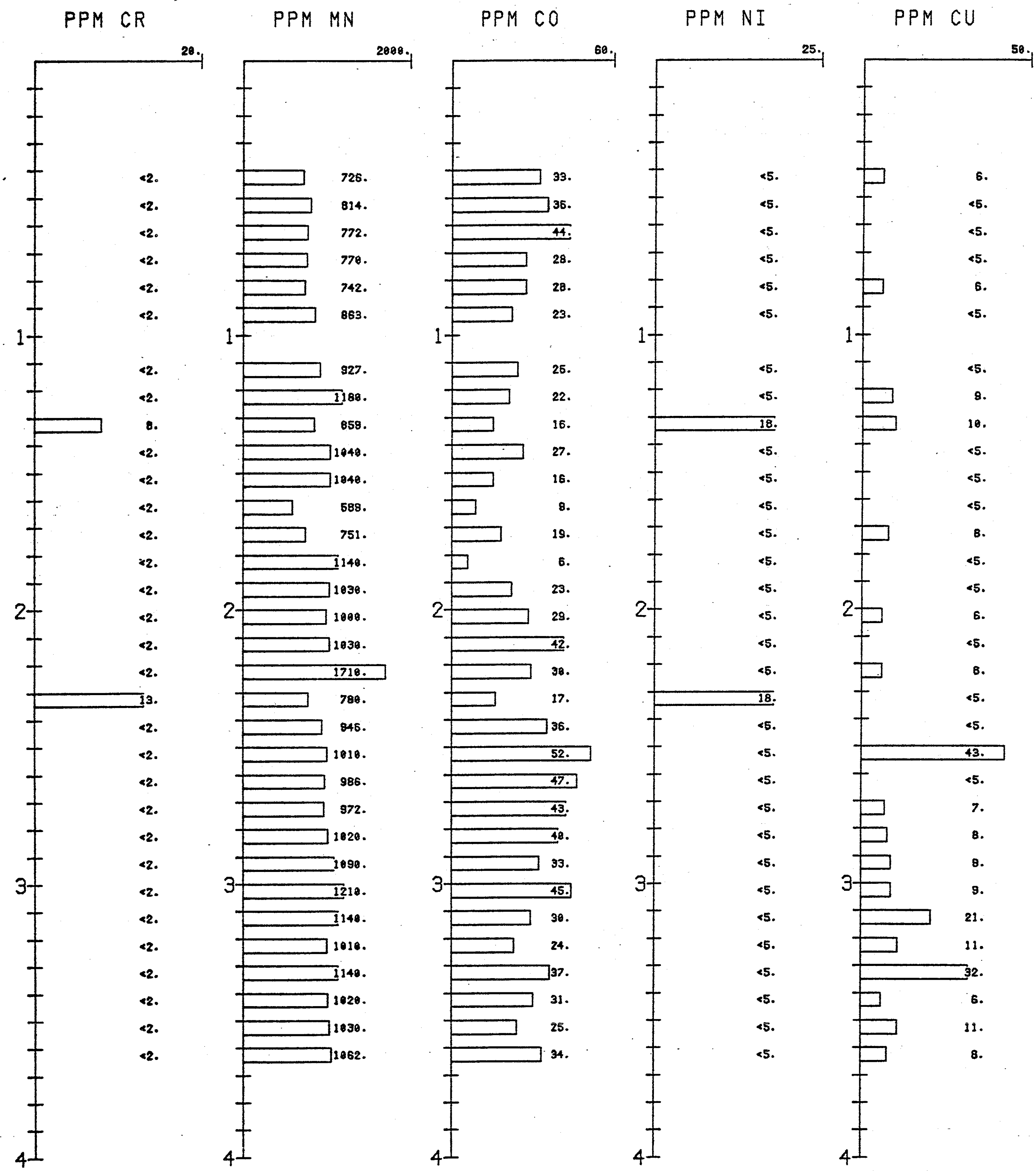


FIGURE 3/M7-79D

DH M7-79D

MEAGER CREEK
BRITISH COLUMBIA, CANADA

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 20.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)



DH M7-79D

MEAGER CREEK
BRITISH COLUMBIA, CANADA

FIGURE 4/M7-79D

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 20.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)

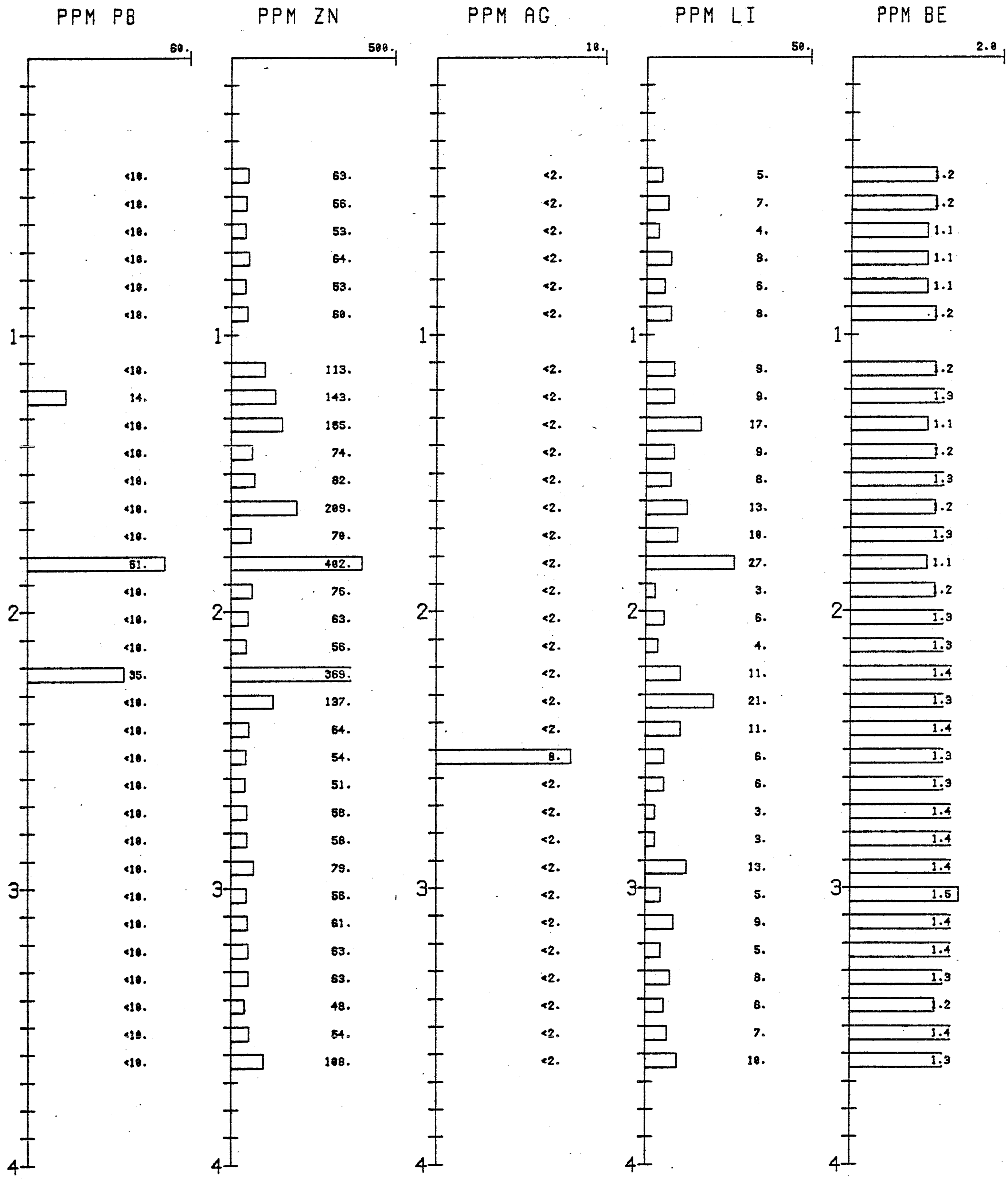


FIGURE 5/M7-79D

DH M7-79D

MEAGER CREEK
BRITISH COLUMBIA, CANADA

SAMPLE TYPE: WHOLE ROCK
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(DEPTH SHOWN IN 100 METER UNITS)

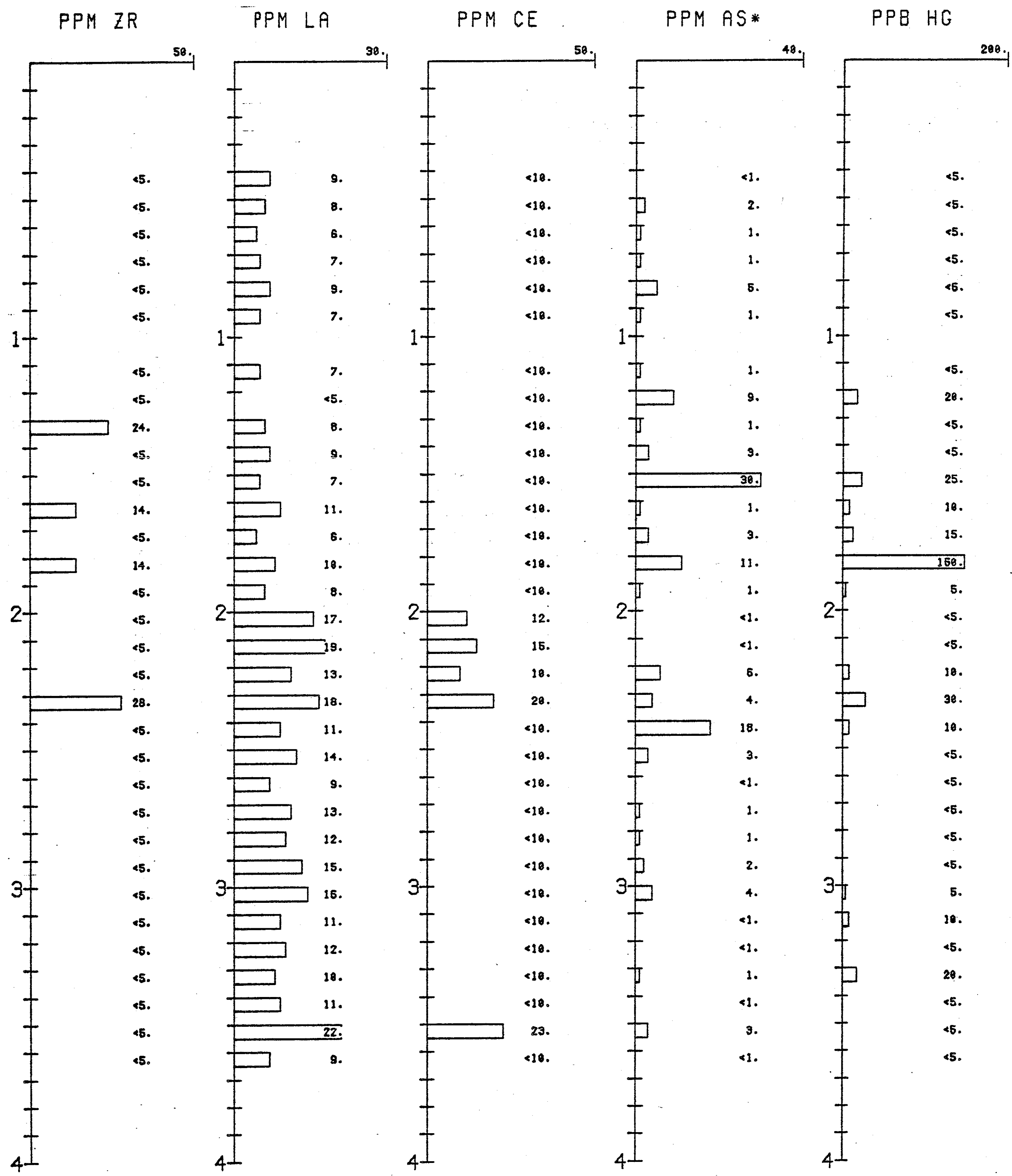


FIGURE 1/M8

DH M8

MEAGER CREEK
BRITISH COLUMBIA, CANADA

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 25.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)

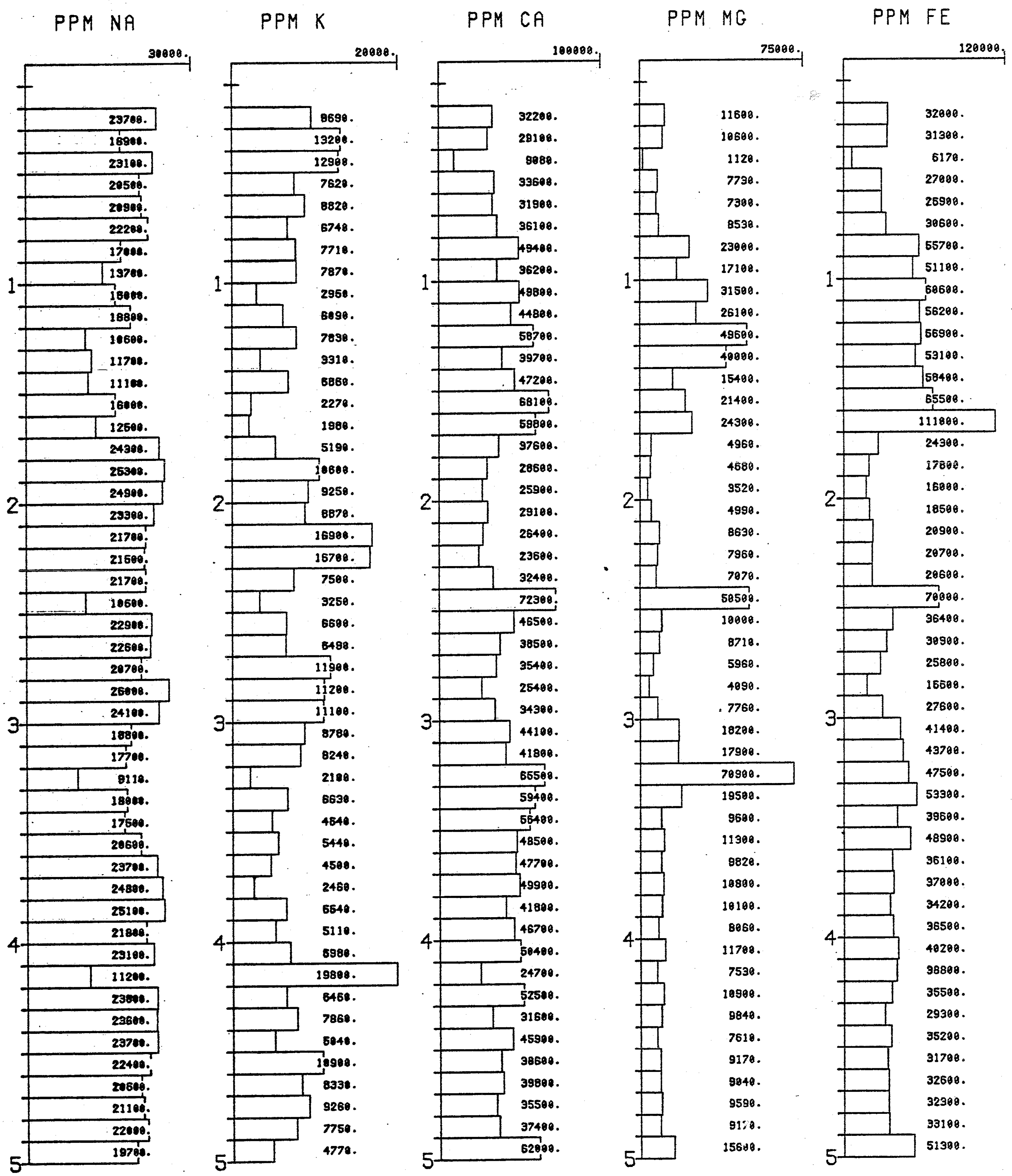


FIGURE 2/M8

DH M8

MEAGER CREEK
BRITISH COLUMBIA, CANADA

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 25.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)

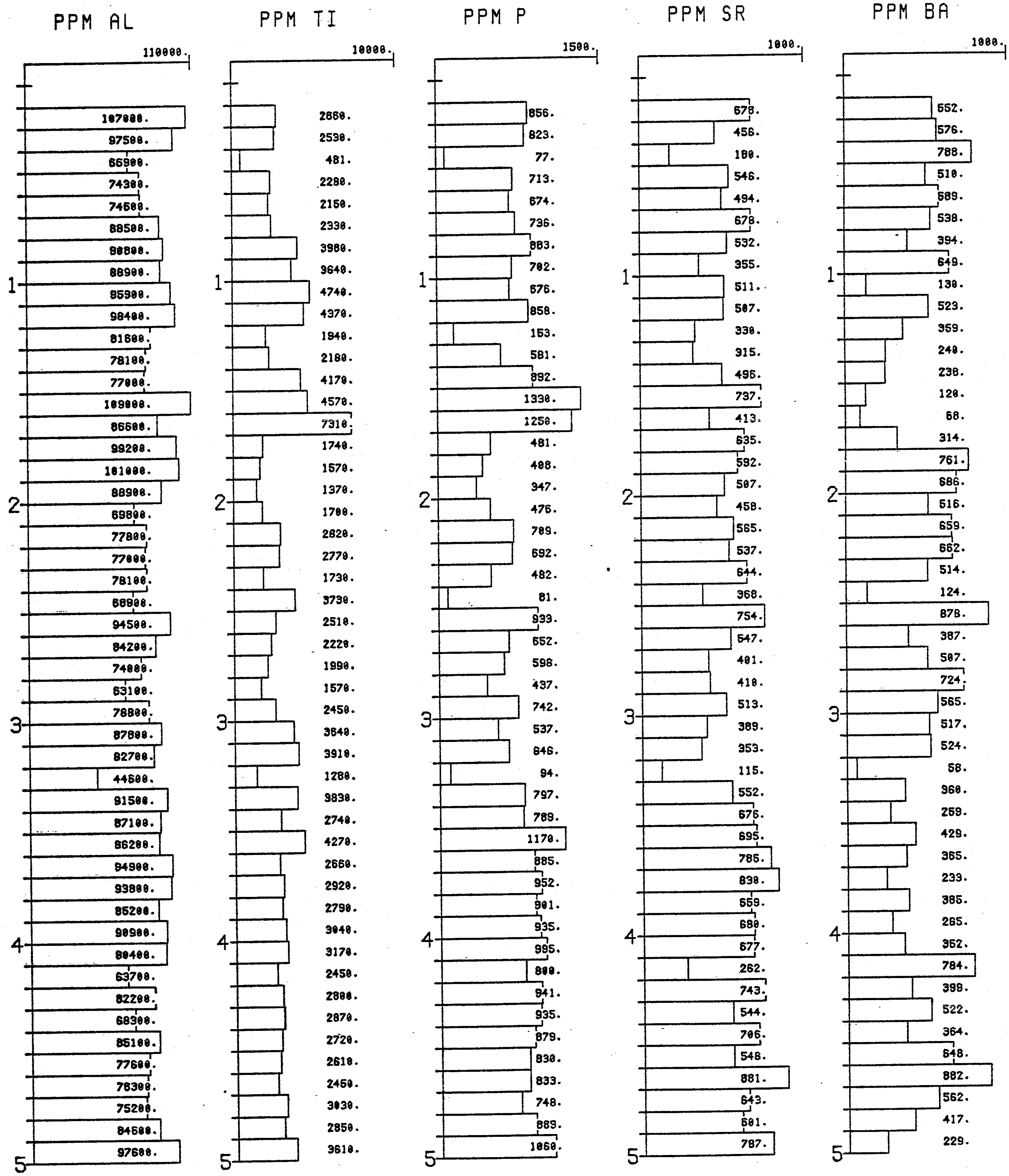


FIGURE 3/M8

DH M8

MEAGER CREEK
BRITISH COLUMBIA, CANADA

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 25.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)

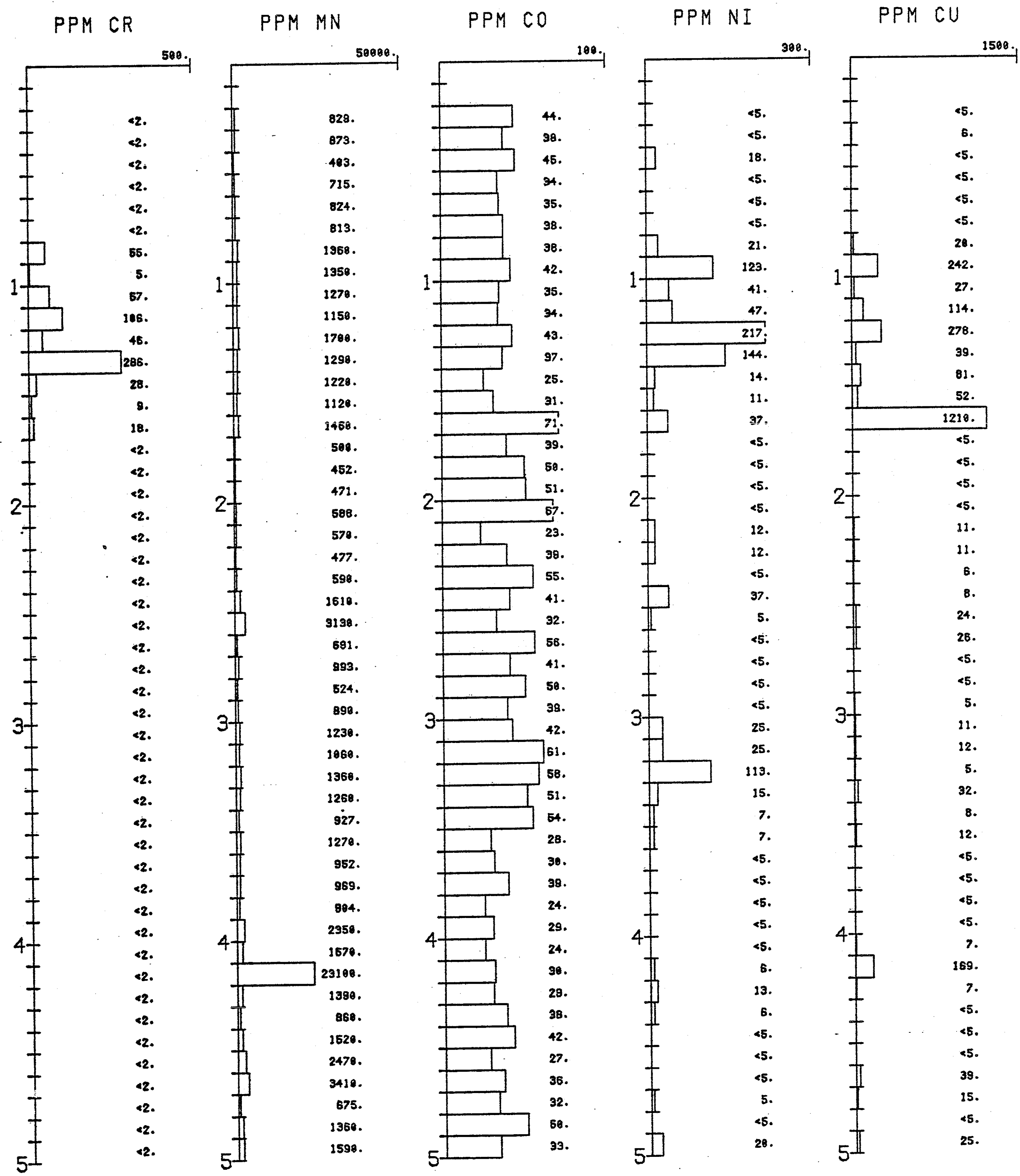


FIGURE 4/M8

DH M8

MEAGER CREEK
BRITISH COLUMBIA, CANADA

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 25.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)

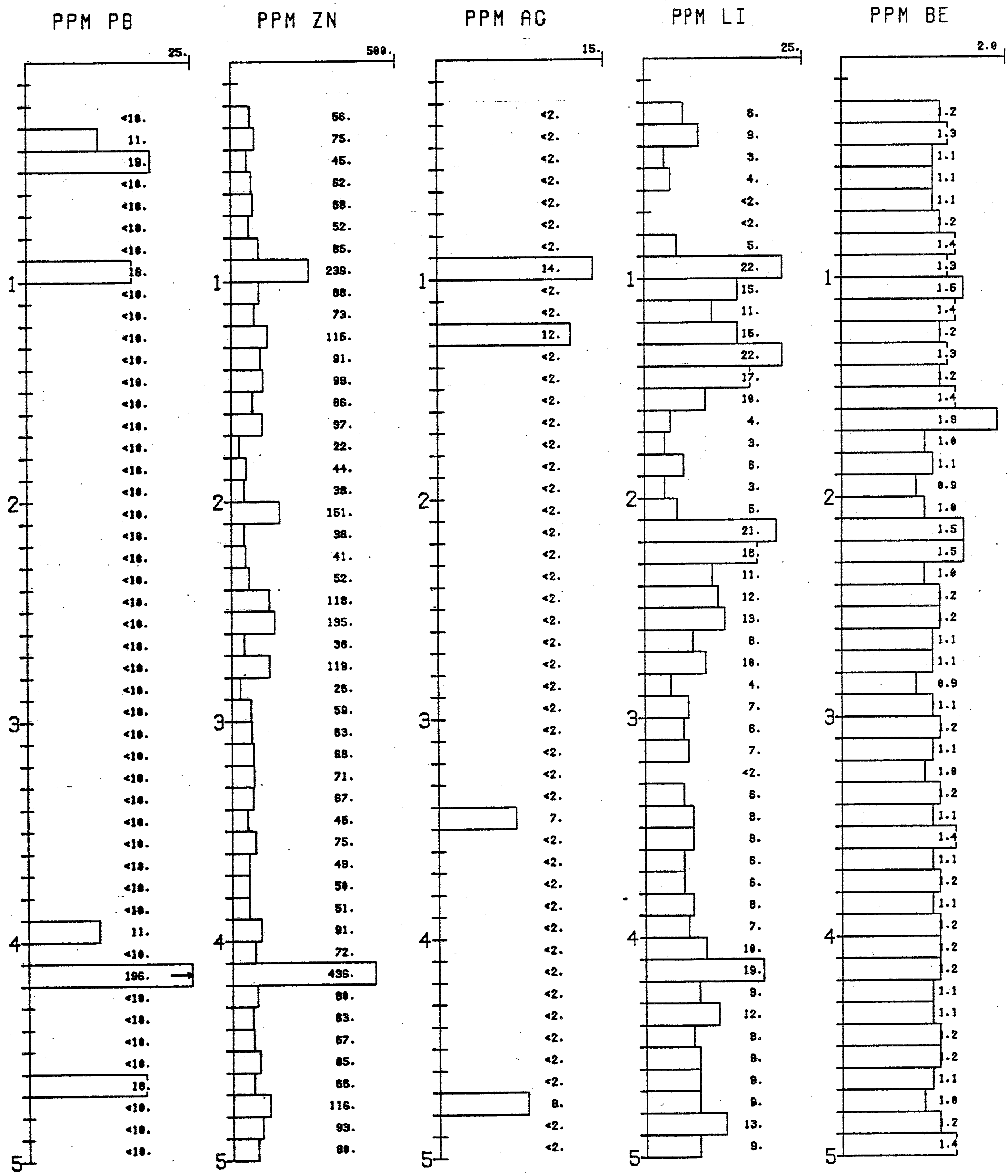
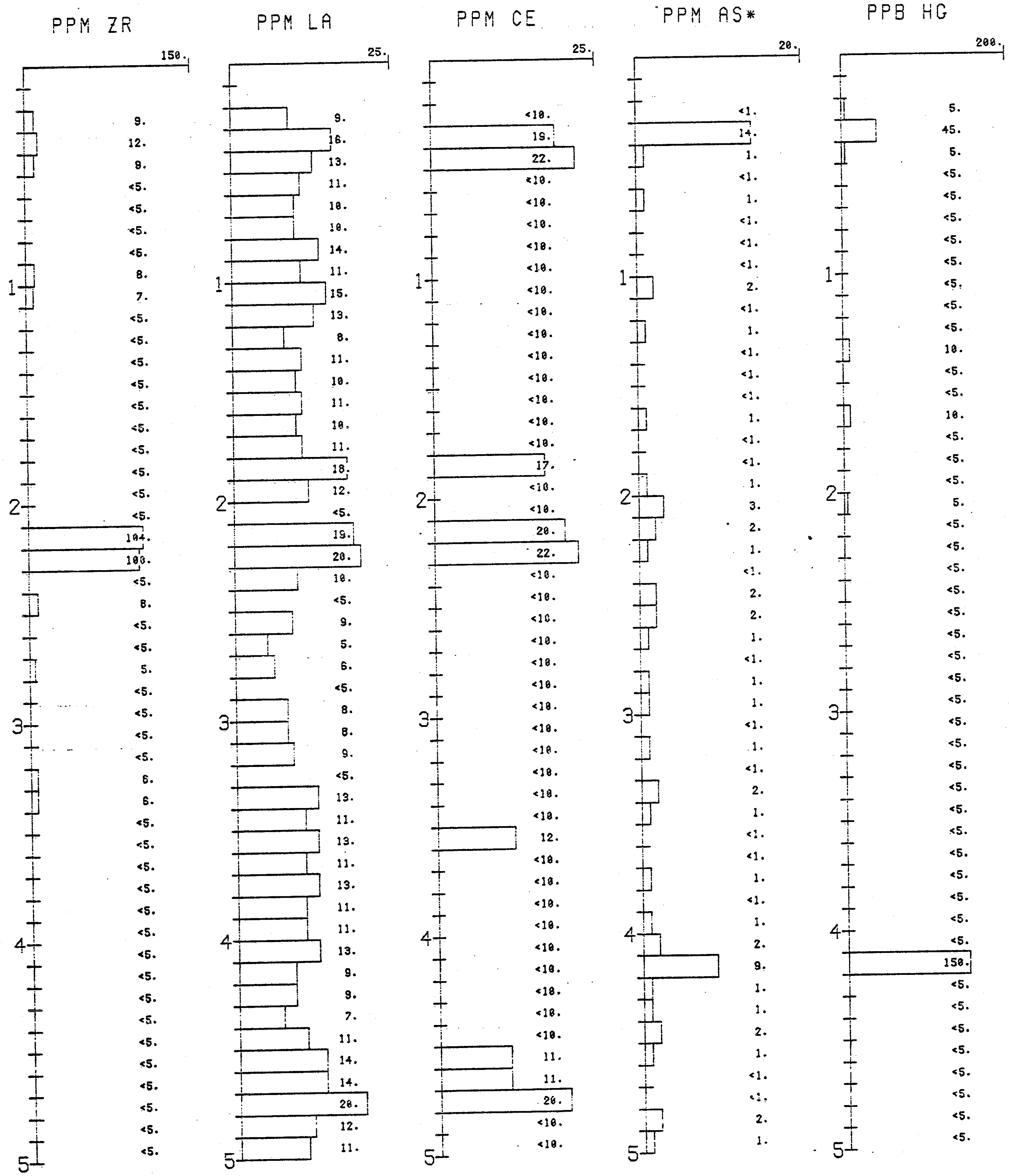


FIGURE 5/M8

DH M8

MEAGER CREEK
BRITISH COLUMBIA, CANADA

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 25.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)



DH M9

MEAGER CREEK
BRITISH COLUMBIA, CANADA

FIGURE 1/M9

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 55.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)

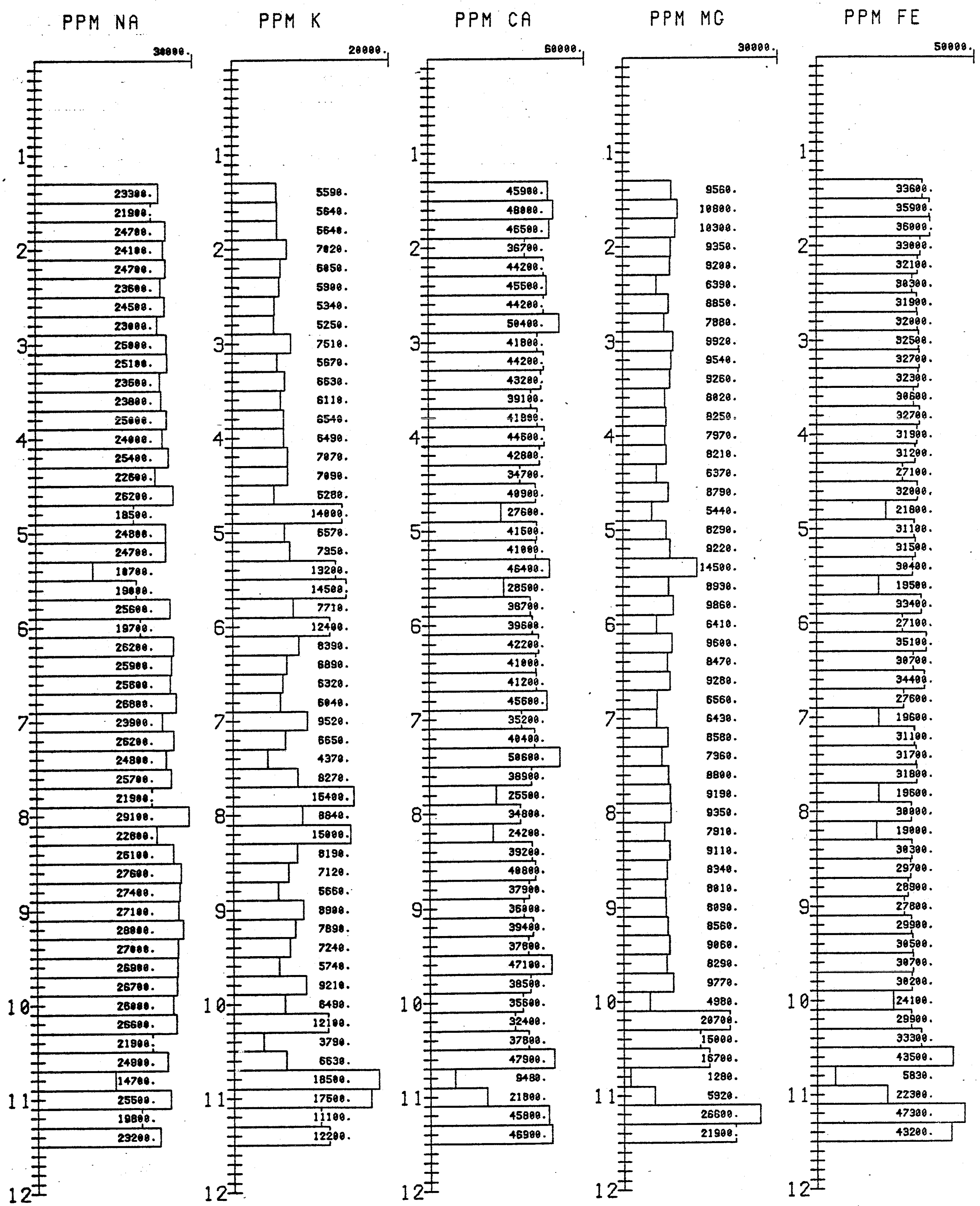
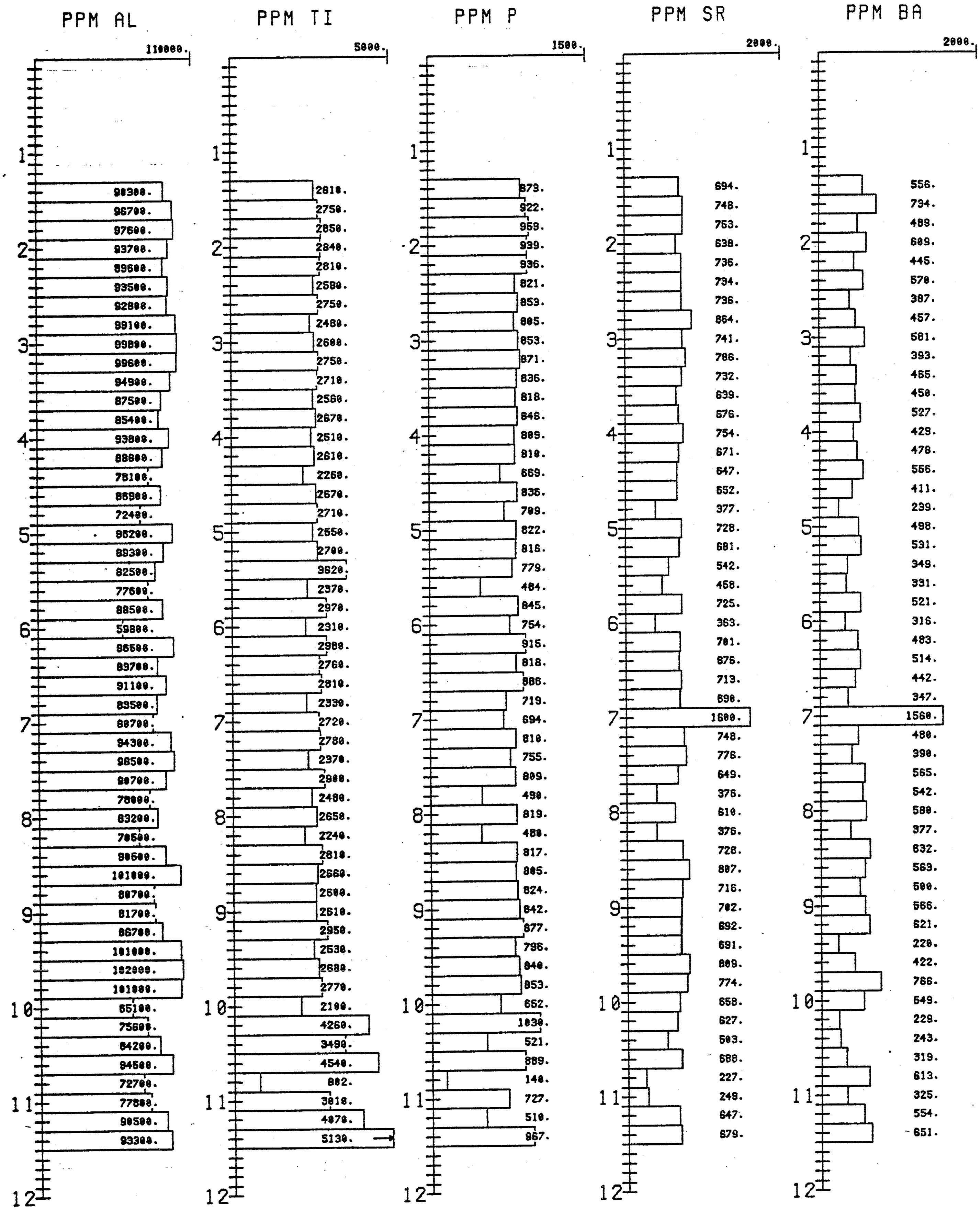


FIGURE 2/M9

DH M9

MEAGER CREEK
BRITISH COLUMBIA, CANADA

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 55.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)



DH M9

MEAGER CREEK
BRITISH COLUMBIA, CANADA

FIGURE 3/M9

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 55.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)

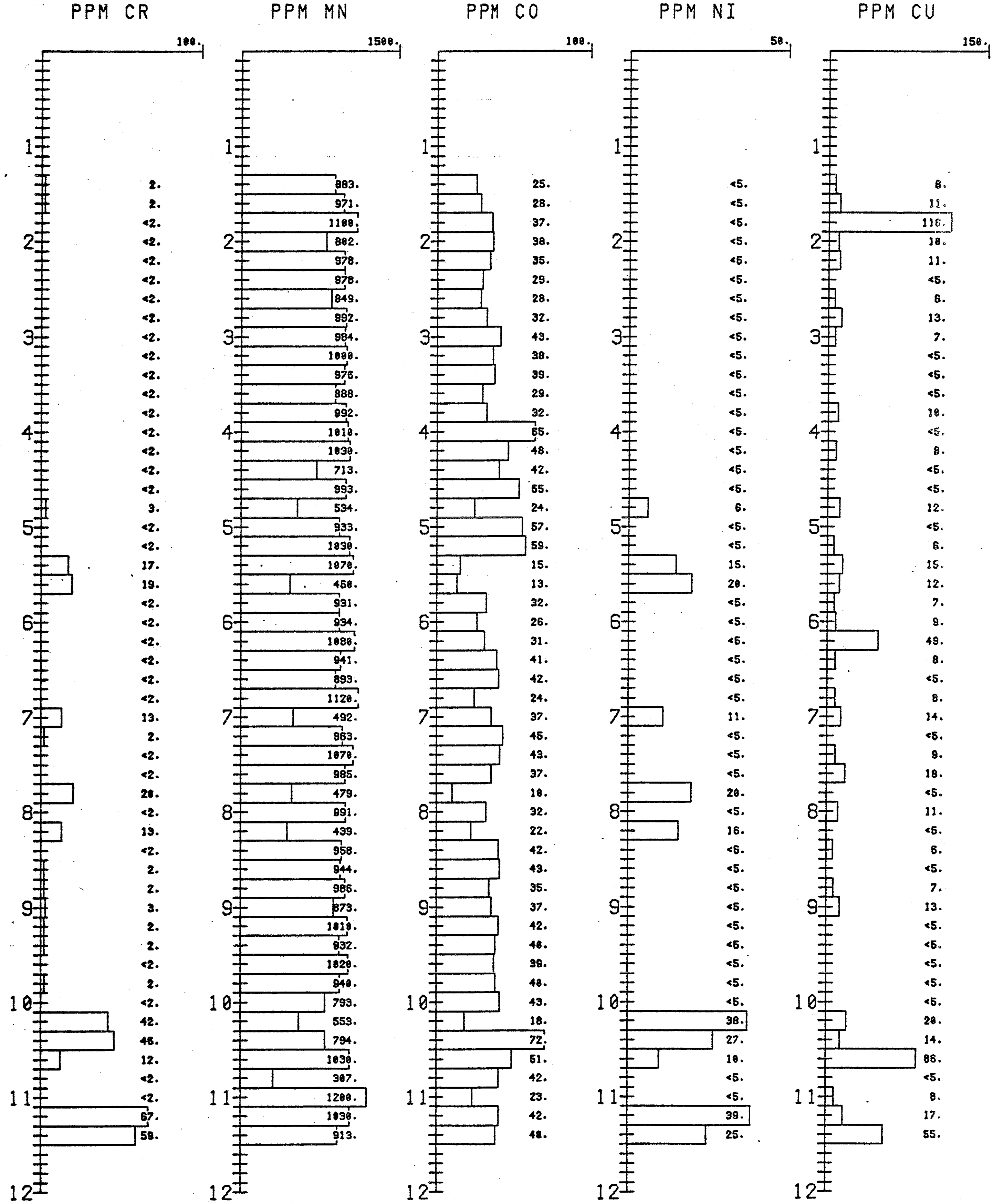


FIGURE 4/M9

DH M9

MEAGER CREEK
BRITISH COLUMBIA, CANADA

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 55.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)

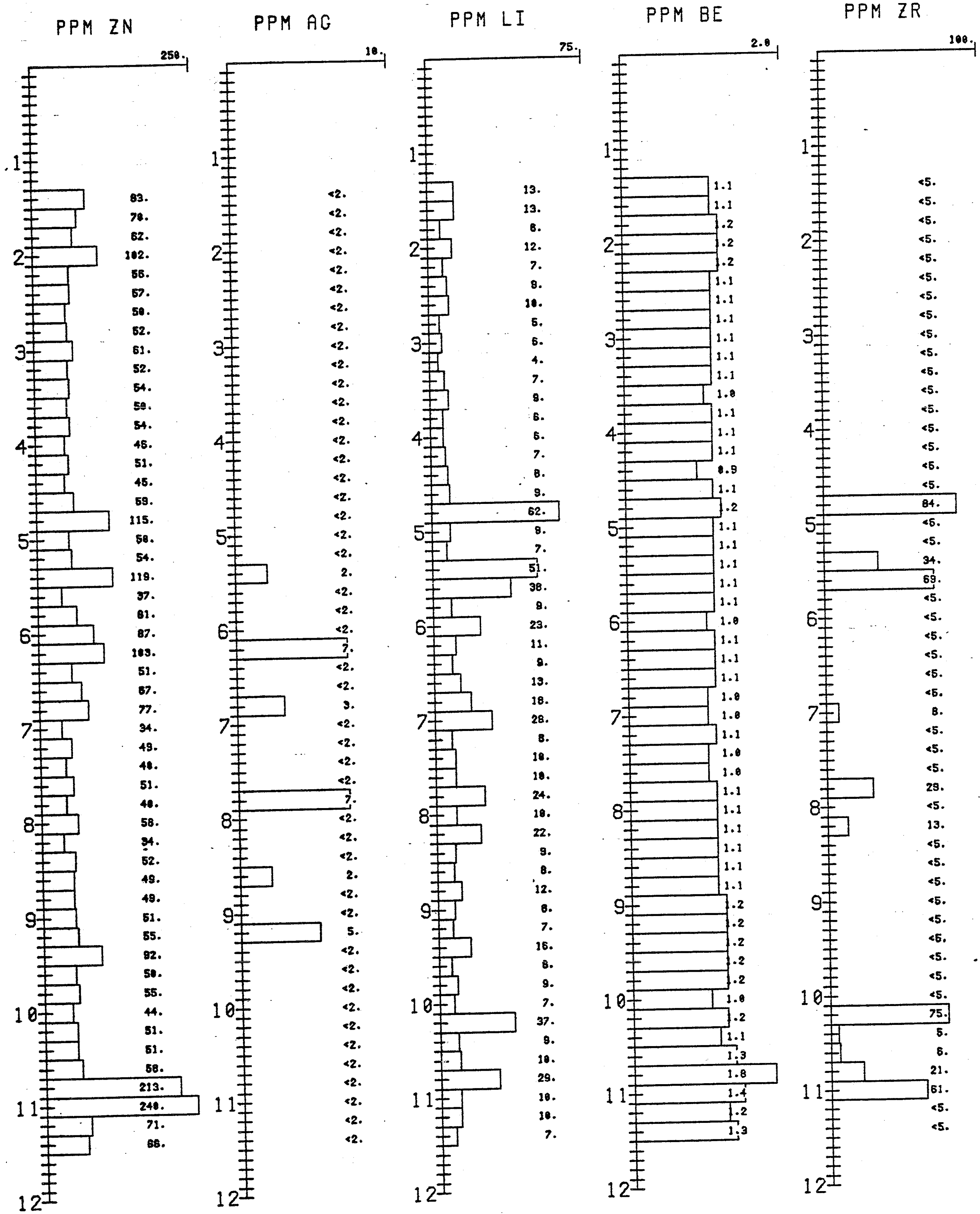


FIGURE 5/M9

DH M9

MEAGER CREEK
BRITISH COLUMBIA, CANADA

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 55.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)

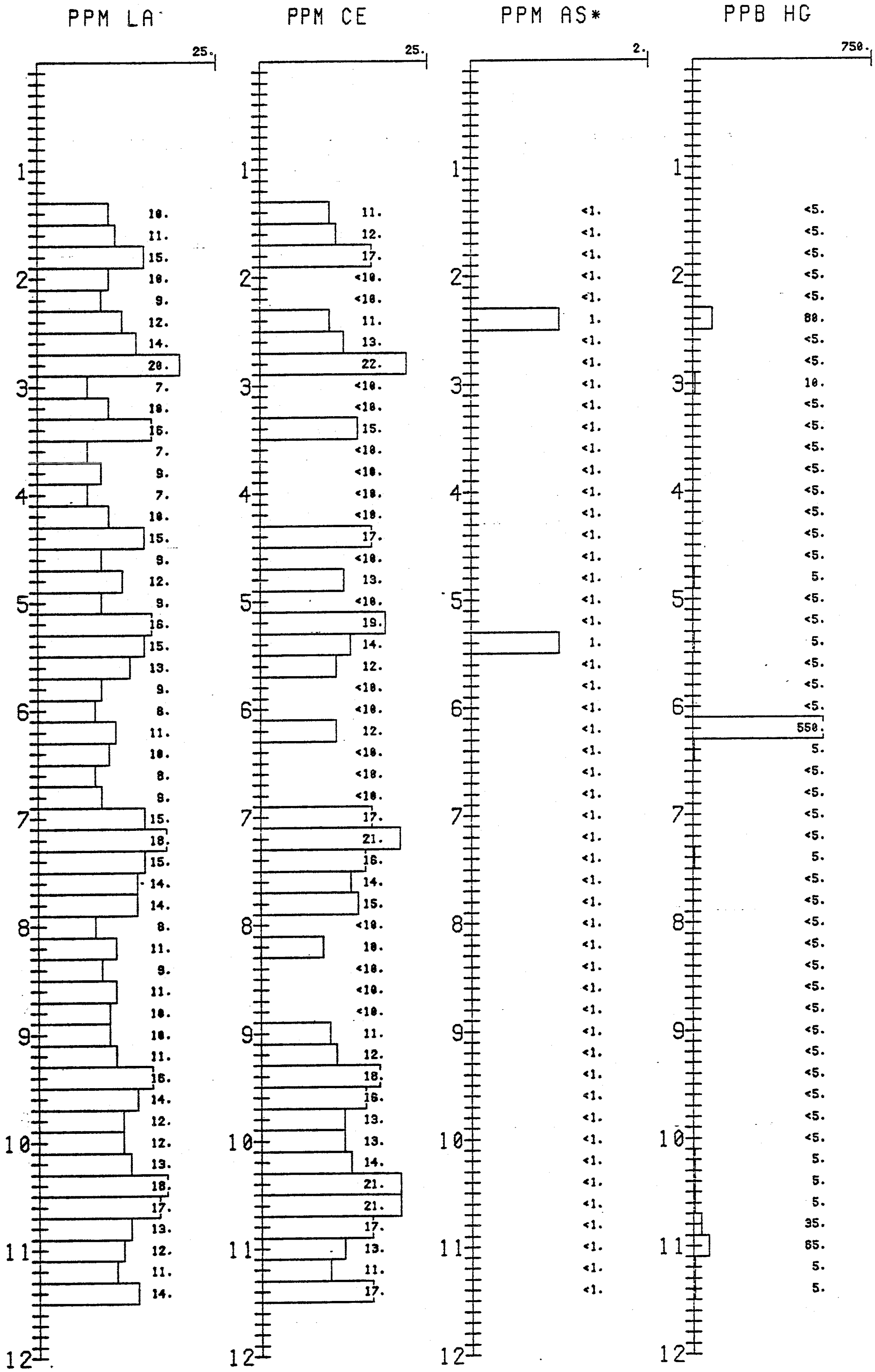
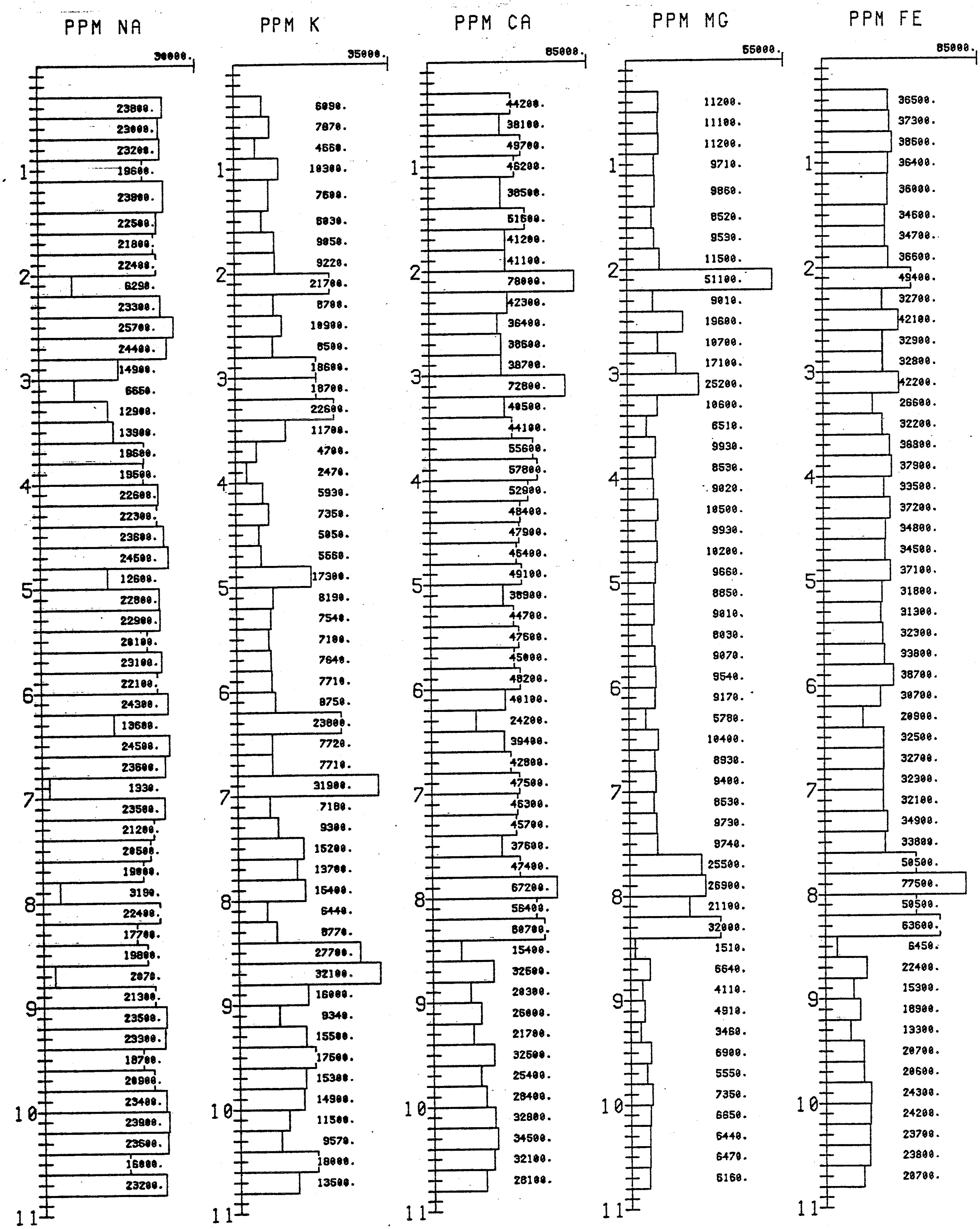


FIGURE 1/M10-80D

DH M10-80D

MEAGER CREEK
BRITISH COLUMBIA, CANADA

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 50.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)



DH M10-80D

MEAGER CREEK
BRITISH COLUMBIA, CANADA

FIGURE 2/M10-80D

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 50.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)

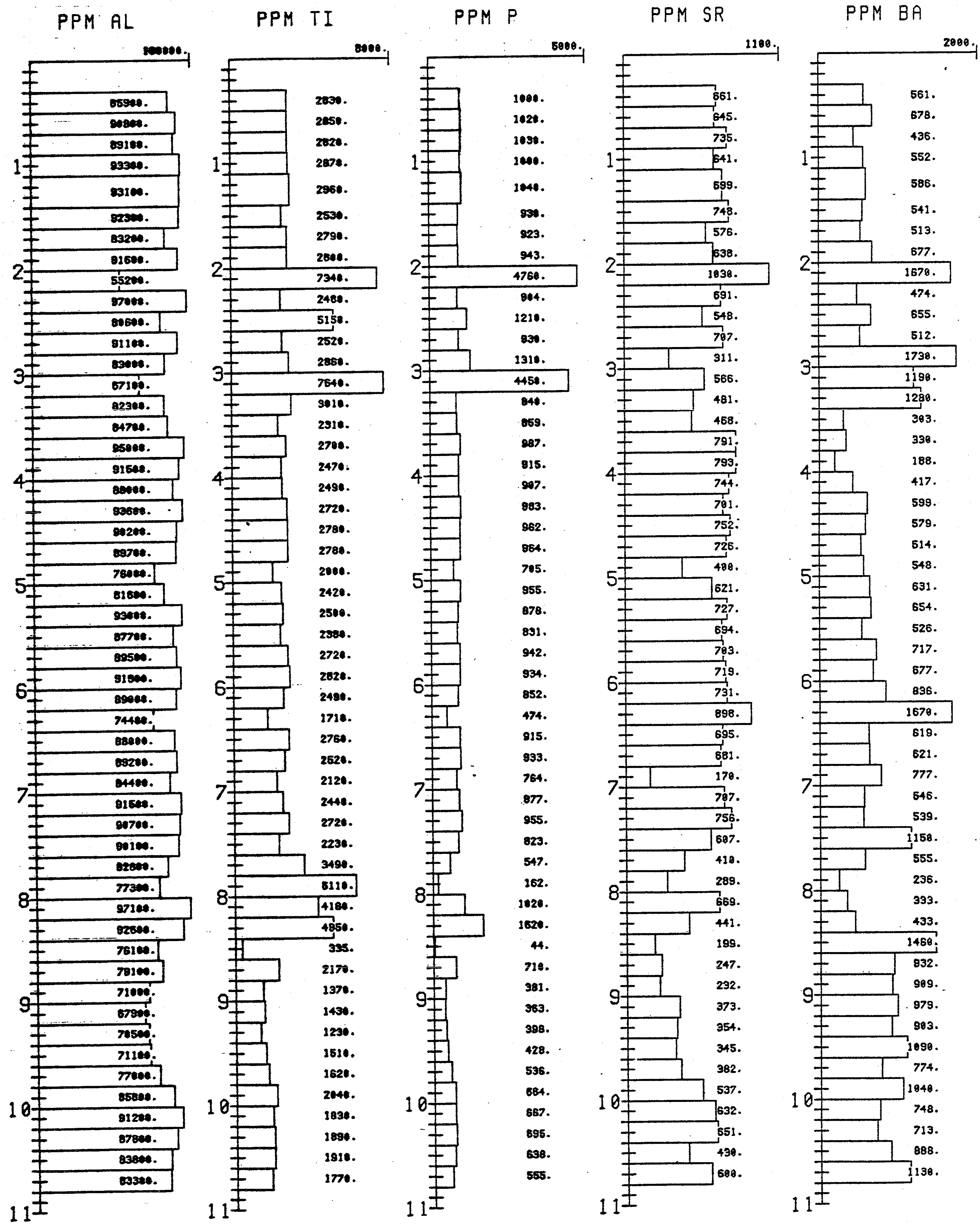


FIGURE 3/M10-80D

DH M10-80D

MEAGER CREEK
BRITISH COLUMBIA, CANADA

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 50.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)

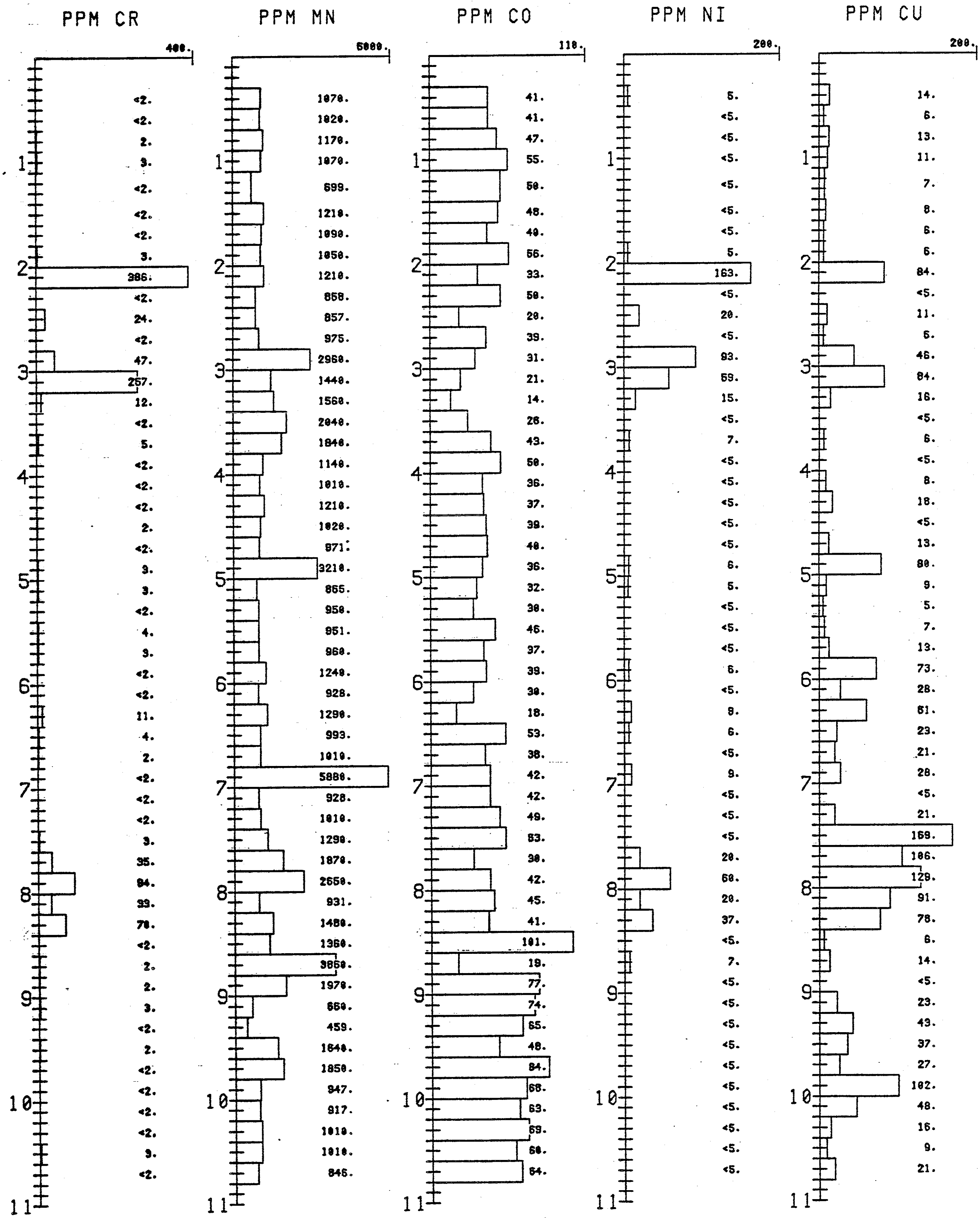
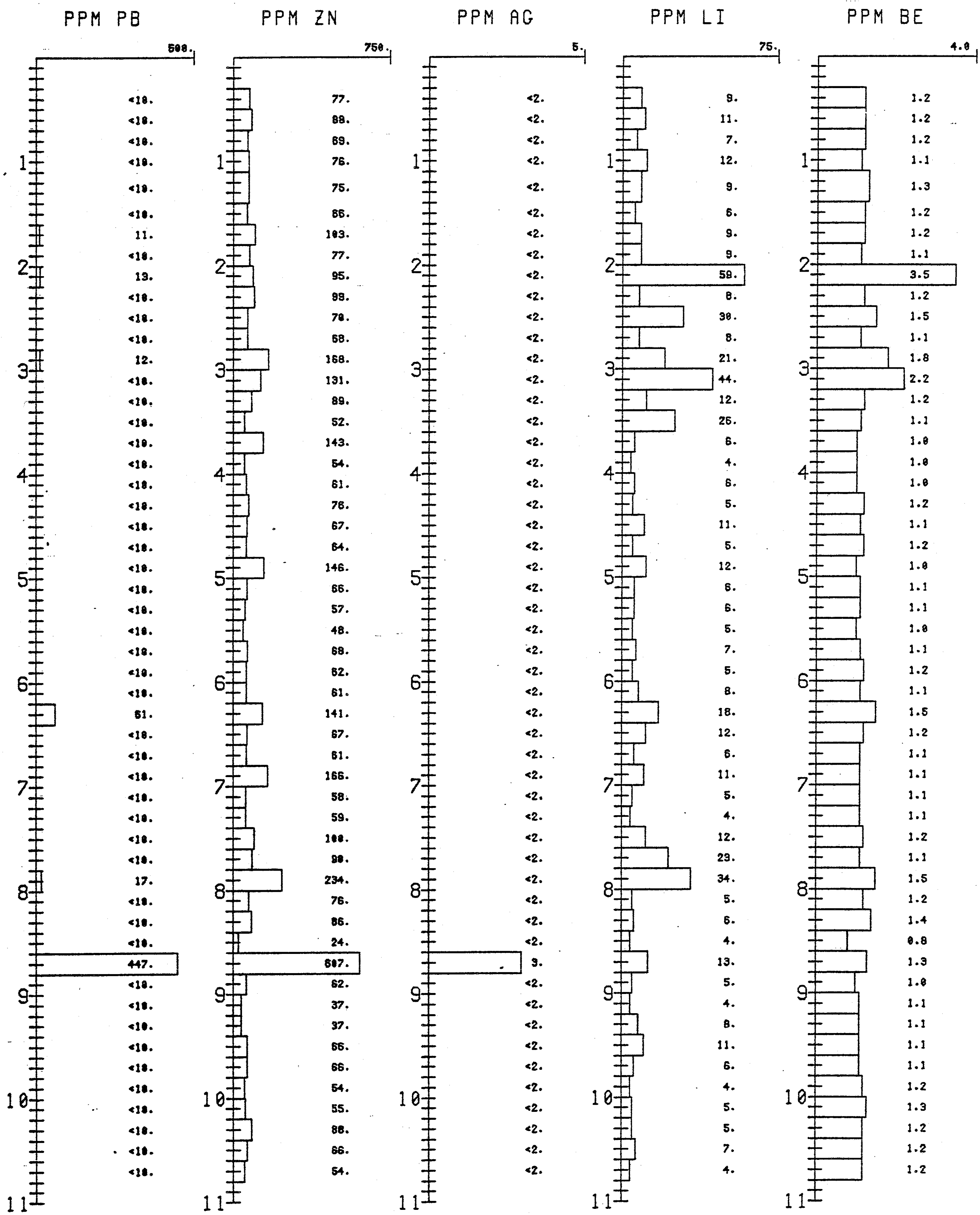


FIGURE 4/M10-80D

DH M10-80D

MEAGER CREEK
BRITISH COLUMBIA, CANADA

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 50.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)



PPM PB	PPM ZN	PPM AG	PPM LI	PPM BE
<10.	77.	<2.	9.	1.2
<10.	88.	<2.	11.	1.2
<10.	89.	<2.	7.	1.2
<10.	76.	<2.	12.	1.1
<10.	75.	<2.	9.	1.3
<10.	86.	<2.	6.	1.2
11.	103.	<2.	9.	1.2
<10.	77.	<2.	9.	1.1
13.	95.	<2.	59.	3.5
<10.	98.	<2.	8.	1.2
<10.	70.	<2.	30.	1.5
<10.	68.	<2.	8.	1.1
12.	168.	<2.	21.	1.8
<10.	131.	<2.	44.	2.2
<10.	89.	<2.	12.	1.2
<10.	52.	<2.	26.	1.1
<10.	143.	<2.	6.	1.0
<10.	54.	<2.	4.	1.0
<10.	61.	<2.	6.	1.0
<10.	76.	<2.	5.	1.2
<10.	67.	<2.	11.	1.1
<10.	64.	<2.	5.	1.2
<10.	146.	<2.	12.	1.0
<10.	66.	<2.	6.	1.1
<10.	57.	<2.	6.	1.1
<10.	48.	<2.	5.	1.0
<10.	68.	<2.	7.	1.1
<10.	62.	<2.	5.	1.2
<10.	61.	<2.	8.	1.1
61.	141.	<2.	18.	1.5
<10.	67.	<2.	12.	1.2
<10.	61.	<2.	6.	1.1
<10.	166.	<2.	11.	1.1
<10.	58.	<2.	5.	1.1
<10.	59.	<2.	4.	1.1
<10.	100.	<2.	12.	1.2
<10.	90.	<2.	23.	1.1
17.	234.	<2.	34.	1.5
<10.	76.	<2.	5.	1.2
<10.	86.	<2.	6.	1.4
<10.	24.	<2.	4.	0.8
447.	607.	3.	13.	1.3
<10.	62.	<2.	5.	1.0
<10.	37.	<2.	4.	1.1
<10.	37.	<2.	8.	1.1
<10.	66.	<2.	11.	1.1
<10.	66.	<2.	6.	1.1
<10.	54.	<2.	4.	1.2
<10.	55.	<2.	5.	1.3
<10.	88.	<2.	5.	1.2
<10.	66.	<2.	7.	1.2
<10.	54.	<2.	4.	1.2

DH M10-80D

MEAGER CREEK
BRITISH COLUMBIA, CANADA

FIGURE 5/M10-80D

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 50.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)

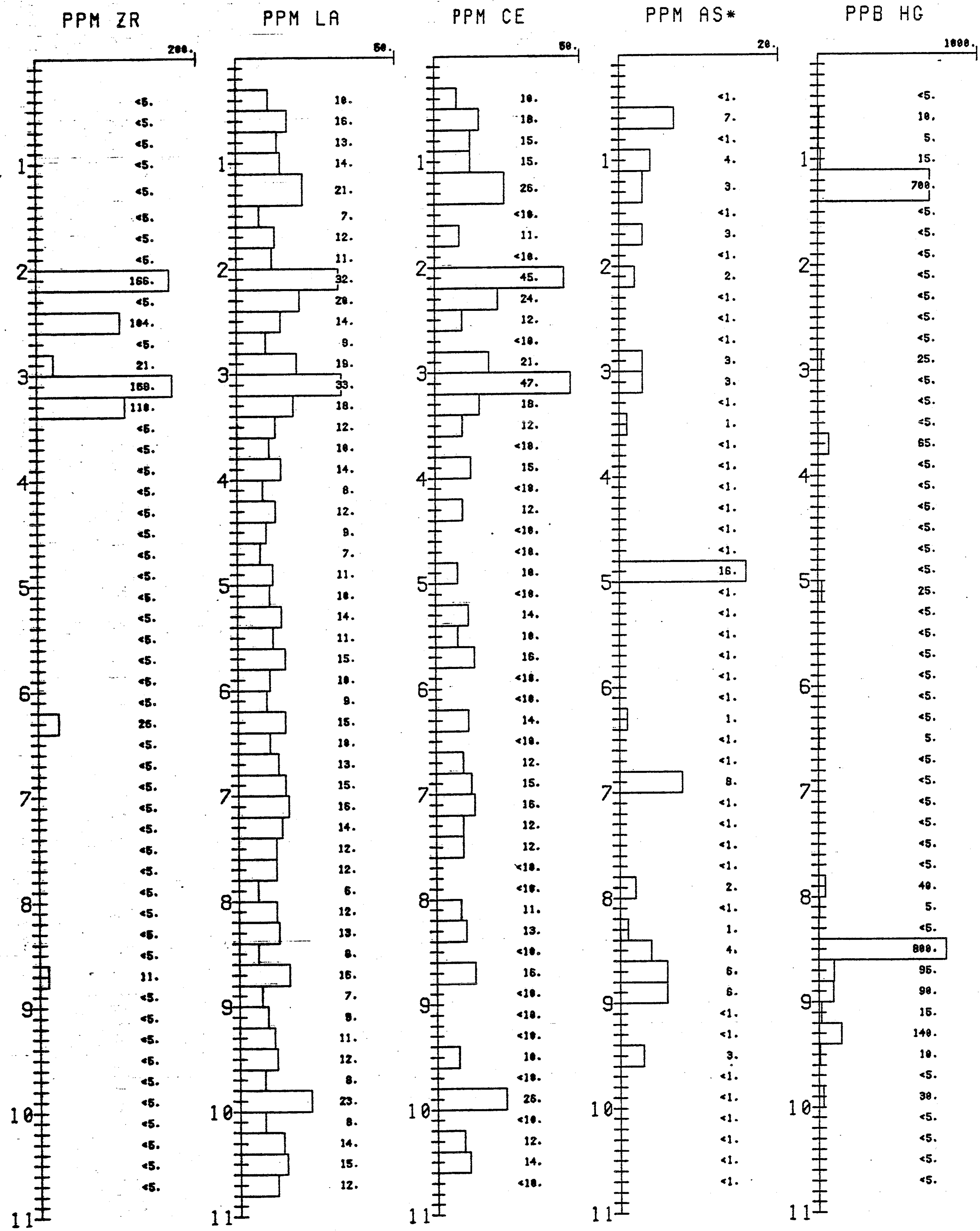


FIGURE 1/M12

DH M12

MEAGER CREEK
BRITISH COLUMBIA, CANADA

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 35.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)

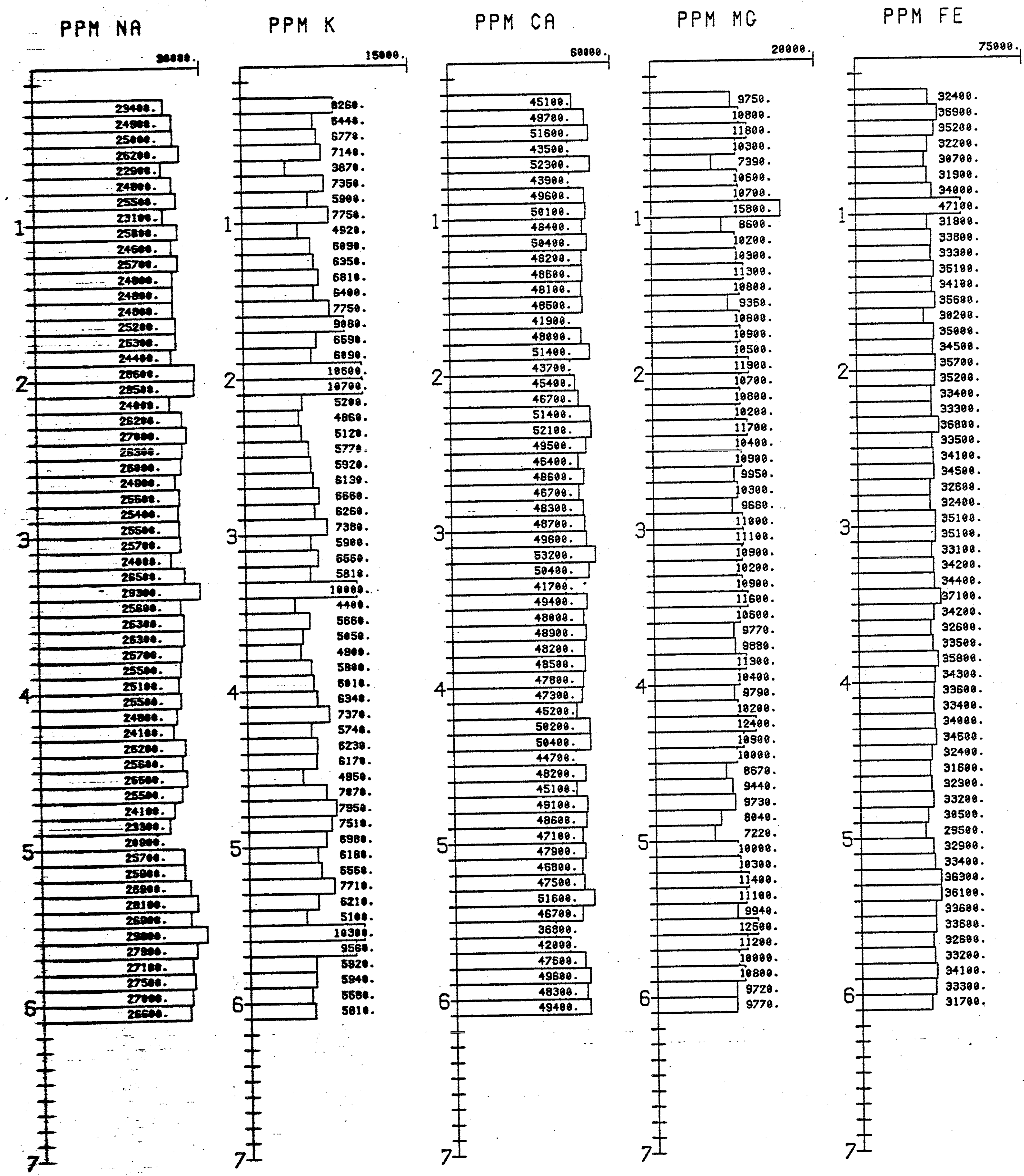


FIGURE 2/M12

DH M12

MEAGER CREEK
BRITISH COLUMBIA, CANADA

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 35.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)

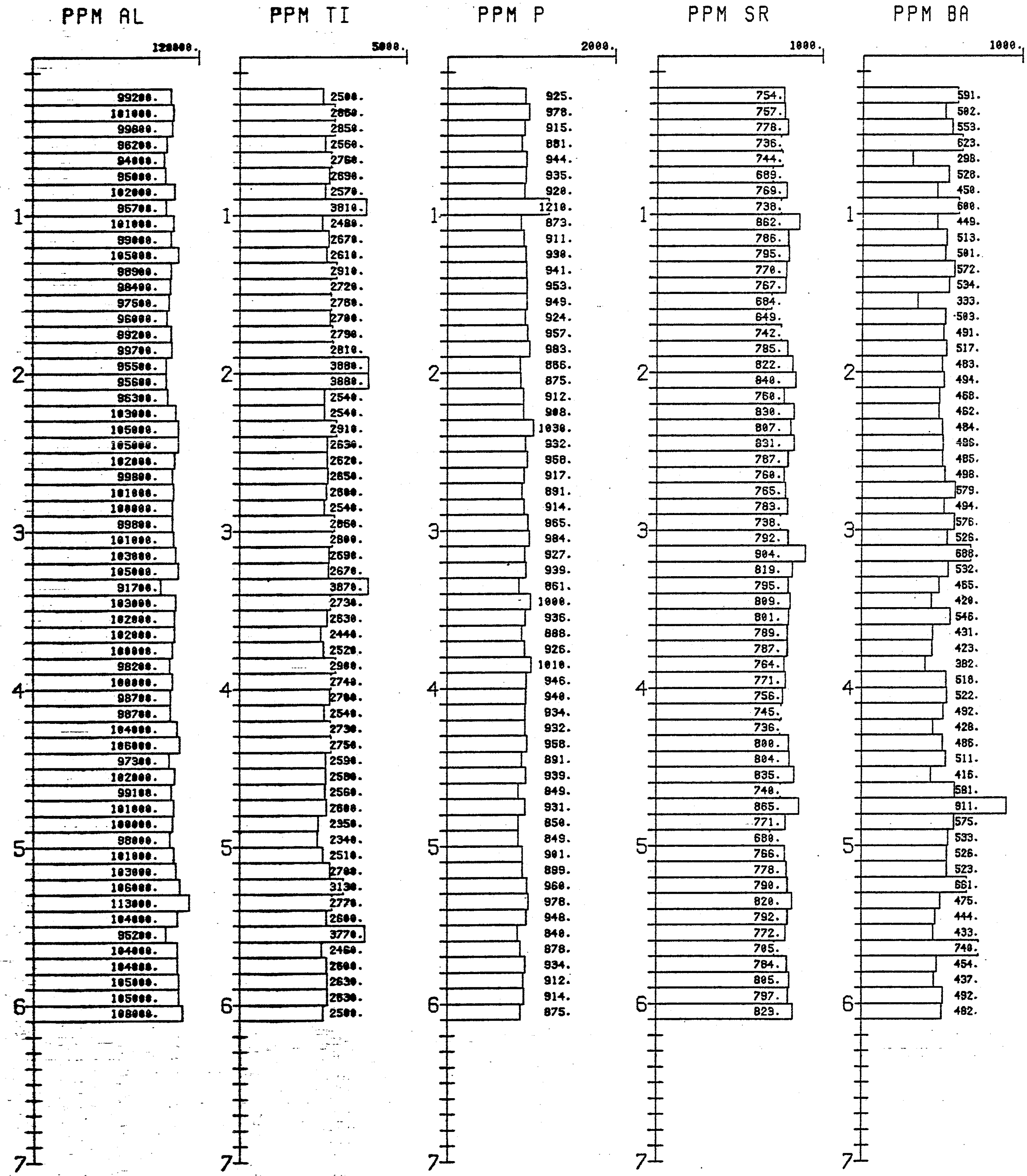


FIGURE 3/M12

DH M12

MEAGER CREEK
BRITISH COLUMBIA, CANADA

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 35.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)

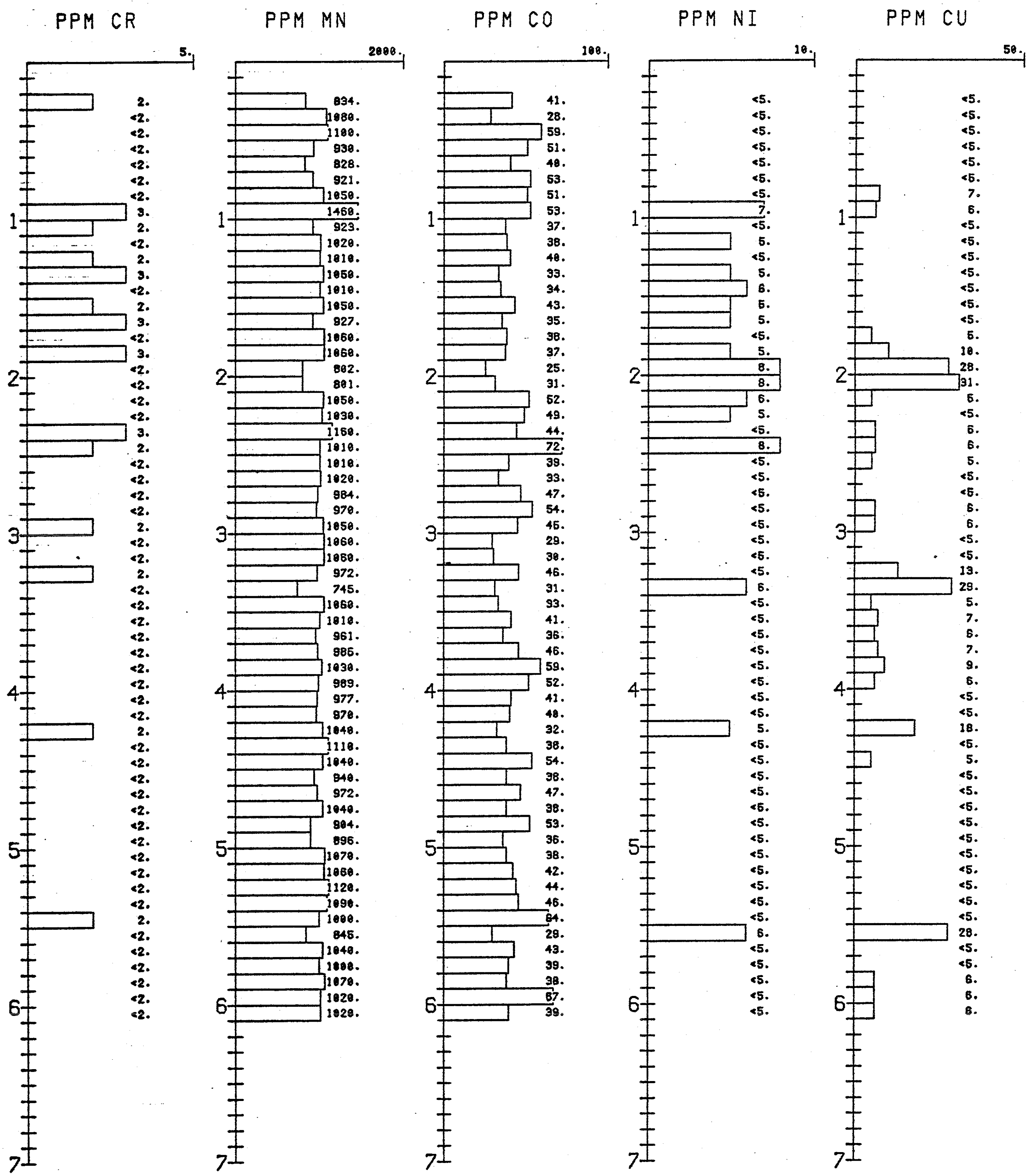


FIGURE 4/M12

DH M12

MEAGER CREEK
BRITISH COLUMBIA, CANADA

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 35.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)

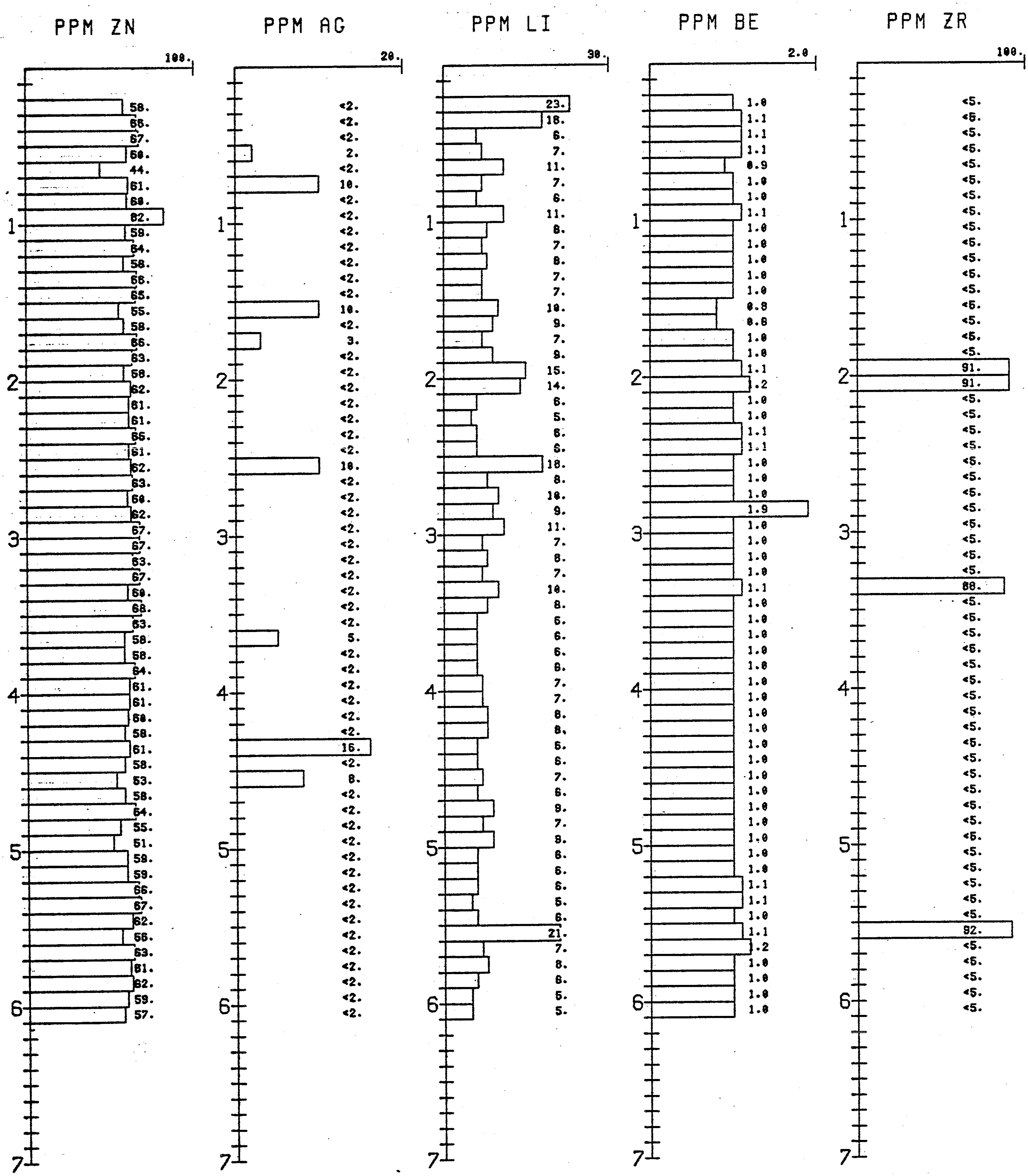
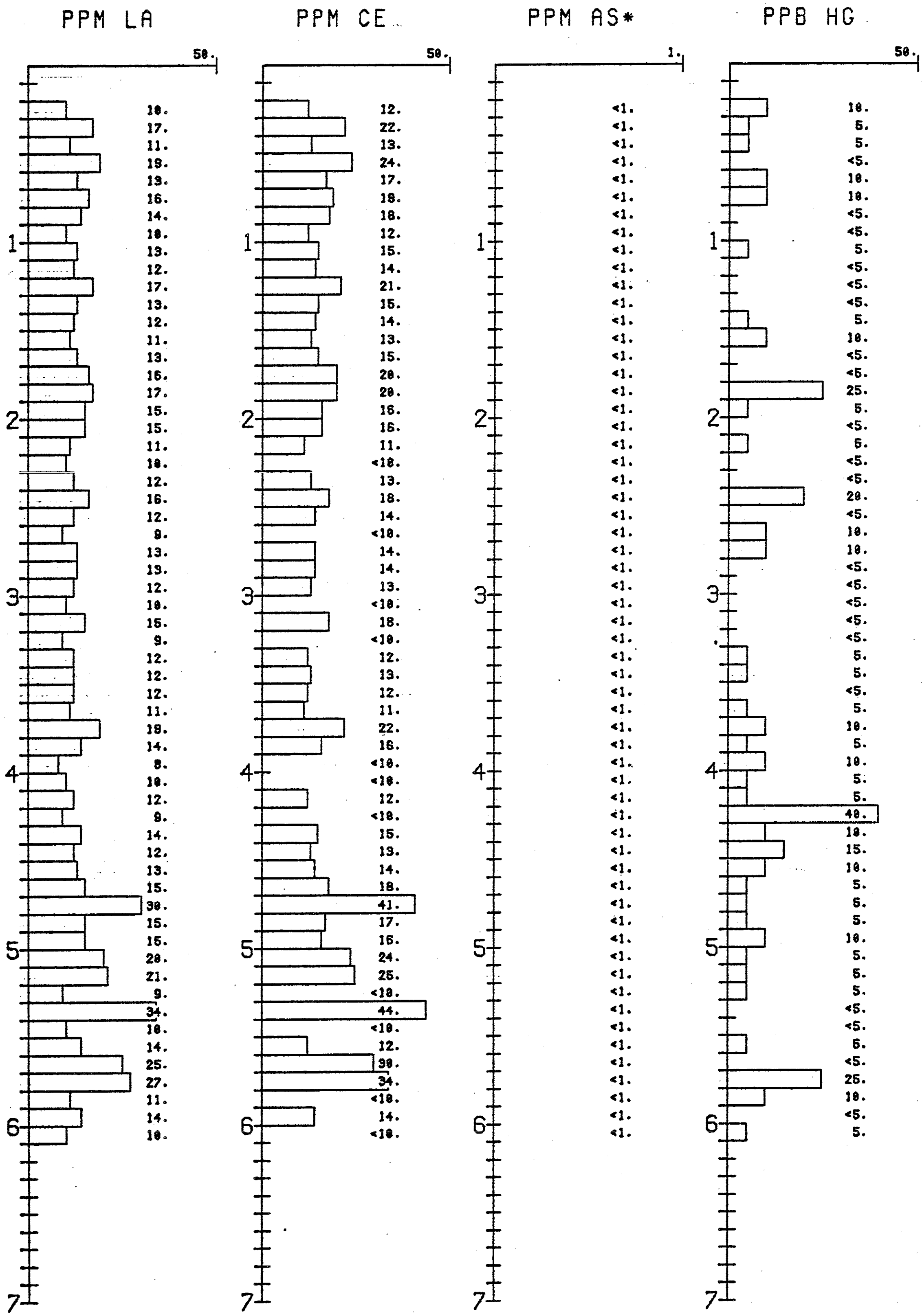


FIGURE 5/M12

DH M12

MEAGER CREEK
BRITISH COLUMBIA, CANADA

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 35.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)

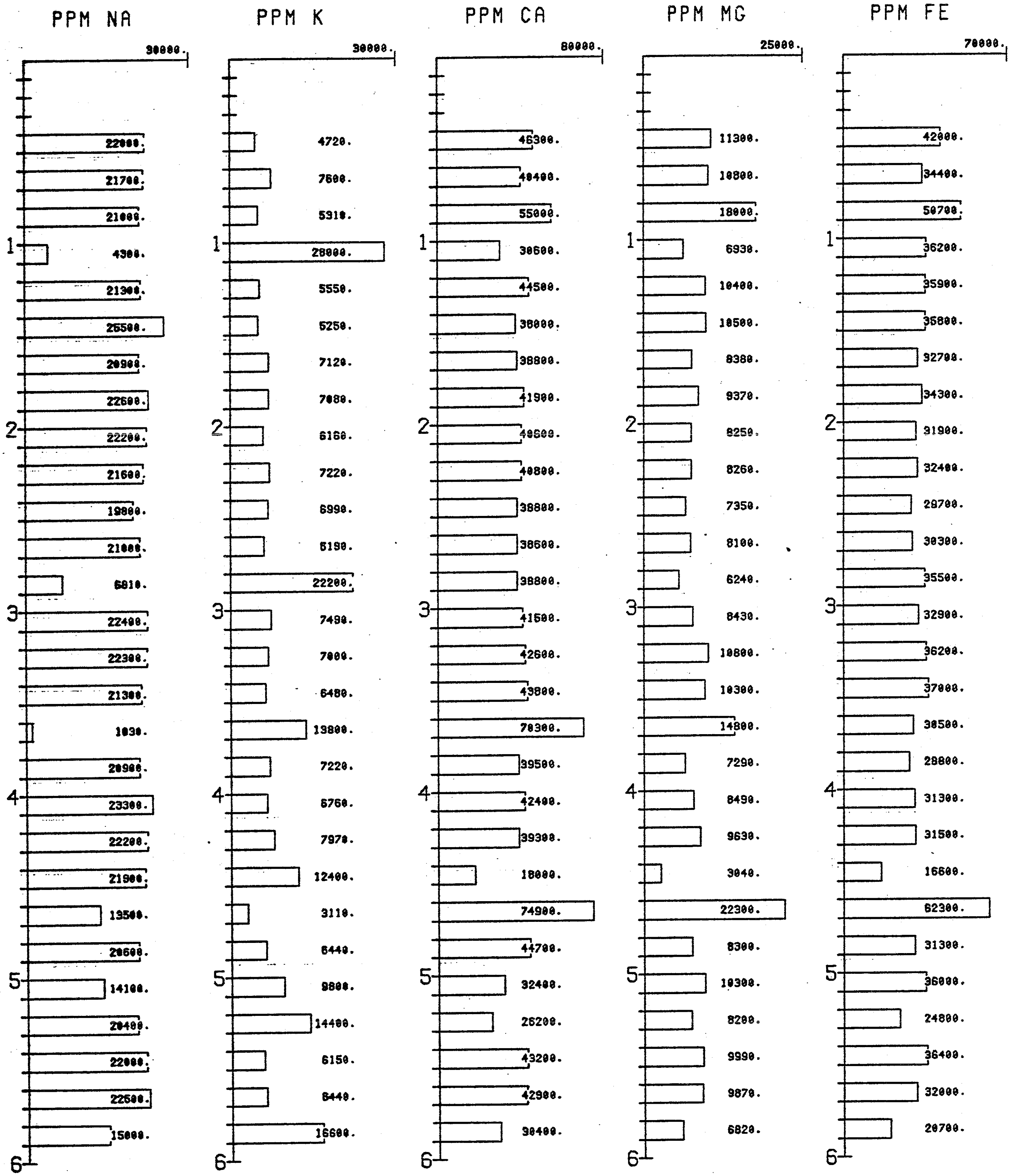


DH M13

MEAGER CREEK
BRITISH COLUMBIA, CANADA

FIGURE 1/M13

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 30.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)



DH M13

MEAGER CREEK
BRITISH COLUMBIA, CANADA

FIGURE 2/M13

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 30.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)

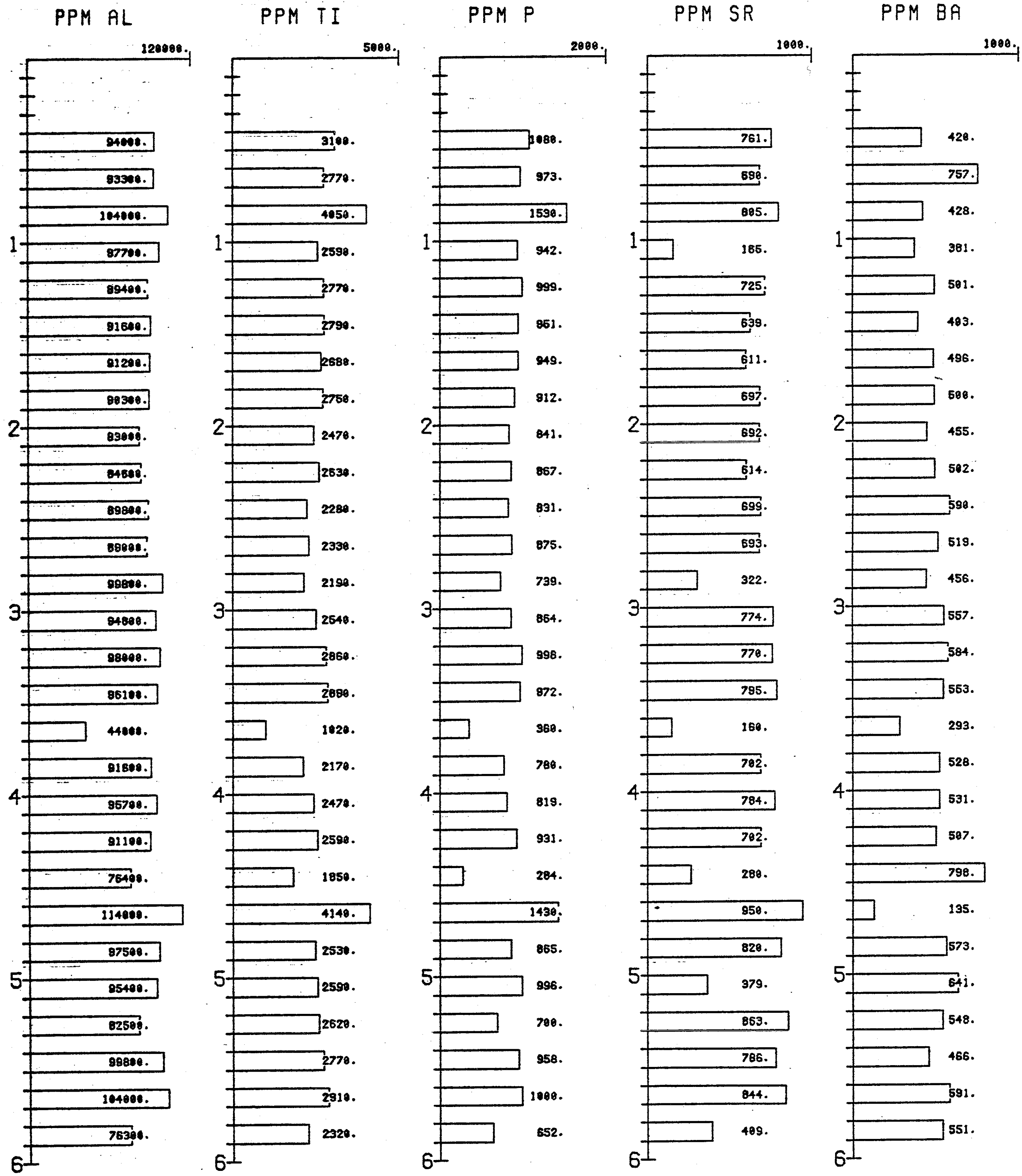


FIGURE 3/M13

DH M13

MEAGER CREEK
BRITISH COLUMBIA, CANADA

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 30.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)

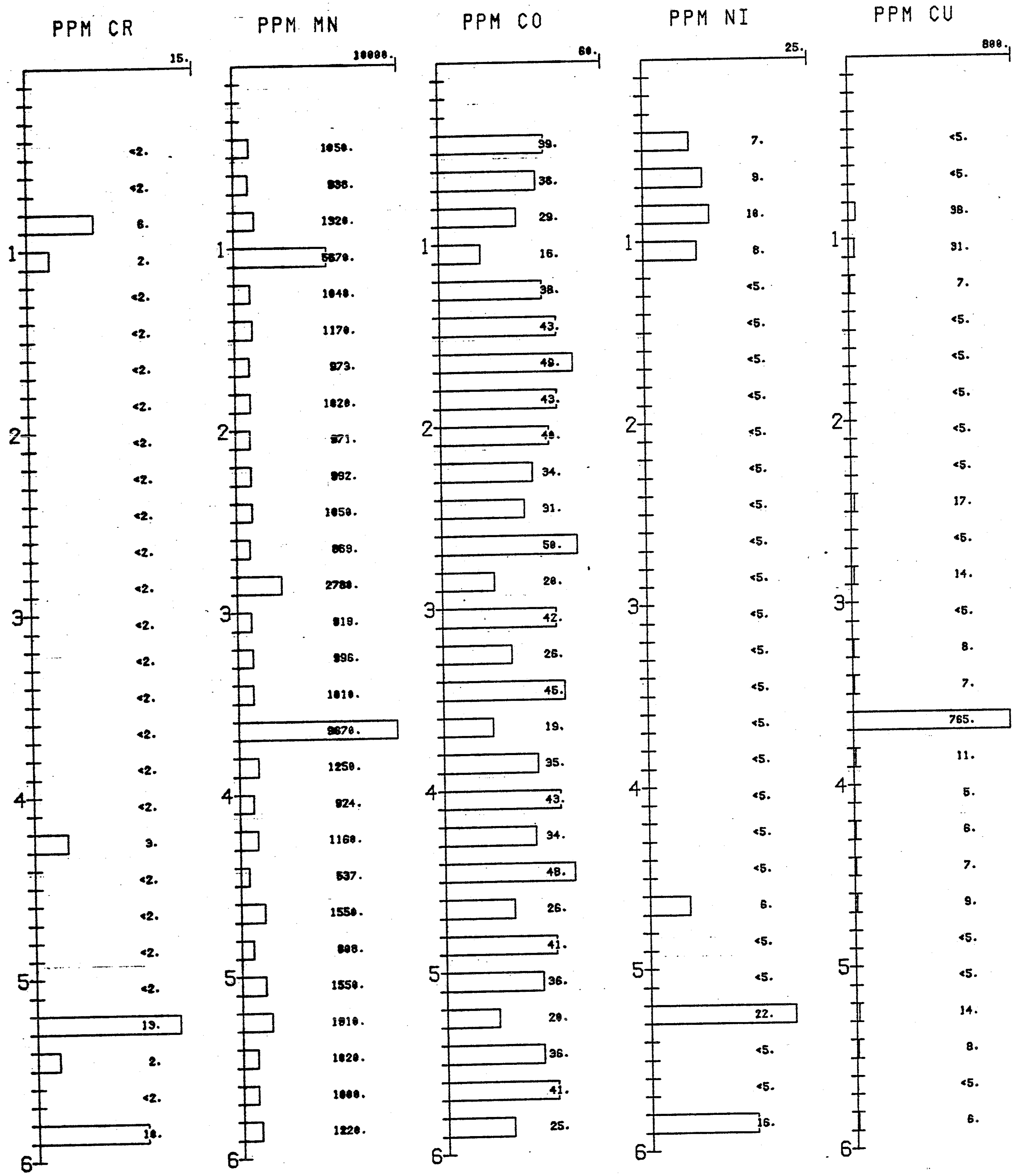


FIGURE 4/M13

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 30.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)

DH M13

MEAGER CREEK
BRITISH COLUMBIA, CANADA

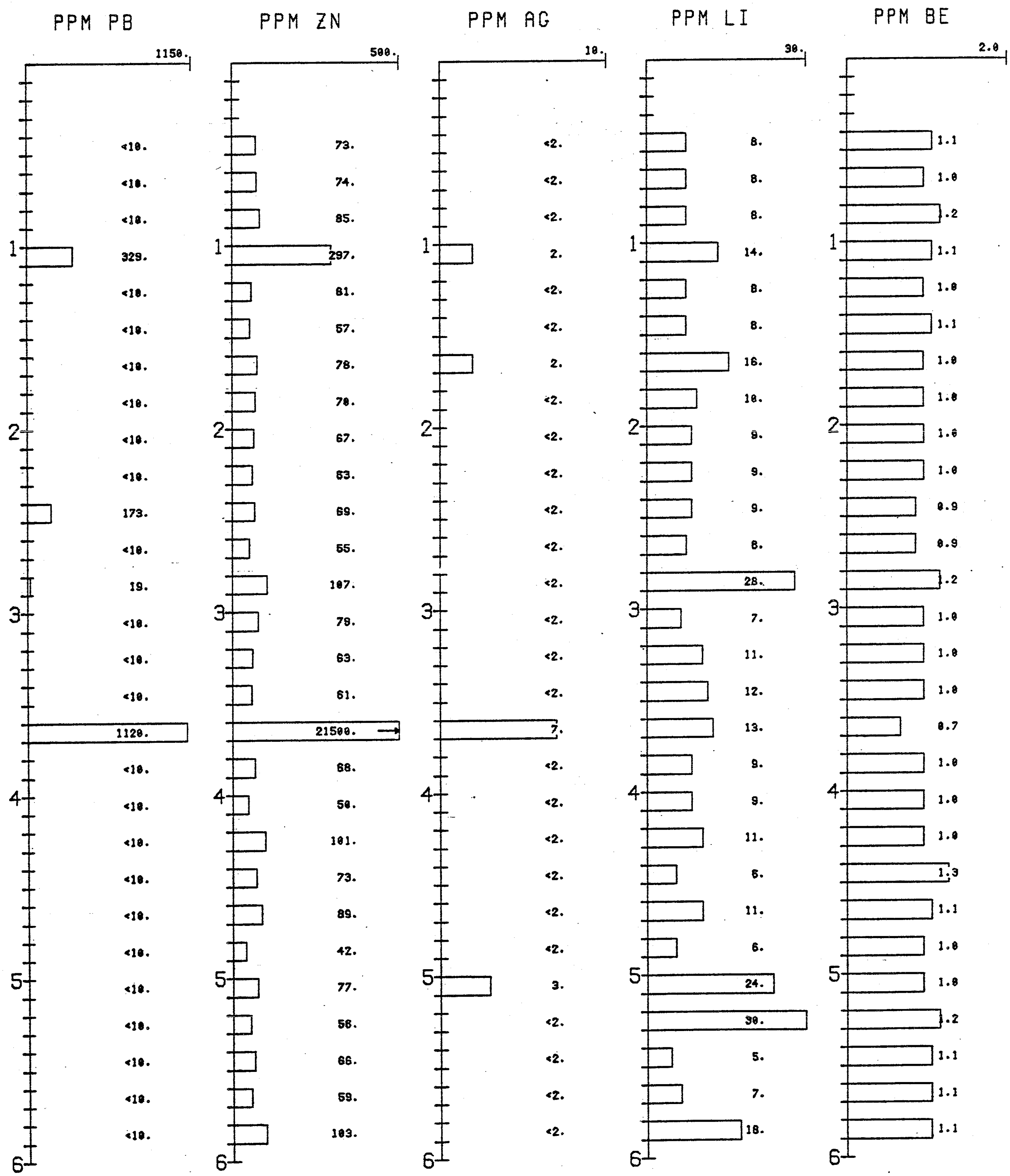
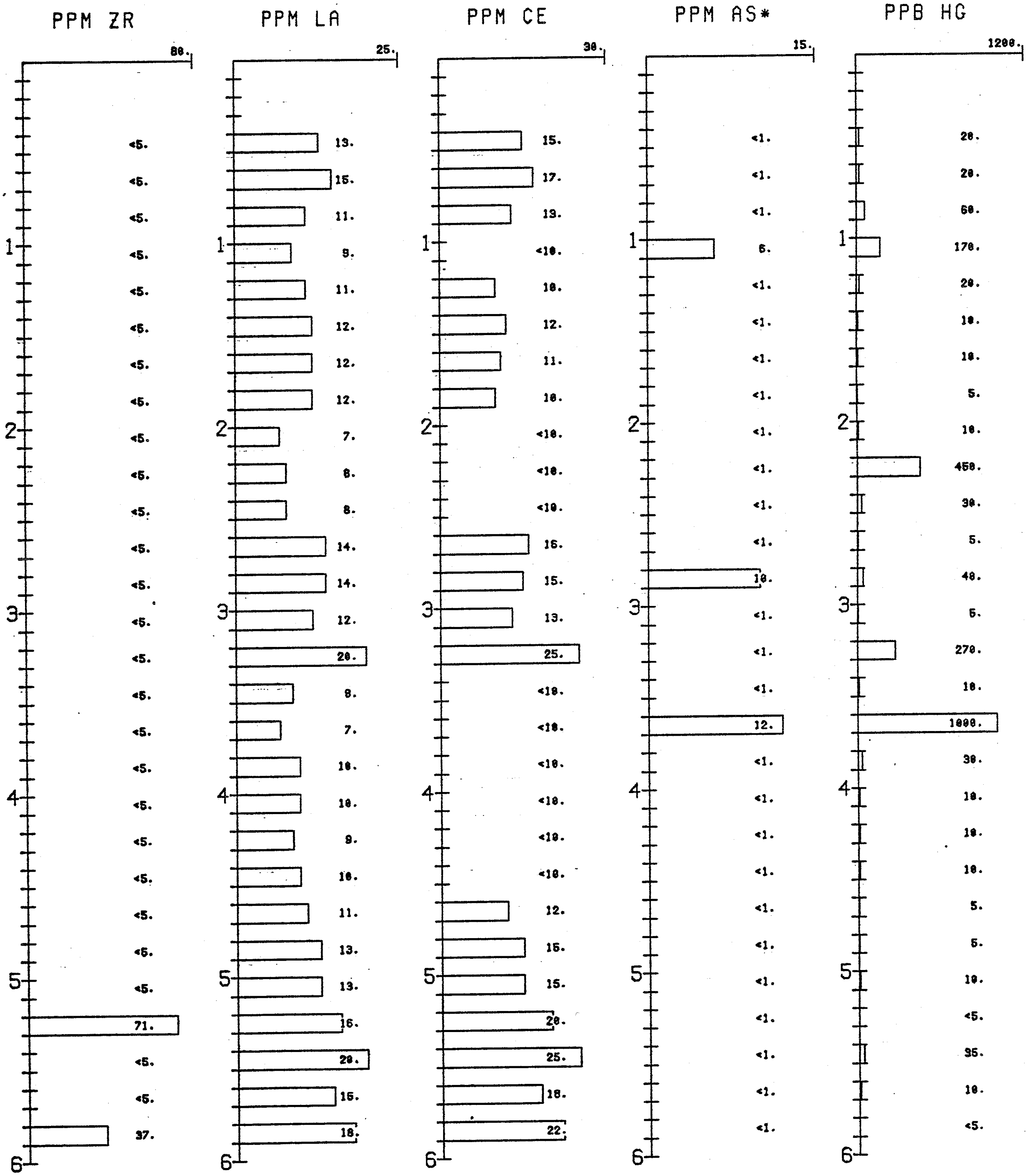


FIGURE 5/M13

DH M13

MEAGER CREEK
BRITISH COLUMBIA, CANADA

SAMPLE TYPE: WHOLE ROCK
VERT. SCALE: 30.0 M./CM.
(DEPTH SHOWN IN 100 METER UNITS)



Appendix II

Geochemical Analyses of Veins

MEAGER CREEK D H 7 VEINS

50 m

ELEMENT		CONCENTRATION
NA	% OX.	2.49
K	% OX.	1.46
CA	% OX.	9.32
MG	% OX.	1.87
FE	% OX.	4.89
AL	% OX.	14.99
SI	% OX.	< 1.60
TI	% OX.	0.291
P	% OX.	0.145
SR	PPM	530
BA	% OX.	0.075
V	PPM	< 250
CR	PPM	< 2.00
MN	% OX.	0.227
CO	PPM	58
NI	PPM	< 5.00
CU	PPM	< 5.00
MO	PPM	< 50.0
PB	PPM	< 10.0
ZN	PPM	85
CD	PPM	< 5.00
AG	PPM	< 2.00
AU	PPM	< 16.0
AS	PPM	1
SB	PPM	< 30.0
BI	PPM	< 100
U	PPM	< 2500
TE	PPM	< 50.0
SN	PPM	< 5.00
W	PPM	< 1200
LI	PPM	12
BE	PPM	1.1
B	PPM	< 400
ZR	PPM	< 5.00
LA	PPM	17
CE	PPM	11
TH	PPM	< 150
HG	PPB	< 5

MEAGER CREEK D H 7 VEINS

180 m

ELEMENT			CONCENTRATION
NA	% OX.		0.046
K	% OX.		1.28
CA	% OX.		34.47
MG	% OX.		0.780
FE	% OX.		1.40
AL	% OX.		6.20
SI	% OX.	<	1.60
TI	% OX.		0.069
P	% OX.		0.018
SR	PPM		205
BA	% OX.		0.037
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		0.938
CO	PPM		42
NI	PPM	<	5.00
CU	PPM		7
MO	PPM	<	50.0
PB	PPM		433
ZN	PPM		811
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM		19
AS	PPM		14
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM		22
BE	PPM		0.8
B	PPM	<	400
ZR	PPM		22
LA	PPM	<	5.00
CE	PPM	<	10.0
TH	PPM	<	150
HG	PPB		700

MEAGER CREEK D H 7 VEINS

220 m

ELEMENT		CONCENTRATION
NA	% OX.	3.02
K	% OX.	1.26
CA	% OX.	6.61
MG	% OX.	2.51
FE	% OX.	4.80
AL	% OX.	15.92
SI	% OX.	< 1.60
TI	% OX.	0.408
P	% OX.	0.177
SR	PPM	515
BA	% OX.	0.161
V	PPM	< 250
CR	PPM	< 2.00
MN	% OX.	0.386
CO	PPM	70
NI	PPM	< 5.00
CU	PPM	< 5.00
MO	PPM	< 50.0
PB	PPM	< 10.0
ZN	PPM	146
CD	PPM	< 5.00
AG	PPM	< 2.00
AU	PPM	< 16.0
AS	PPM	2
SB	PPM	< 30.0
BI	PPM	< 100
U	PPM	< 2500
TE	PPM	< 50.0
SN	PPM	< 5.00
W	PPM	< 1200
LI	PPM	12
BE	PPM	1.3
B	PPM	< 400
ZR	PPM	< 5.00
LA	PPM	10
CE	PPM	< 10.0
TH	PPM	< 150
HG	PPB	< 5

MEAGER CREEK D H 7 VEINS

240 m

ELEMENT			CONCENTRATION
NA	% OX.		1.72
K	% OX.		2.31
CA	% OX.		8.90
MG	% OX.		1.20
FE	% OX.		4.65
AL	% OX.		16.17
SI	% OX.	<	1.60
TI	% OX.		0.360
P	% OX.		0.179
SR	PPM		422
BA	% OX.		0.055
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		0.213
CO	PPM		33
NI	PPM	<	5.00
CU	PPM	<	5.00
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		59
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM	<	16.0
AS	PPM		22
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM		9
BE	PPM		1.4
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM		12
CE	PPM	<	10.0
TH	PPM	<	150
HG	PPB		10

MEAGER CREEK D H 7 VEINS

340 m

ELEMENT			CONCENTRATION
NA	% OX.		2.27
K	% OX.		0.117
CA	% OX.		9.85
MG	% OX.		0.615
FE	% OX.		5.36
AL	% OX.		18.49
SI	% OX.	<	1.60
TI	% OX.		0.333
P	% OX.		0.137
SR	PPM		1019
BA	% OX.		0.010
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		0.148
CO	PPM		61
NI	PPM	<	5.00
CU	PPM	<	5.00
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		21
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM	<	16.0
AS	PPM	<	1
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM	<	2.00
BE	PPM		1.0
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM		7
CE	PPM	<	10.0
TH	PPM	<	150
HG	PPB	<	5

MEAGER CREEK D H 8 VEINS

60 m

ELEMENT		CONCENTRATION
NA	% OX.	0.338
K	% OX.	0.827
CA	% OX.	35.78
MG	% OX.	1.01
FE	% OX.	5.55
AL	% OX.	5.55
SI	% OX.	< 1.60
TI	% OX.	0.143
P	% OX.	0.024
SR	PPM	340
BA	% OX.	0.109
V	PPM	< 250
CR	PPM	< 2.00
MN	% OX.	1.20
CO	PPM	24
NI	PPM	< 5.00
CU	PPM	< 5.00
MO	PPM	< 50.0
PB	PPM	37
ZN	PPM	108
CD	PPM	< 5.00
AG	PPM	< 2.00
AU	PPM	27
AS	PPM	2
SB	PPM	< 30.0
BI	PPM	< 100
U	PPM	< 2500
TE	PPM	< 50.0
SN	PPM	< 5.00
W	PPM	< 1200
LI	PPM	5
BE	PPM	0.8
B	PPM	< 400
ZR	PPM	18
LA	PPM	35
CE	PPM	42
TH	PPM	< 150
HG	PPB	10

MEAGER CREEK D H 8 VEINS

360 m

ELEMENT			CONCENTRATION
NA	% OX.		3.13
K	% OX.		0.440
CA	% OX.		9.16
MG	% OX.		2.35
FE	% OX.		7.94
AL	% OX.		20.26
SI	% OX.	<	1.60
TI	% OX.		0.704
P	% OX.		0.326
SR	PPM		832
BA	% OX.		0.032
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		0.198
CO	PPM		41
NI	PPM		6
CU	PPM		9
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		76
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM		5
AS	PPM		1
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM		9
BE	PPM		1.5
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM		14
CE	PPM		13
TH	PPM	<	150
HG	PPB	<	5
	TOTAL		46.145

MEAGER CREEK D H 8 VEINS

340 m

ELEMENT			CONCENTRATION
NA	% OX.		1.39
K	% OX.		0.306
CA	% OX.		12.80
MG	% OX.		0.711
FE	% OX.		7.14
AL	% OX.		18.87
SI	% OX.	<	1.60
TI	% OX.		0.408
P	% OX.		0.146
SR	PPM		889
BA	% OX.		0.010
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		0.151
CO	PPM		46
NI	PPM		7
CU	PPM	<	5.00
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		14
CD	PPM	<	5.00
AG	PPM		9
AU	PPM	<	4.00
AS	PPM		2
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM		8
BE	PPM		0.9
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM		10
CE	PPM	<	10.0
TH	PPM	<	150
HG	PPB	<	5
	TOTAL		43.536

MEAGER CREEK D H 8 VEINS

420 m

ELEMENT			CONCENTRATION
NA	% OX.		0.597
K	% OX.		1.08
CA	% OX.		27.13
MG	% OX.		3.66
FE	% OX.		5.43
AL	% OX.		6.38
SI	% OX.	<	1.60
TI	% OX.		0.112
P	% OX.		0.043
SR	PPM		333
BA	% OX.		0.052
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		1.22
CO	PPM		13
NI	PPM	<	5.00
CU	PPM	<	5.00
MO	PPM	<	50.0
PB	PPM		18
ZN	PPM		208
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM		18
AS	PPM		3
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM		19
BE	PPM		0.9
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM		15
CE	PPM		27
TH	PPM	<	150
HG	PPB		10
	TOTAL		47.311

MEAGER CREEK D H 8 VEINS

320 m

ELEMENT			CONCENTRATION
NA	% OX.		1.93
K	% OX.		0.175
CA	% OX.		7.13
MG	% OX.		7.05
FE	% OX.		4.53
AL	% OX.		10.58
SI	% OX.	<	1.60
TI	% OX.		0.159
P	% OX.		0.027
SR	PPM		208
BA	% OX.		0.007
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		0.121
CO	PPM		109
NI	PPM		74
CU	PPM	<	5.00
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		45
CD	PPM	<	5.00
AG	PPM		12
AU	PPM		7
AS	PPM	<	1
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM		3
BE	PPM		0.9
B	PPM	<	400
ZR	PPM		7
LA	PPM		9
CE	PPM	<	10.0
TH	PPM	<	150
HG	PPB	<	5
	TOTAL		33.316

MEAGER CREEK D H 8 VEINS

310 m

ELEMENT			CONCENTRATION
NA	% OX.		2.81
K	% OX.		0.484
CA	% OX.		3.37
MG	% OX.		0.921
FE	% OX.		1.69
AL	% OX.		9.53
SI	% OX.	<	1.60
TI	% OX.		0.225
P	% OX.		0.030
SR	PPM		339
BA	% OX.		0.034
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		0.036
CO	PPM		89
NI	PPM		7
CU	PPM		66
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		30
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM		7
AS	PPM	<	1
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM		5
BE	PPM		0.7
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM		6
CE	PPM	<	10.0
TH	PPM	<	150
HG	PPB	<	5
	TOTAL		20.718

MEAGER CREEK D H 8 VEINS

300 m

ELEMENT			CONCENTRATION
NA	% OX.		3.02
K	% OX.		0.914
CA	% OX.		3.90
MG	% OX.		1.34
FE	% OX.		2.57
AL	% OX.		12.83
SI	% OX.	<	1.60
TI	% OX.		0.323
P	% OX.		0.053
SR	PPM		369
BA	% OX.		0.052
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		0.067
CO	PPM		129
NI	PPM		12
CU	PPM		6
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		29
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM		6
AS	PPM		1
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM		9
BE	PPM		1.0
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM		13
CE	PPM	<	10.0
TH	PPM	<	150
HG	PPB	<	5
	TOTAL		26.673

MEAGER CREEK D H 8 VEINS

270 m

ELEMENT		CONCENTRATION	
NA	% OX.		2.24
K	% OX.		2.24
CA	% OX.		5.32
MG	% OX.		1.57
FE	% OX.		6.96
AL	% OX.		17.09
SI	% OX.	<	1.60
TI	% OX.		0.536
P	% OX.		0.204
SR	PPM		293
BA	% OX.		0.079
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		0.205
CO	PPM		22
NI	PPM		9
CU	PPM	<	5.00
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		232
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM	<	4.00
AS	PPM		4
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM		32
BE	PPM		1.5
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM		11
CE	PPM	<	10.0
TH	PPM	<	150
HG	PPB	<	5
	TOTAL		38.055

MEAGER CREEK D H & VEINS

240 m

ELEMENT		CONCENTRATION	
NA	% OX.		5.23
K	% OX.		0.149
CA	% OX.		7.24
MG	% OX.		0.980
FE	% OX.		1.48
AL	% OX.		16.00
SI	% OX.	<	1.60
TI	% OX.		0.219
P	% OX.		0.007
SR	PPM		1117
BA	% OX.		0.011
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		0.028
CO	PPM		35
NI	PPM	<	5.00
CU	PPM	<	5.00
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM	<	5.00
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM		5
AS	PPM	<	1
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM	<	2.00
BE	PPM		0.7
B	PPM	<	400
ZR	PPM		8
LA	PPM	<	5.00
CE	PPM	<	10.0
TH	PPM	<	150
HG	PPB	<	5
	TOTAL		32.952

MEAGER CREEK D H 8 VEINS

160 m

ELEMENT			CONCENTRATION
NA	% OX.		0.356
K	% OX.		1.28
CA	% OX.		18.02
MG	% OX.		0.939
FE	% OX.		2.36
AL	% OX.		7.63
SI	% OX.	<	1.60
TI	% OX.		0.102
P	% OX.		0.015
SR	PPM		325
BA	% OX.		0.032
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		0.271
CO	PPM		118
NI	PPM	<	5.00
CU	PPM	<	5.00
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		40
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM	<	16.0
AS	PPM	<	1
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM		3
BE	PPM	<	0.500
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM	<	5.00
CE	PPM	<	10.0
TH	PPM	<	150
HG	PPB	<	5

MEAGER CREEK D H 8 VEINS

140 m

ELEMENT			CONCENTRATION
NA	% OX.		1.59
K	% OX.		1.40
CA	% OX.		8.96
MG	% OX.		1.22
FE	% OX.		8.95
AL	% OX.		20.43
SI	% OX.	<	1.60
TI	% OX.		0.372
P	% OX.		0.090
SR	PPM		590
BA	% OX.		0.057
V	PPM	<	250
CR	PPM		2
MN	% OX.		0.124
CO	PPM		44
NI	PPM		7
CU	PPM		12
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		28
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM	<	16.0
AS	PPM		1
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM		20
BE	PPM		1.2
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM		9
CE	PPM	<	10.0
TH	PPM	<	150
HG	PPB	<	5

MEAGER CREEK D H 8 VEINS

110 m

ELEMENT		CONCENTRATION	
NA	% OX.		1.93
K	% OX.		0.084
CA	% OX.		4.24
MG	% OX.		3.04
FE	% OX.		2.75
AL	% OX.		11.93
SI	% OX.	<	1.60
TI	% OX.		0.060
P	% OX.		0.441
SR	PPM		343
BA	% OX.		0.006
V	PPM	<	250
CR	PPM		159
MN	% OX.		0.081
CO	PPM		81
NI	PPM		116
CU	PPM	<	5.00
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		43
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM	<	16.0
AS	PPM		1
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM		16
BE	PPM		0.7
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM		10
CE	PPM	<	10.0
TH	PPM	<	150
HG	PPB	<	5

MEAGER CREEK D H 8 VEINS

100 m

ELEMENT		CONCENTRATION	
NA	% OX.		1.94
K	% OX.		0.598
CA	% OX.		6.96
MG	% OX.		2.51
FE	% OX.		8.03
AL	% OX.		15.15
SI	% OX.	<	1.60
TI	% OX.		0.479
P	% OX.		0.131
SR	PPM		527
BA	% OX.		0.030
V	PPM	<	250
CR	PPM		50
MN	% OX.		0.113
CO	PPM		68
NI	PPM		31
CU	PPM		33
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		55
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM	<	16.0
AS	PPM		2
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM		10
BE	PPM		1.3
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM		8
CE	PPM	<	10.0
TH	PPM	<	150
HG	PPB	<	5

MEAGER CREEK D H 9 VEINS

410 m

ELEMENT		CONCENTRATION
NA	% OX.	1.68
K	% OX.	0.108
CA	% OX.	13.17
MG	% OX.	0.208
FE	% OX.	6.83
AL	% OX.	19.75
SI	% OX.	< 1.60
TI	% OX.	0.419
P	% OX.	0.162
SR	PPM	1281
BA	% OX.	0.008
V	PPM	< 250
CR	PPM	< 2.00
MN	% OX.	0.212
CO	PPM	42
NI	PPM	< 5.00
CU	PPM	< 5.00
MO	PPM	< 50.0
PB	PPM	< 10.0
ZN	PPM	9
CD	PPM	< 5.00
AG	PPM	< 2.00
AU	PPM	< 4.00
AS	PPM	< 1
SB	PPM	< 30.0
BI	PPM	< 100
U	PPM	< 2500
TE	PPM	< 50.0
SN	PPM	< 5.00
W	PPM	< 1200
LI	PPM	< 2.00
BE	PPM	1.0
B	PPM	< 400
ZR	PPM	7
LA	PPM	44
CE	PPM	72
TH	PPM	< 150
		< 5
	TOTAL	44.151

MEAGER CREEK D H 9 VEINS

650 m

ELEMENT		CONCENTRATION	
NA	% OX.		2.15
K	% OX.		0.583
CA	% OX.		9.94
MG	% OX.		0.486
FE	% OX.		5.86
AL	% OX.		19.76
SI	% OX.	<	1.60
TI	% OX.		0.386
P	% OX.		0.185
SR	PPM		1010
BA	% OX.		0.012
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		0.138
CO	PPM		32
NI	PPM	<	5.00
CU	PPM	<	5.00
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		26
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM	<	4.00
AS	PPM	<	1
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM		8
BE	PPM		1.0
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM		9
CE	PPM	<	10.0
TH	PPM	<	150
		<	5
	TOTAL		41.100

MEAGER CREEK D H 9 VEINS

770 m

ELEMENT			CONCENTRATION
NA	% OX.		1.30
K	% OX.		0.808
CA	% OX.		16.69
MG	% OX.		7.55
FE	% OX.		4.69
AL	% OX.		6.50
SI	% OX.	<	1.60
TI	% OX.		0.141
P	% OX.		0.041
SR	PPM		3300
BA	% OX.		0.624
V	PPM	<	250
CR	PPM		10
MN	% OX.		0.368
CO	PPM		22
NI	PPM		15
CU	PPM		7
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		43
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM	<	4.00
AS	PPM	<	1
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM		8
BE	PPM		0.8
B	PPM	<	400
ZR	PPM		10
LA	PPM		13
CE	PPM		16
TH	PPM	<	150
		<	5
	TOTAL		40.314

MEAGER CREEK D H 9 VEINS

750 m

ELEMENT			CONCENTRATION
NA	% OX.		3.36
K	% OX.		1.11
CA	% OX.		5.47
MG	% OX.		1.42
FE	% OX.		4.75
AL	% OX.		18.46
SI	% OX.	<	1.60
TI	% OX.		0.394
P	% OX.		0.184
SR	PPM		673
BA	% OX.		0.056
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		0.130
CO	PPM		33
NI	PPM	<	5.00
CU	PPM		55
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		48
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM	<	4.00
AS	PPM		2
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM		12
SE	PPM		1.2
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM		9
CE	PPM	<	10.0
TH	PPM	<	150
			5
	TOTAL		37.143

MEAGER CREEK D H 9 VEINS

1110 m

ELEMENT		CONCENTRATION
NA	% OX.	2.74
K	% OX.	0.655
CA	% OX.	4.76
MG	% OX.	1.94
FE	% OX.	2.96
AL	% OX.	13.97
SI	% OX.	< 1.60
TI	% OX.	0.340
P	% OX.	0.048
SR	PPM	633
BA	% OX.	0.031
V	PPM	< 250
CR	PPM	33
MN	% OX.	0.059
CO	PPM	96
NI	PPM	19
CU	PPM	7
MO	PPM	< 50.0
PB	PPM	< 10.0
ZN	PPM	34
CD	PPM	< 5.00
AG	PPM	< 2.00
AU	PPM	9
AS	PPM	< 1
SB	PPM	< 30.0
BI	PPM	< 100
U	PPM	< 2500
TE	PPM	< 50.0
SN	PPM	< 5.00
W	PPM	< 1200
LI	PPM	6
BE	PPM	0.9
B	PPM	< 400
ZR	PPM	< 5.00
LA	PPM	8
CE	PPM	< 10.0
TH	PPM	< 150
		30
	TOTAL	29.108

MEAGER CREEK D H 10 VEINS

360 m

ELEMENT			CONCENTRATION
NA	% OX.		1.77
K	% OX.		0.192
CA	% OX.		10.05
MG	% OX.		0.580
FE	% OX.		5.42
AL	% OX.		16.92
SI	% OX.	<	1.60
TI	% OX.		0.292
P	% OX.		0.153
SR	PPM		918
BA	% OX.		0.010
V	PPM	<	250
CR	PPM		2
MN	% OX.		0.162
CO	PPM		50
NI	PPM	<	5.00
CU	PPM	<	5.00
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		25
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM	<	4.00
AS	PPM	<	1
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM		2
BE	PPM		0.8
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM	<	5.00
CE	PPM	<	10.0
TH	PPM	<	150
HG	PPB	<	5
	TOTAL		37.150

MEAGER CREEK D H 10 VEINS

520 m

ELEMENT			CONCENTRATION
NA	% OX.		1.81
K	% OX.		0.134
CA	% OX.		13.66
MG	% OX.		0.328
FE	% OX.		6.48
AL	% OX.		18.87
SI	% OX.	<	1.60
TI	% OX.		0.326
P	% OX.		0.146
SR	PPM		1118
BA	% OX.		0.012
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		0.186
CO	PPM		84
NI	PPM	<	5.00
CU	PPM		5
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		17
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM	<	4.00
AS	PPM	<	1
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM	<	2.00
BE	PPM		1.0
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM		8
CE	PPM	<	10.0
TH	PPM	<	150
		<	5
	TOTAL		43.556

MEAGER CREEK D H 10 VEINS

600 m

ELEMENT			CONCENTRATION
NA	% OX.		2.97
K	% OX.		0.096
CA	% OX.		14.30
MG	% OX.		0.187
FE	% OX.		6.84
AL	% OX.		20.06
SI	% OX.	<	1.60
TI	% OX.		0.205
P	% OX.		0.106
SR	PPM		1178
BA	% OX.		0.016
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		0.129
CO	PPM		20
NI	PPM	<	5.00
CU	PPM		10
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		24
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM	<	4.00
AS	PPM	<	1
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM	<	2.00
BE	PPM		1.3
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM	<	5.00
CE	PPM	<	10.0
TH	PPM	<	150
		<	5
	TOTAL		46.514

MEAGER CREEK D H 10 VEINS

460m

ELEMENT			CONCENTRATION
NA	% OX.		2.26
K	% OX.		0.303
CA	% OX.		11.24
MG	% OX.		0.594
FE	% OX.		5.85
AL	% OX.		18.30
SI	% OX.	<	1.60
TI	% OX.		0.345
P	% OX.		0.183
SR	PPM		1055
BA	% OX.		0.022
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		0.134
CO	PPM		42
NI	PPM	<	5.00
CU	PPM		5
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		25
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM	<	4.00
AS	PPM	<	1
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM	<	2.00
BE	PPM		1.0
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM		6
CE	PPM	<	10.0
TH	PPM	<	150
	PPB	<	5
	TOTAL		40.833

MEAGER CREEK D H 10 VEINS

620 m

ELEMENT			CONCENTRATION
NA	% OX.		1.02
K	% OX.		3.62
CA	% OX.		2.97
MG	% OX.		2.15
FE	% OX.		5.42
AL	% OX.		17.40
SI	% OX.	<	1.60
TI	% OX.		0.809
P	% OX.		0.222
SR	PPM		274
BA	% OX.		0.061
V	PPM	<	250
CR	PPM		46
MN	% OX.		0.173
CO	PPM		20
NI	PPM		30
CU	PPM		39
MO	PPM	<	50.0
PB	PPM		13
ZN	PPM		272
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM	<	4.00
AS	PPM		2
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM		24
BE	PPM		2.1
B	PPM	<	400
ZR	PPM		63
LA	PPM		12
CE	PPM	<	10.0
TH	PPM	<	150
		<	5
	TOTAL		35.447

MEAGER CREEK D H 10 VEINS

660m

ELEMENT			CONCENTRATION
NA	% OX.		2.68
K	% OX.		0.518
CA	% OX.		8.80
MG	% OX.		0.703
FE	% OX.		5.45
AL	% OX.		17.71
SI	% OX.	<	1.60
TI	% OX.		0.384
P	% OX.		0.222
SR	PPM		835
BA	% OX.		0.037
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		0.137
CO	PPM		49
NI	PPM	<	5.00
CU	PPM		188
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		34
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM	<	4.00
AS	PPM	<	1
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM		3
BE	PPM		1.1
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM		21
CE	PPM		24
TH	PPM	<	150
		<	5

TOTAL 38.242

MEAGER CREEK D H 10 VEINS

680 m

ELEMENT		CONCENTRATION
NA	% OX.	0.112
K	% OX.	3.91
CA	% OX.	6.42
MG	% OX.	1.77
FE	% OX.	4.71
AL	% OX.	16.43
SI	% OX.	< 1.60
TI	% OX.	0.288
P	% OX.	0.182
SR	PPM	179
BA	% OX.	0.094
V	PPM	< 250
CR	PPM	< 2.00
MN	% OX.	0.593
CO	PPM	26
NI	PPM	< 5.00
CU	PPM	13
MO	PPM	< 50.0
PB	PPM	< 10.0
ZN	PPM	182
CD	PPM	< 5.00
AG	PPM	< 2.00
AU	PPM	< 4.00
AS	PPM	16
SB	PPM	< 30.0
BI	PPM	< 100
U	PPM	< 2500
TE	PPM	< 50.0
SN	PPM	< 5.00
W	PPM	< 1200
LI	PPM	12
BE	PPM	1.1
B	PPM	< 400
ZR	PPM	< 5.00
LA	PPM	12
CE	PPM	< 10.0
TH	PPM	< 150
		5
	TOTAL	36.109

MEAGER CREEK D H 10 VEINS

860 m

ELEMENT			CONCENTRATION
NA	% OX.		0.062
K	% OX.		2.11
CA	% OX.		17.40
MG	% OX.		1.54
FE	% OX.		4.26
AL	% OX.		8.85
SI	% OX.	<	1.60
TI	% OX.		0.180
P	% OX.		0.082
SR	PPM		391
BA	% OX.		0.027
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		2.07
CO	PPM		64
NI	PPM		8
CU	PPM		400
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		23000
CD	PPM		133
AG	PPM		9
AU	PPM	<	4.00
AS	PPM	<	1
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM		15
BE	PPM		1.1
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM		10
CE	PPM		13
TH	PPM	<	150
HG	PPB		815
	TOTAL		38.186

MEAGER CREEK D H 10 VEINS

880 m

ELEMENT		CONCENTRATION
NA	% OX.	2.43
K	% OX.	0.867
CA	% OX.	9.24
MG	% OX.	0.225
FE	% OX.	4.97
AL	% OX.	17.74
SI	% OX.	< 1.60
TI	% OX.	0.173
P	% OX.	0.064
SR	PPM	588
BA	% OX.	0.043
V	PPM	< 250
CR	PPM	< 2.00
MN	% OX.	0.236
CO	PPM	63
NI	PPM	< 5.00
CU	PPM	6
MO	PPM	< 50.0
PB	PPM	< 10.0
ZN	PPM	25
CD	PPM	< 5.00
AG	PPM	7
AU	PPM	< 4.00
AS	PPM	< 1
SB	PPM	< 30.0
BI	PPM	< 100
U	PPM	< 2500
TE	PPM	< 50.0
SN	PPM	< 5.00
W	PPM	< 1200
LI	PPM	2
BE	PPM	1.0
B	PPM	< 400
ZR	PPM	< 5.00
LA	PPM	11
CE	PPM	< 10.0
TH	PPM	< 150
HG	PPB	200
	TOTAL	37.599

MEAGER CREEK D H 10 VEINS

960 m

ELEMENT			CONCENTRATION
NA	% OX.		0.731
K	% OX.		1.35
CA	% OX.		16.45
MG	% OX.		1.96
FE	% OX.		5.99
AL	% OX.		8.74
SI	% OX.	<	1.60
TI	% OX.		0.137
P	% OX.		0.049
SR	PPM		276
BA	% OX.		0.030
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		2.55
CO	PPM		98
NI	PPM	<	5.00
CU	PPM		8
MO	PPM	<	50.0
PB	PPM		16
ZN	PPM		199
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM	<	4.00
AS	PPM	<	1
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM		23
W	PPM	<	1200
LI	PPM		13
BE	PPM		0.8
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM		18
CE	PPM		23
TH	PPM	<	150
HG	PPB	<	5
	TOTAL		39.507

MEAGER CREEK D H 10 VEINS

1040 m

ELEMENT			CONCENTRATION
NA	% OX.		1.10
K	% OX.		0.946
CA	% OX.		1.90
MG	% OX.		0.328
FE	% OX.		1.02
AL	% OX.		7.08
SI	% OX.	<	1.60
TI	% OX.		0.093
P	% OX.		0.054
SR	PPM		190
BA	% OX.		0.076
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		0.037
CO	PPM		101
NI	PPM	<	5.00
CU	PPM		26
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		16
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM	<	4.00
AS	PPM	<	1
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM		3
BE	PPM	<	0.500
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM		6
CE	PPM	<	10.0
TH	PPM	<	150
HG	PPB		10
	TOTAL		14.238

MEAGER CREEK D H 10 VEINS

1060

ELEMENT			CONCENTRATION
NA	% OX.		2.31
K	% OX.		0.586
CA	% OX.		8.77
MG	% OX.		0.238
FE	% OX.		4.24
AL	% OX.		16.81
SI	% OX.	<	1.60
TI	% OX.		0.204
P	% OX.		0.097
SR	PPM		921
BA	% OX.		0.057
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		0.169
CO	PPM		63
NI	PPM	<	5.00
CU	PPM	<	5.00
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		11
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM	<	4.00
AS	PPM	<	1
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM	<	2.00
BE	PPM		1.0
B	PPM	<	400
ZR	PPM		8
LA	PPM		11
CE	PPM	<	10.0
TH	PPM	<	150
HG	PPB	<	5
	TOTAL		35.073

MEAGER CREEK D H 12 VEINS

310 m

ELEMENT			CONCENTRATION
NA	% OX.		1.31
K	% OX.		0.166
CA	% OX.		30.20
MG	% OX.		0.642
FE	% OX.		1.62
AL	% OX.		8.19
SI	% OX.	<	1.60
TI	% OX.		0.151
P	% OX.		0.081
SR	PPM		3335
BA	% OX.		0.031
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		0.685
CO	PPM		30
NI	PPM	<	5.00
CU	PPM	<	5.00
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		21
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM	<	16.0
AS	PPM	<	1
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM		2
BE	PPM	<	0.500
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM	<	5.00
CE	PPM		17
TH	PPM	<	150
HG	PPB		10

MEAGER CREEK D H 12 VEINS

270 m

ELEMENT			CONCENTRATION
NA	% OX.		2.48
K	% OX.		0.390
CA	% OX.		5.97
MG	% OX.		1.02
FE	% OX.		1.95
AL	% OX.		14.01
SI	% OX.	<	1.60
TI	% OX.		0.124
P	% OX.		0.103
SR	PPM		629
BA	% OX.		0.032
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		0.080
CO	PPM		180
NI	PPM	<	5.00
CU	PPM	<	5.00
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		37
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM	<	16.0
AS	PPM	<	1
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM		6
BE	PPM		0.7
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM		8
CE	PPM	<	10.0
TH	PPM	<	150
HG	PPB		25

MEAGER CREEK D H 12 VEINS

20 m

ELEMENT		CONCENTRATION	
NA	% OX.		2.21
K	% OX.		0.797
CA	% OX.		9.39
MG	% OX.		0.673
FE	% OX.		5.89
AL	% OX.		20.28
SI	% OX.	<	1.60
TI	% OX.		0.335
P	% OX.		0.162
SR	PPM		813
BA	% OX.		0.037
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		0.105
CO	PPM		56
NI	PPM	<	5.00
CU	PPM	<	5.00
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		38
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM	<	16.0
AS	PPM		2
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM		15
W	PPM	<	1200
LI	PPM		20
BE	PPM		1.1
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM		6
CE	PPM	<	10.0
TH	PPM	<	150
HG	PPB		5

MEAGER CREEK D H 12 VEINS

450 m

ELEMENT		CONCENTRATION
NA	% OX.	2.69
K	% OX.	0.743
CA	% OX.	8.97
MG	% OX.	1.45
FE	% OX.	5.51
AL	% OX.	19.55
SI	% OX.	< 1.60
TI	% OX.	0.468
P	% OX.	0.226
SR	PPM	909
BA	% OX.	0.043
V	PPM	< 250
CR	PPM	< 2.00
MN	% OX.	0.172
CO	PPM	58
NI	PPM	5
CU	PPM	< 5.00
MO	PPM	< 50.0
PB	PPM	< 10.0
ZN	PPM	48
CD	PPM	< 5.00
AG	PPM	< 2.00
AU	PPM	< 16.0
AS	PPM	< 1
SB	PPM	< 30.0
BI	PPM	< 100
U	PPM	< 2500
TE	PPM	< 50.0
SN	PPM	< 5.00
W	PPM	< 1200
LI	PPM	11
BE	PPM	1.3
B	PPM	< 400
ZR	PPM	< 5.00
LA	PPM	8
CE	PPM	< 10.0
TH	PPM	< 150
HG	PPB	5

MEAGER CREEK D H 12 VEINS

420 m

ELEMENT		CONCENTRATION
NA	% OX.	2.49
K	% OX.	0.739
CA	% OX.	10.91
MG	% OX.	1.03
FE	% OX.	6.54
AL	% OX.	19.95
SI	% OX.	< 1.60
TI	% OX.	0.356
P	% OX.	0.193
SR	PPM	881
BA	% OX.	0.037
V	PPM	< 250
CR	PPM	< 2.00
MN	% OX.	0.124
CO	PPM	43
NI	PPM	< 5.00
CU	PPM	29
MO	PPM	< 50.0
PB	PPM	< 10.0
ZN	PPM	40
CD	PPM	< 5.00
AG	PPM	< 2.00
AU	PPM	< 16.0
AS	PPM	< 1
SB	PPM	< 30.0
BI	PPM	< 100
U	PPM	< 2500
TE	PPM	< 50.0
SN	PPM	6
W	PPM	< 1200
LI	PPM	8
BE	PPM	1.1
B	PPM	< 400
ZR	PPM	< 5.00
LA	PPM	8
CE	PPM	10
TH	PPM	< 150
HG	PPB	20

MEAGER CREEK D H 12 VEINS

210 m

ELEMENT			CONCENTRATION
NA	% OX.		3.34
K	% OX.		0.858
CA	% OX.		8.09
MG	% OX.		1.60
FE	% OX.		5.18
AL	% OX.		18.44
SI	% OX.	<	1.60
TI	% OX.		0.444
P	% OX.		0.217
SR	PPM.		826
BA	% OX.		0.065
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		0.155
CO	PPM		80
NI	PPM	<	5.00
CU	PPM	<	5.00
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		53
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM	<	16.0
AS	PPM	<	1
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM		7
W	PPM	<	1200
LI	PPM		8
BE	PPM		1.0
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM		8
CE	PPM	<	10.0
TH	PPM	<	150
HG	PPB		5

MEAGER CREEK D H 13 VEINS

360 m

ELEMENT			CONCENTRATION
NA	% OX.		0.057
K	% OX.		0.497
CA	% OX.		38.36
MG	% OX.		1.33
FE	% OX.		2.24
AL	% OX.		2.52
SI	% OX.	<	1.60
TI	% OX.		0.055
P	% OX.		0.029
SR	PPM		399
BA	% OX.		0.047
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		0.744
CO	PPM		16
NI	PPM	<	5.00
CU	PPM		242
MO	PPM	<	50.0
PB	PPM		316
ZN	PPM		4827
CD	PPM		26
AG	PPM		4
AU	PPM		11
AS	PPM		8
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM		8
BE	PPM		0.7
B	PPM	<	400
ZR	PPM		7
LA	PPM	<	5.00
CE	PPM	<	10.0
TH	PPM	<	150
HG	PPB		660
	TOTAL		47.485

MEAGER CREEK D H 13 VEINS

520 m

ELEMENT		CONCENTRATION
NA	% OX.	3.30
K	% OX.	1.44
CA	% OX.	3.02
MG	% OX.	1.20
FE	% OX.	2.97
AL	% OX.	16.99
SI	% OX.	< 1.60
TI	% OX.	0.502
P	% OX.	0.179
SR	PPM	234
BA	% OX.	0.041
V	PPM	< 250
CR	PPM	14
MN	% OX.	0.362
CO	PPM	23
NI	PPM	18
CU	PPM	20
MO	PPM	< 50.0
PB	PPM	< 10.0
ZN	PPM	97
CD	PPM	< 5.00
AG	PPM	< 2.00
AU	PPM	6
AS	PPM	< 1
SB	PPM	< 30.0
BI	PPM	< 100
U	PPM	< 2500
TE	PPM	< 50.0
SN	PPM	< 5.00
W	PPM	< 1200
LI	PPM	40
BE	PPM	1.0
B	PPM	< 400
ZR	PPM	90
LA	PPM	14
CE	PPM	15
TH	PPM	< 150
HG	PPB	5
	TOTAL	31.594

MEAGER CREEK D H 13 VEINS

460 m

ELEMENT			CONCENTRATION
NA	% OX.		1.10
K	% OX.		0.076
CA	% OX.		16.80
MG	% OX.		1.13
FE	% OX.		8.96
AL	% OX.		20.93
SI	% OX.	<	1.60
TI	% OX.		0.467
P	% OX.		0.256
SR	PPM		1333
BA	% OX.		0.004
V	PPM	<	250
CR	PPM	<	2.00
MN	% OX.		0.153
CO	PPM		28
NI	PPM	<	5.00
CU	PPM		11
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		47
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM	<	4.00
AS	PPM	<	1
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM		7
BE	PPM		0.8
B	PPM	<	400
ZR	PPM	<	5.00
LA	PPM		8
CE	PPM		13
TH	PPM	<	150
HG	PPB		5
	TOTAL		51.480

MEAGER CREEK D H 13 VEINS

360 m

ELEMENT		CONCENTRATION
NA	% OX.	0.037
K	% OX.	1.12
CA	% OX.	3.96
MG	% OX.	1.04
FE	% OX.	8.31
AL	% OX.	5.04
SI	% OX.	< 1.60
TI	% OX.	0.105
P	% OX.	0.052
SR	PPM	50
BA	% OX.	0.011
V	PPM	< 250
CR	PPM	< 2.00
MN	% OX.	2.83
CO	PPM	31
NI	PPM	9
CU	PPM	7937
MO	PPM	< 50.0
PB	PPM	1998
ZN	PPM	114850
CD	PPM	406
AG	PPM	20
AU	PPM	10
AS	PPM	12
SB	PPM	31
BI	PPM	< 100
U	PPM	< 2500
TE	PPM	51
SN	PPM	< 5.00
W	PPM	< 1200
LI	PPM	16
BE	PPM	0.9
B	PPM	< 400
ZR	PPM	< 5.00
LA	PPM	7
CE	PPM	< 10.0
TH	PPM	< 150
HG	PPB	3850
	TOTAL	24.118

MEAGER CREEK D H 13 VEINS

80 m

ELEMENT			CONCENTRATION
NA	% OX.		2.90
K	% OX.		0.340
CA	% OX.		8.37
MG	% OX.		3.19
FE	% OX.		7.50
AL	% OX.		20.66
SI	% OX.	<	1.60
TI	% OX.		0.852
P	% OX.		0.369
SR	PPM		867
BA	% OX.		0.019
V	PPM	<	250
CR	PPM		15
MN	% OX.		0.210
CO	PPM		50
NI	PPM		11
CU	PPM		304
MO	PPM	<	50.0
PB	PPM	<	10.0
ZN	PPM		83
CD	PPM	<	5.00
AG	PPM	<	2.00
AU	PPM		4
AS	PPM		1
SB	PPM	<	30.0
BI	PPM	<	100
U	PPM	<	2500
TE	PPM	<	50.0
SN	PPM	<	5.00
W	PPM	<	1200
LI	PPM		6
BE	PPM		1.2
B	PPM	<	400
ZR	PPM		7
LA	PPM		14
CE	PPM		16
TH	PPM	<	150
HG	PPB		115
	TOTAL		46.018