GEOCHEMICAL INVESTIGATION OF THE POMFRET DOME, VERMONT

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ABSTRACT

The Pomfret Dome, in east-central Vermont, lies in the region of domes and recumbent folds of eastern Vermont. A geochemical soil survey was made in this region in order to determine the economic potential of the area. Five major and nine minor traverses were taken across the dome and samples were collected for analysis approximately every 200 feet. Eight of the minor traverses were made on the eastern flank of the dome, since the mineralization in the Strafford Dome, just north of this area, is located along its eastern side.

The samples were analyzed for copper, zinc, and lead, and the results are tabulated in the Appendix of this report. One minor copper anomaly was found in an area centered about an amphibolite in the Gile Mountain Formation on the southeastern side of the dome. No zinc or lead anomalies were found in the Pomfret Dome.

Similarities between the mineralization found in the Pomfret Dome and that in the Elizabeth Mine in the Strafford Quadrangle to the north are compared in the text.

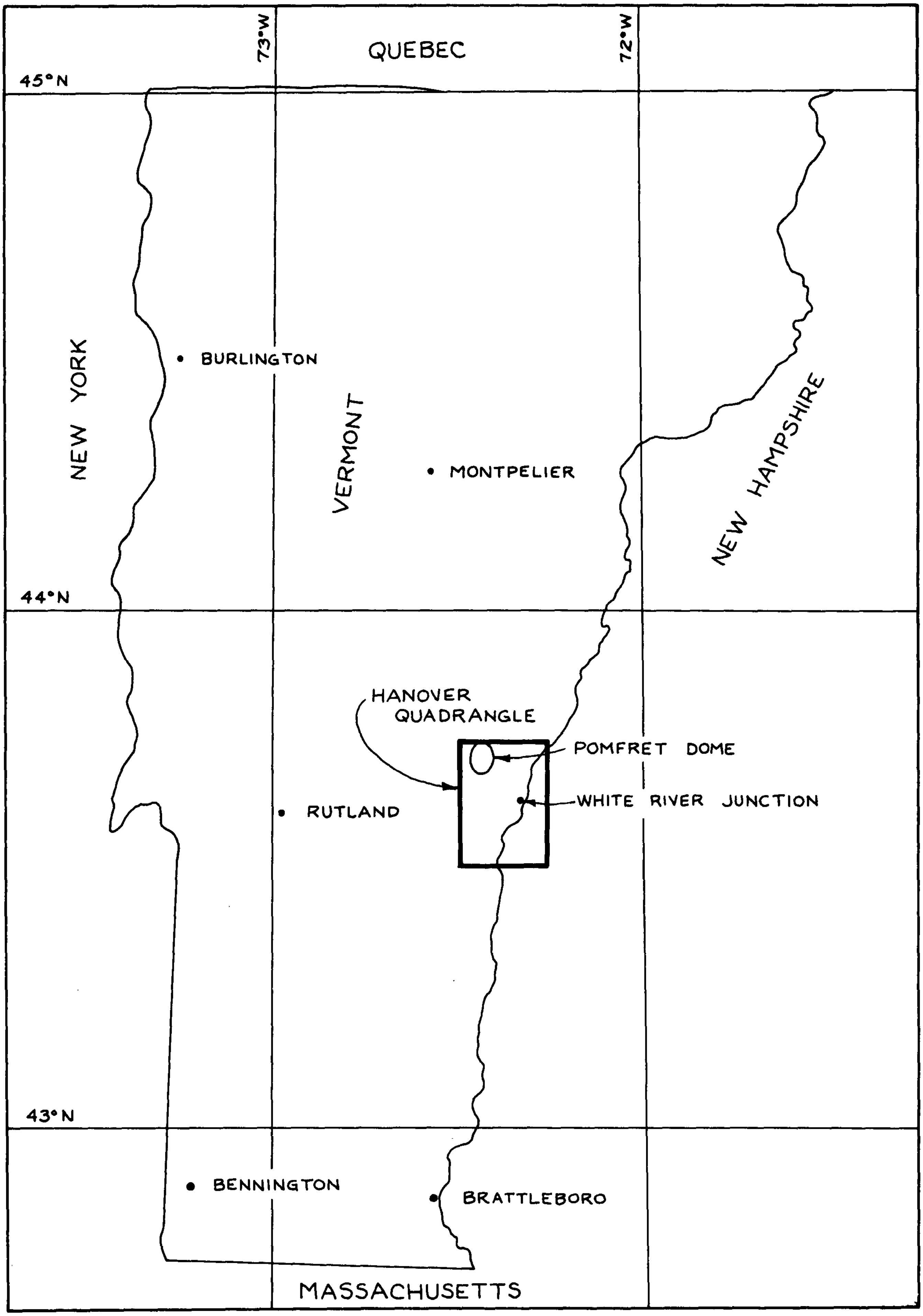


Figure 1. Index Map

INTRODUCTION

The Pomfret Dome is a distinct geologic structure in the northwest quadrant of the Vermont-New Hampshire, Hanover Quadrangle. The villages of North Pomfret and West Hartford are located in the northwestern and east-central parts of the dome respectively. The area is drained in the south by the Ottauquechee River, and in the east by the White River. Figure 1 is a map of Vermont showing the location of the Hanover Quadrangle and the Pomfret Dome.

The dome is one of a series of domes located along the eastern flanks of the Green Mountains, and is made up of the Gile Mountain Formation, the Standing Pond Amphibolite, and the Waits River Formation. Physically the dome has an oval shape with a north-south major axis and an east-west minor axis, and covers about 35 square miles. The center of the Strafford Dome is approximately eight miles north-northeast, and of the Chester Dome, twenty-four miles south-southwest, of the center of the Pomfret Dome.

Purpose of the Study

The geochemical investigation of the Pomfret Dome was undertaken in order to determine if there was any mineralization of economic value in the area, and to make recommendations concerning the possible future development of any such deposit. A further purpose of this study was to compare geochemically and petrologically any deposits found in the Pomfret Area to those found at the Elizabeth Mine in the Strafford Dome.

General Geology of the Pomfret Area

The geology of eastern Vermont was first described in 1861 by E. Hitchcock, who also provided a brief description of some of the mining operations in the area. Strong interest has always been shown in the mineral deposits in this part of the state and a number of reports have been written about them. Among these are C. H. Hitchcock's (1912) maps of the Strafford and Hanover quadrangles. Doll (1944), however, produced the first accurate regional map of the Strafford Quadrangle, and outlined the Strafford Dome and the associated Elizabeth Mine. Doll's stratigraphic and structural sequences were extended to the south by Lyons (1955), where he mapped the Hanover Quadrangle. Lyon's map was used as a base map for the field work of this report.

The Pomfret Dome is divided into three formations: the Gile Mountain Formation, the Standing Pond Amphibolite, and the Waits River Formation. The Gile Mountain Formation consists of non-calcareous mica schists and mica quartzites and some minor amphibolites. The amphibolites consist mainly of hornblende, plagioclase, and garnet, and occasionally have associated sulfide mineralization as in the Strafford Dome.

The Waits River Formation is made up of interbedded impure limestones, calcareous mica schists and micaceous schists, and quartzites. In the field, individual outcrops of the Waits River and the Gile Mountain mica schists could not be differentiated. The Standing Pond Amphibolite, however, made an excellent marker bed for separating the two formations, and has been the key to outlining the dome (Doll, 1944).

The Standing Pond Amphibolite is composed chiefly of hornblende, plagioclase, garnet, quartz and biotite. It is similar mineralogically and in outcrop to the amphibolites within the Gile Mountain Formation, but stratigraphically it is separated from them.

The rocks in the Pomfret Area have been recrystallized to the almandine-amphibolite facies, and kyanite and garnet are typically found in most of the schists, although only garnet is found in the very eastern part of the area.

Acknowledgments

The writer wishes to express his thanks to Dr. Charles G. Doll, State Geologist, who suggested this problem and critically reviewed the manuscript. Mr. Richard Gillespie, of the Geology Department of the University of Vermont, kindly produced thin sections of some critical specimens from the Pomfret Dome.

Grateful appreciation is also extended to my wife, Klawa, who typed the final manuscript.

GEOCHEMICAL AND FIELD INVESTIGATION OF THE POMFRET DOME

Fourteen traverses were made to collect soil samples for chemical determination of the copper, zinc, and lead in the B horizon in the overburden of the area. As shown in Figure 2, five major east-west traverses, A, C, E, G, and I, were taken across the dome and an additional four minor east-west traverses, B, D, F, and H, were taken between the five major traverses on the eastern part of the dome. This coverage was given to the eastern part of the dome because it was thought that, since the mineralization at the Elizabeth Mine to the north of this area is located along the eastern flanks of the Strafford Dome, similar mineralization might be found in the Pomfret Dome.

A northwest-southeast traverse, J, was also taken on the southeast corner of the Woodstock Dome, since the traverse thus crossed an area in the Gile Mountain Formation with numerous amphibolites (Lyons, 1955). These amphibolites were singled out for special attention because they are closely related to the mineralization throughout the Copper Belt (Doll, 1944, and Howard, 1969). Several amphibolites which were not traversed during the geochemical sampling were visited and examined for signs of mineralization.

Because field and laboratory results indicated the presence of a small mineralized zone along traverse G, four additional short traverses, GA, GB, GC, and GD, were undertaken parallel to traverse G in order to estimate the lateral extent of this mineralization.

Field Procedure

Soil samples of about five grams each were collected along the traverses at intervals of 200 ± 20 feet in order to assure that at least two samples would be taken over any major mineralized zone. The interval was kept by pacing and frequent checks on local topography. Deviations of greater than ± 20 feet in the interval were the result of highways, rivers and/or houses being in the path of the traverse. The traverse bearings were checked each time a sample was taken in order to maintain a straight traverse line. The samples were taken 6 ± ½ inches below the top of the B soil horizon in order to minimize the effect of the vertical dispersion of copper within the soil, as recommended by Hawkes and Webb (1962). They were collected with a stainless steel Oakfield soil sampler and stored in individual polyethylene bags to avoid contamination. The same samples were used for all three analyses.

Outcrops found along all of the traverses were examined for visible signs of mineralization and appropriate notes were made at these outcrops. Since a detailed study of the bedrock exposures in this area was made by Lyons (1955), the examination of the outcrops was made mainly to cross reference the chemical analyses.

Field Observations

Mineralization was seen in outcrop at two places in the Pomfret Area, both of which are on the east side of the dome. The first of these, in the Gile Mountain Formation in the southeastern part of the dome, is in an area not crossed by the traverses, and is indicated in Figure 2 by a "T". The minerals here are rutile and ilmenite, which occur in the thick quartz veins and pods within the schists of the formation. These titanium-bearing minerals generally comprise about two per cent of the veins, but in some cases they may account for as much as twenty per cent. The rutile, which is about five times as abundant as the ilmenite, is found as rough megascopic crystals, usually one-eighth inch in diameter and one-quarter inch in length. The rutile crystals do not appear to have any correlation to the structures of the rocks containing them, in contrast to the ilmenite, which usually occurs as thin, one-quarter inch in diameter plates found in fractures in the veins. In some cases the ilmenite forms thin rims around some of the rutile crystals.

The second mineralized area, designated by an "S" in Figure 2, occurs north of the first and is associated with a medium-grained amphibolite in the Gile Mountain Formation. (See Plate 1). This area is characterized by pyrrhotite, chalcopyrite, and pyrite, which in outcrop appear as rusty spots about one-eighth of an inch in diameter, due to the leaching of iron from the pyrrhotite and pyrite. The amount of total sulfide mineralization varies from five to twenty per cent of the amphibolite by volume, but is somewhat more concentrated in its western part. Associated with the sulfides is widespread sericitization of feldspars and chloritization of amphibole, the amount of which is not extensive, but again, is much more common in the western part of the amphibolite. In hand samples the chalcopyrite was seen to comprise approximately one-quarter of the sulfides, the rest being mostly pyrrhotite. The sulfide grains are scattered throughout the amphibolite, but some appear to be planar and parallel to the schistosity of the rock, as shown in Plate 2.

The soils covering the Pomfret Dome are mainly poorly to moderately drained sandy to silty loams. In addition, thick sand and gravel deposits, which are more difficult to sample than the loams, are common in the White River valley. Scattered boulders are found to the south and east of the major hills in the dome.

The land is dissected by many small streams and the topography is that of gently rounded hills. Much of the land is open fields, thus making it possible to maintain the traverses easily.

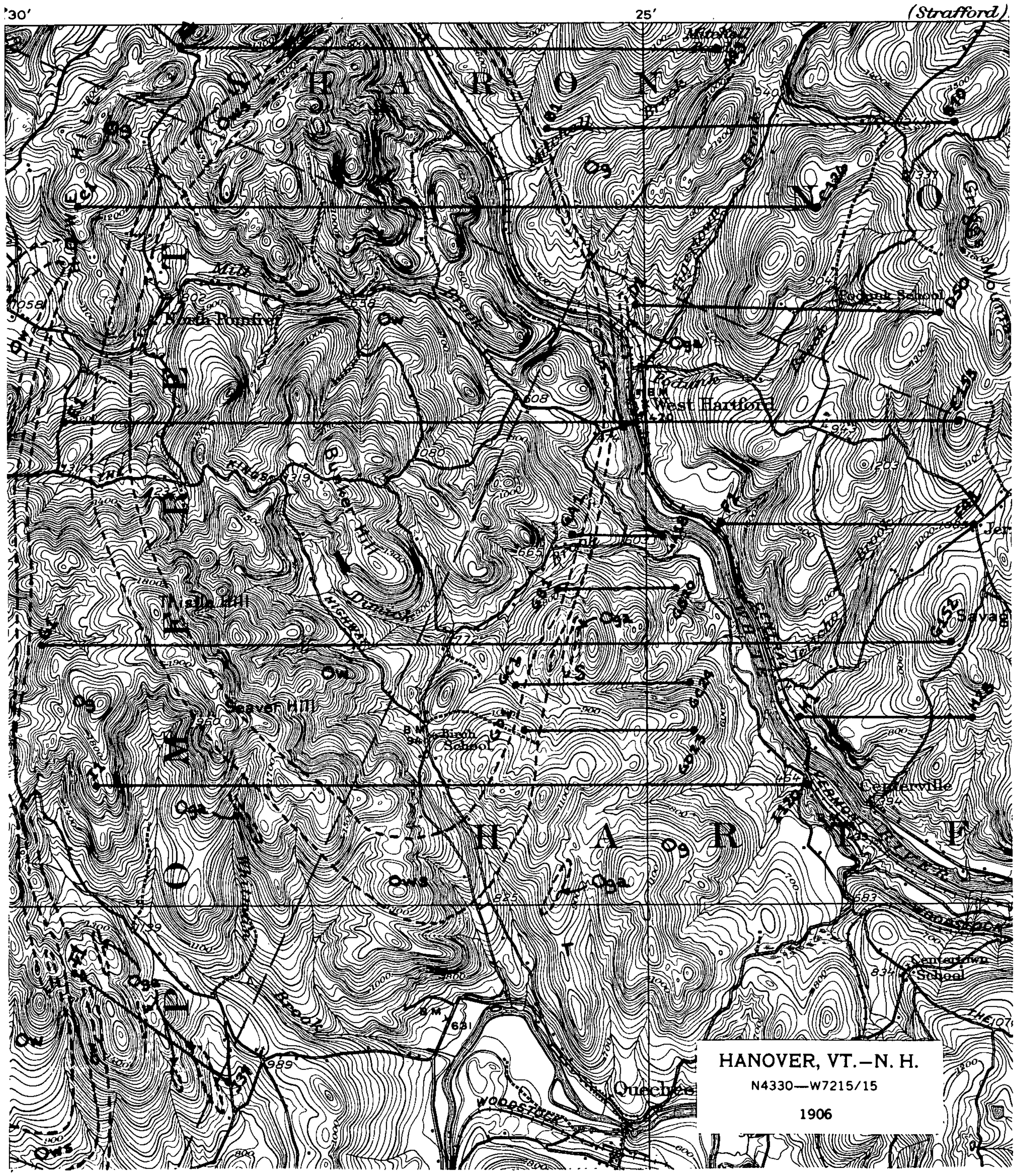
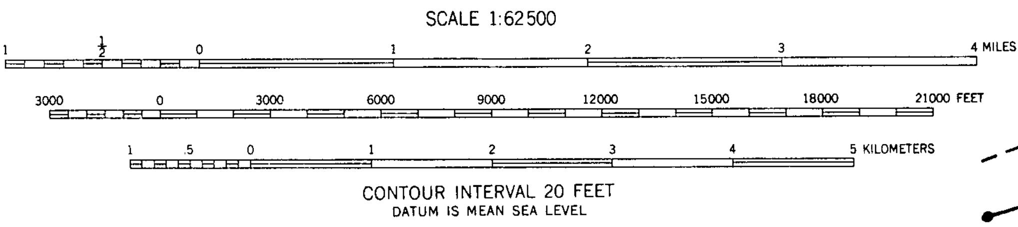


Figure 2. Traverse and geologic map. Geologic information taken from Lyons (1955).



LEGEND

Og-Gile Mountain Formation
Oga- Amphibolite
Ows-Standing Pond Amphibolite
Ow-Waits River Formation

- - - approximate formation boundary

traverse with station indicated

NOTE

Following Lyons, the formations were assigned by the author to the Ordovician. They are now considered to be Devonian.

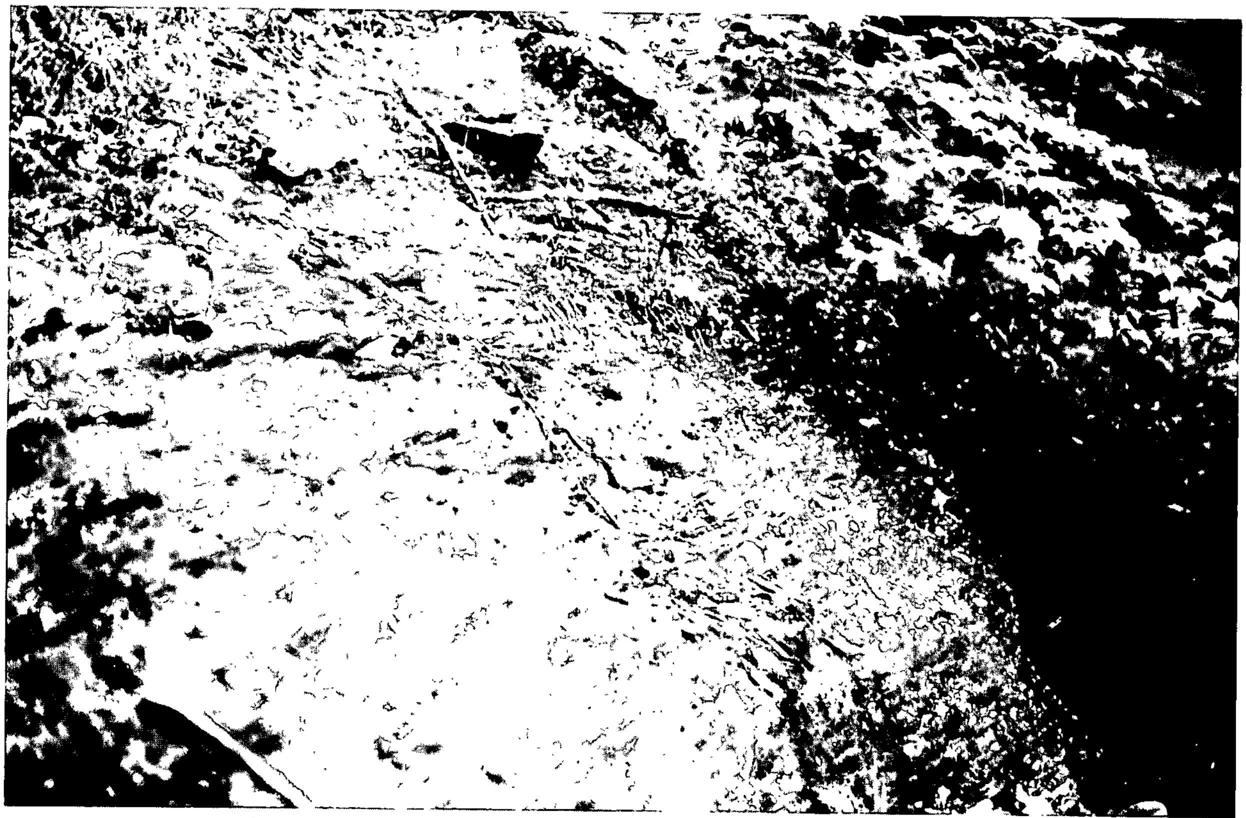


Plate 1. Eastward dipping amphibolite on the southeastern part of the dome.

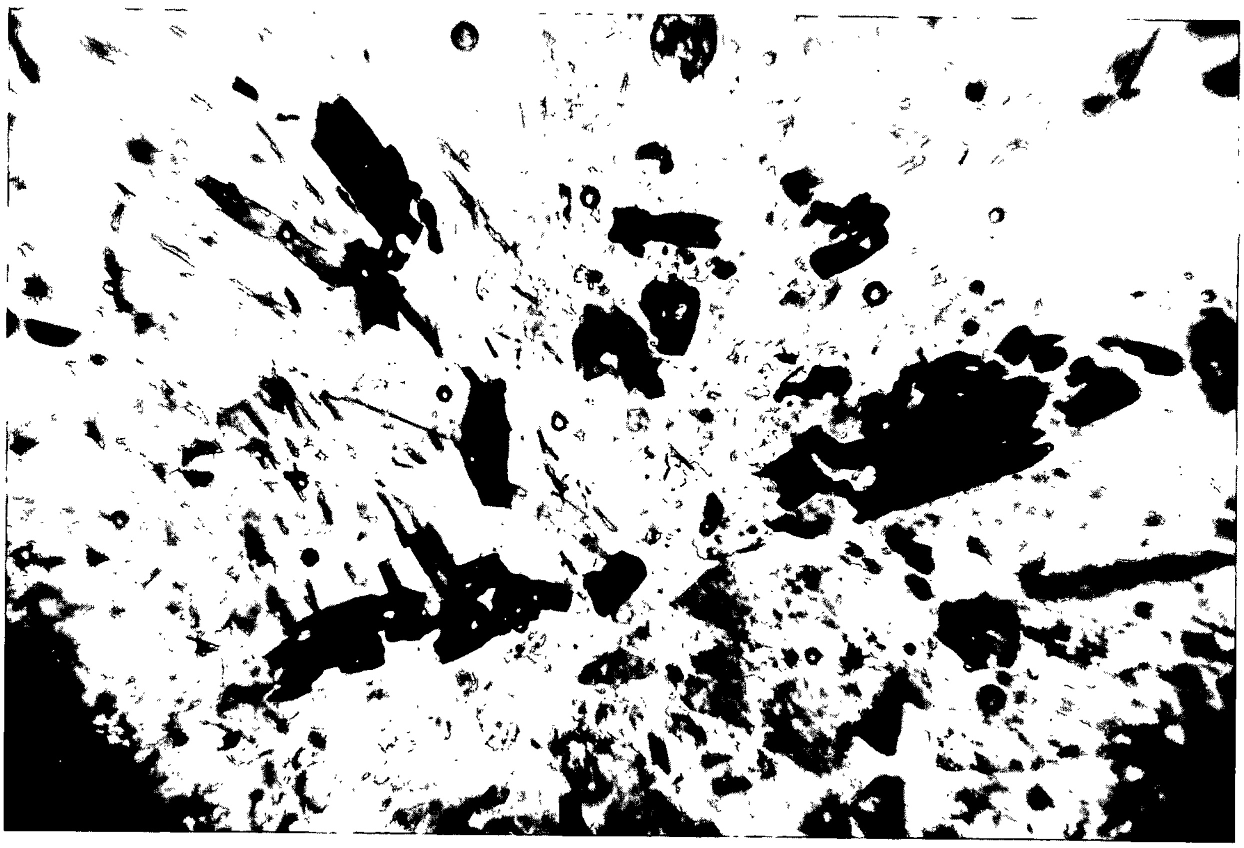


Plate 2. Photomicrograph of sulfides within the amphibolite. x 250

LEGEND

Og-Gile Mountain Formation
Oga-Amphibolite
Ows-Standing Pond Amphibolite
Ow-Waits River Formation

approximate formation boundary

geochemical contour in ppm Cu

traverse line with station

NOTE

Following Lyons, the formations were assigned by the author to the Ordovician; they are now considered to be Devonian.

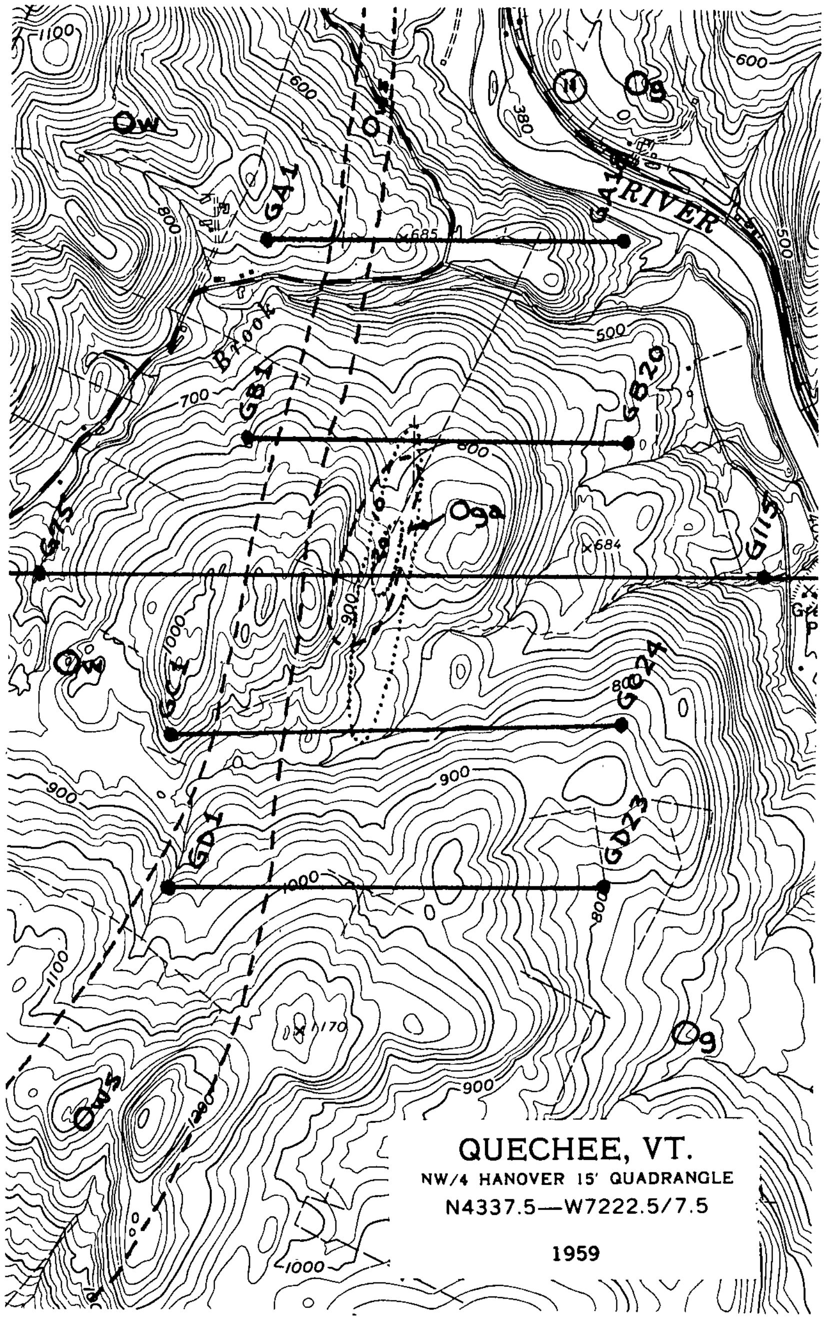
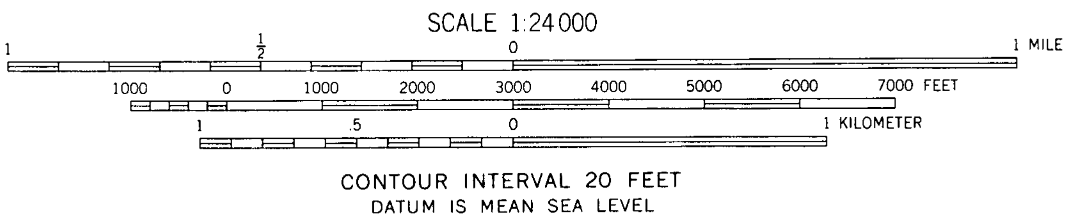


Figure 3. Detail of copper anomaly. Cold extractable copper concentrations contoured at 10 and 20 ppm. Geologic information taken from Lyons (1955).



Laboratory Procedures

The soils collected in the field were individually homogenized and 0.2 gram of the sand size fraction of each sample was used for the copper analysis and 0.1 gram for the lead and zinc analyses. A total of 955 samples was analyzed for the three elements.

The copper analyses were performed using the cold acid extraction method of Canney and Hawkins (1958). This method was recently shown to be superior to the pyrosulfate fusion method by Canney (1965), who compared the two methods while examining deposits in the Vermont Copper Belt. A comparison between the values determined by Canney in the economic copper deposits and those in the Pomfret Area is given in a later section of this report.

Zinc and lead were analyzed by the standard pyrosulfate fusion method (Ward *et. al.,* 1963). Concentrations of zinc and lead, as well as copper, were made by visual estimate, i.e., by comparing the depth of color of the organometallic complex formed in the analysis to colors formed from known concentrations.

Copper standards of 0, 1, 2, 3, 5, 10, 15, 20, 25, 50 and 100 ppm, lead standards of 0, 2, 5, 10, 20, 50, and 100 ppm, and zinc standards of 0, 10, 20, 30, 40, 50, 75, and 100 ppm, were used for these estimates. All of the values derived by this method are recorded in the Appendix at the end of this report. Also in the Appendix are profiles of the copper values of traverses G, GA, GB, GC, and GD, i.e., those with anomalous copper values.

Analytical Results

The results of the analyses from the Pomfret Dome can be summarized as follows:

1. In general the Gile Mountain and Waits River formations are devoid of any significant mineralization and contain only normal trace amounts of copper, lead, and zinc in the soils above them.

2. The Standing Pond Amphibolite contains more copper and zinc and less lead than the Gile Mountain and Waits River formations, which is a common difference between rocks of an igneous origin and those of a sedimentary origin. The concentrations of copper and zinc in the soils above the Standing Pond, therefore, are only normal background amounts for soils overlying rocks of basaltic composition. (See Hawkes and Webb, 1962)

3. Most of the soils sampled above the amphibolites in the Gile Mountain Formation contain copper, lead, and zinc concentrations similar to those taken above the Standing Pond. However, one amphibolite, previously described in the section on field observations, contains anomalously high amounts of copper, as would be expected by the mineralization seen in hand specimen. The copper values from the samples taken along traverses G, GA, GB, GC, and GD suggest that the anomaly is an elongated oval with a north-south major axis, and overlies the amphibolite as shown in Figure 3.

COMPARISON OF THE MINERALIZATION OF THE POMFRET DOME TO THAT OF THE ELIZABETH MINE, STRAFFORD QUADRANGLE

The minor sulfide mineralization noted in the Pomfred Dome is similar in composition and in relationship to structure to that of the other deposits of the Vermont Copper Belt, and in particular to that of the Elizabeth Mine at South Strafford. The major sulfide has been found to be pyrrhotite, but varying amounts of other sulfides, notably chalcopyrite, have been found and mined at South Strafford, Vershire, Corinth and other localities in the Copper Belt. Most of the mineralization found in eastern Vermont is along the eastern flanks of the domal and related structures. Table 1 shows a comparison between the Pomfret mineralization and that at the Elizabeth Mine.

As can be seen in Table 1, the mineralization is very similar in the two areas, with the notable exception that the mineralization at the Elizabeth Mine is more extensive than that in the Pomfret Dome. The mineralization at the Elizabeth Mine is considered to be hydrothermal in orign (Howard, 1969) and because of the textural, structural, and mineralogical similarities between the two areas, the mineralization in the Pomfret Dome is also considered to be of hydrothermal origin.

RECOMMENDATIONS

As a result of this work and the comparison of its findings to those of other related areas, the following recommendations are made:

1. Since minor mineralization is present in the amphibolite at "S" on Figure 2, drilling should be carried out on the amphibolite in order to establish the economic feasibility of opening a mine in that area. Although it appears that a deposit of the magnitude of the Elizabeth Mine has not been found in the Pomfret Area, the possibility exists that since the ore body at the Elizabeth Mine is plunging, this also may be the case in the Pomfret Dome, so that only a small part of the body was seen. Only drilling will give a reasonable estimate of the depth and quality of the deposit.

2. It is also recommended that a program of exploration be carried out in the dome-like areas to the south of the Pomfret Dome in order to determine if they too contain sulfide deposits.

3. The deposit of rutile and ilmenite is considered to be too small and the titanium concentration too low to be of economic significance by today's standards. Therefore, no further work is recommended with respect to this deposit.

Feature	Pomfret Dome	Elizabeth Mine
1. Ore minerals	Pyrrhotite, chalcopyrite	Pyrrhotite, chalcopyrite
2. Mineral occurrence	Disseminated grains in amphibolite	Massive sulfide bands, disseminated grains in schists and coarse-grained aggregates filling narrow veins and fractures.
3. Location of ore in dome	Southeastern part	Northeastern part
4. Lithologic association	Amphibolite in the Gile Mountain Formation	With amphibolite but mostly in the schists of the Gile Mountain Formation
5. Background copper from cold acid method	1-5 ppm Cu, in soil	1-5 ppm Cu, in soil
6. Anomalous copper from cold acid method	25 ppm Cu maximum in soil	200 + ppm Cu in soil
7. Alteration associated with mineralization	Sericitization of feldspar, chloritization of hornblende	Sericitization of fledspar, formation of biotite from hornblende

Table 1. Comparison of the Pomfret Dome and Elizabeth Mine Minealization.

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APPENDIX

Tabulated Results of the Chemical Analyses

Traverse A

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
1	1	10	2	Gile Mountain
2	1	10	5	Gile Mountain
3	3	10	2	Gile Mountain
4	2	30	2	Gile Mountain
5	2	20	2	Gile Mountain
6	1	20	5	Gile Mountain
7	3	40	10	Gile Mountain
8	3	10	2	Gile Mountain
9	2	20	2	Gile Mountain
10	3	30	5	Gile Mountain
11	1	10	5	Gile Mountain
12	2	10	2	Gile Mountain
13	1	20	2	Gile Mountain
14	5	30	5	Gile Mountain
15	2	20	2	Gile Mountain
16	2	10	10	Gile Mountain
17	3	20	2	Gile Mountain
18	2	10	5	Gile Mountain
19	1	30	2	Gile Mountain
20	1	20	5	Gile Mountain
21	5	50	2	Standing Pond
22	10	75	10	Standing Pond
23	5	75	2	Standing Pond
24	3	50	5	Standing Pond
25	5	40	5	Standing Pond

Traverse A

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
26	10	75	2	Standing Pond
27	2	30	5	Waits River
28	3	20	2	Waits River
29	1	10	2	Waits River
30	3	20	5	Waits River
31	3	10	2	Waits River
32	2	30	2	Waits River
33	1	20	5	Waits River
34	2	30	2	Waits River
35	1	20	5	Waits River
36	1	10	5	Waits River
37	2	20	2	Waits River
38	2	40	5	Waits River
39	1	20	2	Waits River
40	1	30	5	Waits River
41	3	20	2	Waits River
42	2	30	2	Waits River
43	3	20	5	Waits River
44	2	30	5	Waits River
45	3	20	2	Waits River
46	3	20	2	Waits River
47	1	30	2	Waits River
48	2	10	5	Waits River
49	2	20	2	Waits River
50	1	10	2	Waits River

Traverse A, continued

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
51	5	50	5	Standing Pond
52	5	75	2	Standing Pond
53	3	40	2	Gile Mountain
54	2	30	5	Gile Mountain
55	3	20	2	Gile Mountain
56	1	40	2	Gile Mountain
57	2	30	5	Gile Mountain
58	3	20	2	Gile Mountain
59	1	30	10	Gile Mountain
60	2	10	2	Gile Mountain
61	3	20	2	Gile Mountain
62	2	20	2	Gile Mountain
63	1	40	2	Gile Mountain
64	2	30	5	Gile Mountain
65	2	20	5	Gile Mountain
66	1	30	2	Gile Mountain
67	5	20	5	Gile Mountain
68	1	30	5	Gile Mountain
69	3	20	2	Gile Mountain
70	1	30	2	Gile Mountain
71	3	20	5	Gile Mountain
72	2	40	10	Gile Mountain
73	3	40	5	Gile Mountain
74	3	30	2	Gile Mountain
75	1	20	2	Gile Mountain
76	2	30	5	Gile Mountain
77	3	20	10	Gile Mountain

Traverse A, continued

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
78	2	40	2	Gile Mountain
79	1	20	5	Gile Mountain
80	1	30	2	Gile Mountain
81	2	20	2	Gile Mountain
82	2	40	2	Gile Mountain
83	3	10	5	Gile Mountain
84	2	20	5	Gile Mountain
85	2	30	2	Gile Mountain
86	1	40	2	Gile Mountain
87	2	10	5	Gile Mountain
88	1	20	2	Gile Mountain
89	1	30	2	Gile Mountain
90	3	20	5	Gile Mountain
91	2	20	2	Gile Mountain
92	3	30	2	Gile Mountain
93	2	40	5	Gile Mountain

Traverse B

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
1	2	30	2	Gile Mountain
2	3	10	5	Gile Mountain
3	2	20	2	Gile Mountain
4	5	40	5	Gile Mountain
5	1	50	5	Gile Mountain
6	2	30	2	Gile Mountain
7	2	40	5	Gile Mountain
8	3	10	5	Gile Mountain
9	5	20	10	Gile Mountain
10	1	50	5	Gile Mountain

Traverse B

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
11	2	30	5	Gile Mountain
12	2	20	5	Gile Mountain
13	5	30	5	Gile Mountain
14	3	40	2	Gile Mountain
15	2	20	5	Gile Mountain
16	5	30	2	Gile Mountain
17	2	30	2	Gile Mountain
18	3	30	5	Gile Mountain
19	1	20	2	Gile Mountain
20	2	40	10	Gile Mountain
21	3	20	2	Gile Mountain
22	2	40	5	Gile Mountain
23	3	30	5	Gile Mountain
24	2	20	2	Gile Mountain
25	5	20	2	Gile Mountain
26	2	30	2	Gile Mountain
27	10	40	10	Gile Mountain
28	3	20	5	Gile Mountain
29	2	30	2	Gile Mountain
30	2	20	5	Gile Mountain
31	3	10	2	Gile Mountain
32	5	50	2	Gile Mountain
33	2	40	2	Gile Mountain
34	3	40	2	Gile Mountain
35	5	20	5	Gile Mountain
36	2	30	2	Gile Mountain
37	3	20	2	Gile Mountain

Traverse B, continued

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
38	5	30	5	Gile Mountain
39	2	30	2	Gile Mountain
40	3	40	10	Gile Mountain
41	2	30	5	Gile Mountain
42	3	20	2	Gile Mountain
43	5	30	5	Gile Mountain
44	1	30	10	Gile Mountain
45	3	20	2	Gile Mountain
46	2	30	5	Gile Mountain
47	3	20	2	Gile Mountain
48	2	30	2	Gile Mountain
49	2	40	5	Gile Mountain
50	5	20	2	Gile Mountain
51	2	30	5	Gile Mountain
52	3	20	5	Gile Mountain
53	2	40	2	Gile Mountain
54	1	20	5	Gile Mountain
55	5	30	2	Gile Mountain
56	2	20	5	Gile Mountain
57	3	10	2	Gile Mountain
58	2	30	2	Gile Mountain
59	3	20	2	Gile Mountain
60	5	40	5	Gile Mountain
61	2	30	5	Gile Mountain
62	3	40	2	Gile Mountain
63	1	30	2	Gile Mountain
64	2	20	5	Gile Mountain

Traverse B, continued

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
65	3	30	10	Gile Mountain
66	3	20	2	Gile Mountain
67	3	30	2	Gile Mountain
68	2	20	2	Gile Mountain
69	3	40	5	Gile Mountain
70	2	30	5	Gile Mountain
Traverse C				
1	3	30	2	Gile Mountain
2	2	40	5	Gile Mountain
3	2	20	5	Gile Mountain
4	1	30	2	Gile Mountain
5	5	20	10	Gile Mountain
6	3	20	5	Gile Mountain
7	2	40	2	Gile Mountain
8	1	20	2	Gile Mountain
9	3	10	5	Gile Mountain
10	2	30	2	Gile Mountain
11	3	20	2	Gile Mountain
12	5	50	2	Standing Pond
13	3	40	5	Standing Pond
14	5	75	2	Standing Pond
15	3	50	2	Standing Pond
16	2	40	2	Standing Pond
17	5	75	5	Standing Pond
18	5	40	2	Standing Pond
19	3	20	5	Waits River
20	2	30	2	Waits River

Traverse C, continued

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
21	3	20	5	Waits River
22	2	40	5	Waits River
23	2	30	5	Waits River
24	3	20	2	Waits River
25	3	50	10	Waits River
26	2	40	2	Waits River
27	3	20	5	Waits River
28	2	20	5	Waits River
29	3	30	2	Waits River
30	1	30	5	Waits River
31	2	30	5	Waits River
32	3	40	2	Waits River
33	2	30	5	Waits River
34	2	50	2	Waits River
35	3	20	5	Waits River
36	2	40	5	Waits River
37	2	30	5	Waits River
38	1	20	2	Waits River
39	2	10	5	Waits River
40	2	20	2	Waits River
41	3	20	2	Waits River
42	2	30	5	Waits River
43	5	20	10	Waits River
44	3	30	2	Waits River
45	2	40	10	Waits River
46	3	40	5	Waits River
47	3	30	5	Waits River

Traverse C, continued				
Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
48	2	20	5	Waits River
49	3	40	2	Waits River
50	2	30	5	Waits River
51	3	20	2	Waits River
52	2	30	2	Waits River
53	3	40	2	Waits River
54	2	30	5	Waits River
55	3	20	2	Waits River
56	1	30	5	Waits River
57	2	20	5	Waits River
58	5	10	2	Waits River
59	3	30	2	Waits River
60	10	20	5	Waits River
61	5	20	5	Waits River
62	2	30	2	Waits River
63	3	40	2	Waits River
64	5	20	5	Waits River
65	3	30	2	Waits River
66	5	20	5	Waits River
67	3	30	5	Waits River
68	2	20	2	Waits River
69	3	10	5	Waits River
70	5	20	10	Waits River
71	2	30	2	Waits River
72	3	30	2	Waits River
73	2	40	5	Waits River
74	3	20	5	Waits River

Traverse C, continued				
Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
75	2	30	5	Waits River
76	5	40	2	Waits River
77	2	30	5	Waits River
78	1	20	5	Waits River
79	3	20	2	Waits River
80	5	10	5	Waits River
81	5	50	10	Standing Pond
82	5	75	2	Standing Pond
83	3	40	5	Gile Mountain
84	2	30	5	Gile Mountain
85	3	30	2	Gile Mountain
86	2	40	2	Gile Mountain
87	3	30	5	Gile Mountain
88	5	40	2	Gile Mountain
89	2	30	10	Gile Mountain
90	3	20	5	Gile Mountain
91	2	40	5	Gile Mountain
92	3	30	2	Gile Mountain
93	5	40	2	Gile Mountain
94	3	20	5	Gile Mountain
95	2	30	2	Gile Mountain
96	3	20	5	Gile Mountain
97	2	30	5	Gile Mountain
98	3	40	2	Gile Mountain
99	5	10	2	Gile Mountain
100	1	30	5	Gile Mountain
101	2	30	5	Gile Mountain

Traverse C, continued

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
102	3	20	2	Gile Mountain
103	2	40	5	Gile Mountain
104	5	20	5	Gile Mountain
105	3	20	5	Gile Mountain
106	3	40	2	Gile Mountain
107	5	30	2	Gile Mountain
108	2	20	5	Gile Mountain
109	3	30	5	Gile Mountain
110	5	40	2	Gile Mountain
111	2	30	2	Gile Mountain
112	3	20	5	Gile Mountain
113	5	50	2	Gile Mountain
114	2	30	5	Gile Mountain
115	3	20	10	Gile Mountain
116	5	10	2	Gile Mountain
117	3	30	2	Gile Mountain
118	2	40	5	Gile Mountain
119	3	30	10	Gile Mountain
120	3	20	2	Gile Mountain
121	5	30	5	Gile Mountain
122	2	20	2	Gile Mountain
123	5	40	5	Gile Mountain
124	3	30	2	Gile Mountain
125	5	40	5	Gile Mountain
126	2	30	2	Gile Mountain

Traverse D

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
1	2	40	10	Gile Mountain
2	3	20	5	Gile Mountain
3	5	30	5	Gile Mountain
4	2	40	5	Gile Mountain
5	3	30	5	Gile Mountain
6	2	40	2	Gile Mountain
7	3	30	5	Gile Mountain
8	2	40	3	Gile Mountain
9	5	20	5	Gile Mountain
10	1	30	2	Gile Mountain
11	2	40	5	Gile Mountain
12	3	30	5	Gile Mountain
13	2	40	2	Gile Mountain
14	5	20	5	Gile Mountain
15	2	30	2	Gile Mountain
16	5	40	5	Gile Mountain
17	2	30	5	Gile Mountain
18	5	50	2	Gile Mountain
19	3	30	2	Gile Mountain
20	2	20	5	Gile Mountain
21	5	30	5	Gile Mountain
22	2	30	5	Gile Mountain
23	3	20	5	Gile Mountain
24	5	30	2	Gile Mountain
25	3	40	2	Gile Mountain
26	2	20	5	Gile Mountain
27	1	30	2	Gile Mountain

Traverse D, continued

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
28	2	20	5	Gile Mountain
29	3	40	2	Gile Mountain
30	2	30	5	Gile Mountain
31	3	20	10	Gile Mountain
32	5	40	2	Gile Mountain
33	5	30	10	Gile Mountain
34	2	30	5	Gile Mountain
35	3	40	5	Gile Mountain
36	5	50	2	Gile Mountain
37	2	40	2	Gile Mountain
38	3	30	2	Gile Mountain
39	5	40	5	Gile Mountain
40	3	40	2	Gile Mountain
41	5	40	2	Gile Mountain
42	2	30	2	Gile Mountain
43	3	40	5	Gile Mountain
44	1	20	5	Gile Mountain
45	2	20	10	Gile Mountain
46	3	30	5	Gile Mountain
47	2	20	5	Gile Mountain
48	5	40	2	Gile Mountain
49	2	30	2	Gile Mountain
50	3	20	5	Gile Mountain

Traverse E

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
1	2	20	10	Gile Mountain
2	5	40	2	Gile Mountain
3	3	30	2	Gile Mountain
4	5	30	2	Gile Mountain
5	2	40	5	Gile Mountain
6	5	50	5	Standing Pond
7	10	50	2	Standing Pond
8	5	75	2	Standing Pond
9	5	40	5	Standing Pond
10	10	75	2	Standing Pond
11	2	30	5	Waits River
12	3	40	5	Standing Pond
13	2	30	5	Waits River
14	5	20	10	Waits River
15	3	40	2	Waits River
16	5	20	5	Waits River
17	3	40	5	Waits River
18	2	10	2	Waits River
19	1	20	2	Waits River
20	1	10	10	Waits River
21	1	20	10	Waits River
22	2	20	5	Waits River
23	2	10	2	Waits River
24	2	10	5	Waits River
25	3	30	2	Waits River
26	2	20	5	Waits River
27	5	40	2	Waits River

Traverse E, continued

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
28	2	30	5	Waits River
29	3	30	5	Waits River
30	2	40	2	Waits River
31	3	30	10	Waits River
32	2	20	5	Waits River
33	3	40	2	Waits River
34	5	40	2	Waits River
35	2	30	2	Waits River
36	3	40	5	Waits River
37	2	30	2	Waits River
38	5	30	2	Waits River
39	2	20	10	Waits River
40	2	10	5	Waits River
41	1	20	2	Waits River
42	2	10	2	Waits River
43	2	30	5	Waits River
44	1	20	5	Waits River
45	3	40	2	Waits River
46	5	30	5	Waits River
47	2	30	5	Waits River
48	3	20	2	Waits River
49	2	20	5	Waits River
50	2	10	2	Waits River
51	3	20	2	Waits River
52	2	30	5	Waits River
53	2	20	5	Waits River
54	3	20	2	Waits River

Traverse E, continued

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
55	2	30	5	Waits River
56	1	20	2	Waits River
57	1	10	5	Waits River
58	2	10	2	Waits River
59	2	20	2	Waits River
60	2	30	5	Waits River
61	2	20	5	Waits River
62	1	30	2	Waits River
63	2	40	5	Waits River
64	5	40	2	Waits River
65	3	50	10	Waits River
66	2	30	2	Waits River
67	3	20	2	Waits River
68	2	40	5	Waits River
69	2	30	2	Waits River
70	2	20	10	Waits River
71	1	30	2	Waits River
72	2	30	2	Waits River
73	2	40	5	Waits River
74	1	30	5	Waits River
75	1	30	2	Waits River
76	2	20	5	Waits River
77	2	30	5	Waits River
78	1	20	2	Waits River
79	5	40	2	Waits River
80	2	30	5	Waits River
81	3	20	5	Waits River

Traverse E, continued

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
82	2	30	2	Waits River
83	2	20	2	Waits River
84	3	30	2	Waits River
85	2	40	5	Waits River
86	2	30	5	Waits River
87	2	20	2	Waits River
88	3	20	2	Waits River
89	3	40	5	Waits River
90	2	30	5	Waits River
91	1	30	2	Waits River
92	2	20	5	Waits River
93	5	50	2	Standing Pond
94	5	75	5	Standing Pond
95	2	30	2	Gile Mountain
96	3	20	2	Gile Mountain
97	3	30	2	Gile Mountain
98	2	20	2	Gioe Mountain
99	2	10	5	Gile Mountain
100	3	40	5	Gile Mountain
101	3	30	2	Gile Mountain
102	2	30	2	Gile Mountain
103	3	30	5	Gile Mountain
104	2	40	5	Gile Mountain
105	3	40	10	Gile Mountain
106	5	50	2	Gile Mountain
107	2	30	5	Gile Mountain
108	2	40	2	Gile Mountain

Traverse E, continued

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
109	3	20	10	Gile Mountain
110	3	30	5	Gile Mountain
111	3	40	2	Gile Mountain
112	2	30	5	Gile Mountain
113	3	40	2	Gile Mountain
114	3	30	2	Gile Mountain
115	2	30	2	Gile Mountain
116	3	40	5	Gile Mountain
117	3	40	5	Gile Mountain
118	3	50	2	Gile Mountain
119	2	30	2	Gile Mountain
120	2	20	5	Gile Mountain
121	3	20	2	Gile Mountain
122	3	40	2	Gile Mountain
123	3	20	5	Gile Mountain
124	3	40	5	Gile Mountain
125	2	30	2	Gile Mountain
126	2	40	2	Gile Mountain
127	3	30	5	Gile Mountain
128	2	20	5	Gile Mountain
129	1	20	2	Gile Mountain
130	1	30	2	Gile Mountain
131	2	40	5	Gile Mountain
132	2	30	2	Gile Mountain
133	3	20	2	Gile Mountain
134	2	40	2	Gile Mountain
135	3	30	5	Gile Mountain

Traverse E, continued

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
136	3	30	2	Gile Mountain
137	5	40	5	Gile Mountain
138	·2	30	5	Gile Mountain
139	3	30	10	Gile Mountain
140	3	40	2	Gile Mountain
141	2	30	2	Gile Mountain
142	3	40	2	Gile Mountain
143	5	30	5	Gile Mountain
144	3	40	2	Gile Mountain
145	2	30	2	Gile Mountain
146	3	20	5	Gile Mountain
147	5	50	2	Gile Mountain
148	2	20	5	Gile Mountain
149	1	10	5	Gile Mountain
150	2	30	2	Gile Mountain
151	3	40	2	Gile Mountain
152	2	30	2	Gile Mountain
153	2	20	5	Gile Mountain

Traverse F

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
1	2	30	2	Gile Mountain
2	3	40	2	Gile Mountain
3	2	30	5	Gile Mountain
4	2	40	5	Gile Mountain
5	3	30	2	Gile Mountain
6	5	50	5	Gile Mountain
7	5	40	5	Gile Mountain
8	5	40	2	Gile Mountain

Traverse F, continued

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
9	3	20	5	Gile Mountain
10	1	30	2	Gile Mountain
11	2	40	5	Gile Mountain
12	5	30	2	Gile Mountain
13	3	40	10	Gile Mountain
14	3	40	2	Gile Mountain
15	2	30	2	Gile Mountain
16	3	40	5	Gile Mountain
17	3	40	5	Gile Mountain
18	5	50	2	Gile Mountain
19	2	30	10	Gile Mountain
20	3	20	5	Gile Mountain
21	1	30	2	Gile Mountain
22	3	20	5	Gile Mountain
23	1	30	5	Gile Mountain
24	1	20	5	Gile Mountain
25	3	40	2	Gile Mountain
26	2	30	2	Gile Mountain
27	3	40	5	Gile Mountain
28	3	50	5	Gile Mountain
29	2	30	2	Gile Mountain
30	5	20	5	Gile Mountain
31	3	40	2	Gile Mountain
32	10	75	2	Gile Mountain
33	2	30	5	Gile Mountain
34	2	20	2	Gile Mountain
35	3	20	2	Gile Mountain

Traverse F, continued

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
36	3	30	5	Gile Mountain
37	5	40	2	Gile Mountain
38	1	20	5	Gile Mountain
39	2	20	10	Gile Mountain
40	3	30	5	Gile Mountain
41	2	40	5	Gile Mountain

Traverse G

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
1	3	30	2	Gile Mountain
2	2	40	5	Gile Mountain
3	3	40	5	Gile Mountain
4	3	50	5	Gile Mountain
5	2	30	2	Gile Mountain
6	5	30	5	Gile Mountain
7	2	30	5	Gile Mountain
8	1	20	2	Gile Mountain
9	3	30	5	Gile Mountain
10	2	40	2	Gile Mountain
11	3	30	5	Gile Mountain
12	2	20	5	Gile Mountain
13	5	50	2	Standing Pond
14	10	50	2	Standing Pond
15	5	75	5	Standing Pond
16	5	40	5	Standing Pond
17	10	75	2	Standing Pond
18	5	50	5	Standing Pond
19	5	30	2	Standing Pond
20	5	75	5	Standing Pond

Traverse G, continued

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
21	2	30	10	Waits River
22	3	40	5	Waits River
23	5	30	2	Waits River
24	3	30	5	Waits River
25	2	30	5	Waits River
26	2	20	5	Waits River
27	3	30	2	Waits River
28	2	40	5	Waits River
29	5	30	2	Waits River
30	3	40	5	Waits River
31	2	30	2	Waits River
32	3	40	2	Waits River
33	2	40	5	Waits River
34	3	30	5	Waits River
35	5	40	2	Waits River
36	2	30	5	Waits River
37	3	40	5	Waits River
38	2	30	5	Waits River
39	2	20	5	Waits River
40	1	20	5	Waits River
41	3	40	10	Waits River
42	2	30	5	Waits River
43	3	20	2	Waits River
44	5	40	2	Waits River
45	2	30	2	Waits River
46	3	40	5	Waits River
47	3	40	2	Waits River

Traverse G, continued				
Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
48	3	50	5	Waits River
49	1	20	5	Waits River
50	2	30	2	Waits River
51	2	30	5	Waits River
52	1	30	5	Waits River
53	3	20	5	Waits River
54	3	20	2	Waits River
55	2	30	10	Waits River
56	2	40	5	Waits River
57	3	40	10	Waits River
58	2	30	2	Waits River
59	3	40	2	Waits River
60	2	30	2	Waits River
61	3	40	2	Waits River
62	2	50	5	Waits River
63	1	20	5	Waits River
64	1	30	2	Waits River
65	2	20	5	Waits River
66	2	30	5	Waits River
67	1	20	2	Waits River
68	2	40	10	Waits River
69	1	30	2	Waits River
70	3	20	5	Waits River
71	2	30	5	Waits River
72	2	30	2	Waits River
73	2	40	2	Waits River
74	3	20	2	Waits River

Traverse G, continued				
Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
75	5	50	2	Waits River
76	2	30	5	Waits River
77	3	20	5	Waits River
78	2	40	5	Waits River
79	3	30	2	Waits River
80	2	30	2	Waits River
81	1	30	10	Waits River
82	2	20	5	Waits River
83	2	30	5	Waits River
84	1	20	5	Waits River
85	2	30	2	Waits River
86	5	50	2	Standing Pond
87	5	40	2	Standing Pond
88	5	75	5	Standing Pond
89	3	75	2	Standing Pond
90	2	30	5	Gile Mountain
91	2	20	2	Gile Mountain
92	20	75	2	Amphibolite
93	25	75	2	Amphibolite
94	10	50	5	Amphibolite
95	2	20	5	Gile Mountain
96	2	30	5	Gile Mountain
97	1	20	2	Gile Mountain
98	3	30	2	Gile Mountain
99	5	40	2	Gile Mountain
100	2	30	2	Gile Mountain
101	3	30	2	Gile Mountain

Traverse G, continued

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
102	5	40	5	Gile Mountain
103	2	30	2	Gile Mountain
104	3	30	2	Gile Mountain
105	2	30	5	Gile Mountain
106	3	40	10	Gile Mountain
107	2	50	2	Gile Mountain
108	3	40	5	Gile Mountain
109	3	20	10	Gile Mountain
110	5	40	2	Gile Mountain
111	2	30	2	Gile Mountain
112	3	40	2	Gile Mountain
113	2	50	5	Gile Mountain
114	2	30	2	Gile Mountain
115	3	20	5	Gile Mountain
116	2	30	5	Gile Mountain
117	5	50	2	Gile Mountain
118	2	40	5	Gile Mountain
119	3	40	2	Gile Mountain
120	2	30	5	Gile Mountain
121	3	50	2	Gile Mountain
122	2	30	2	Gile Mountain
123	5	75	5	Gile Mountain
124	2	40	2	Gile Mountain
125	3	30	2	Gile Mountain
126	2	40	5	Gile Mountain
127	3	40	2	Gile Mountain
128	5	30	5	Gile Mountain

Traverse G, continued

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
129	2	30	2	Gile Mountain
130	1	20	2	Gile Mountain
131	3	20	5	Gile Mountain
132	2	30	5	Gile Mountain
133	3	40	2	Gile Mountain
134	2	30	5	Gile Mountain
135	3	30	5	Gile Mountain
136	3	40	2	Gile Mountain
137	2	30	2	Gile Mountain
138	5	40	2	Gile Mountain
139	3	50	5	Gile Mountain
140	2	40	5	Gile Mountain
141	2	30	10	Gile Mountain
142	3	20	5	Gile Mountain
143	5	40	2	Gile Mountain
144	3	40	10	Gile Mountain
145	2	30	5	Gile Mountain
146	3	40	5	Gile Mountain
147	5	50	2	Gile Mountain
148	2	30	2	Gile Mountain
149	3	40	5	Gile Mountain
150	3	20	2	Gile Mountain
151	2	40	2	Gile Mountain
152	3	30	5	Gile Mountain

Traverse GA

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
1	2	20	2	Waits River
2	3	40	5	Waits River
3	1	20	2	Waits River
4	5	30	2	Waits River
5	3	30	5	Standing Pond
6	2	50	10	Standing Pond
7	1	30	2	Gile Mountain
8	5	40	2	Gile Mountain
9	2	20	5	Gile Mountain
10	5	10	10	Gile Mountain
11	2	20	2	Gile Mountain
12	3	50	5	Gile Mountain
13	2	20	5	Gile Mountain
14	1	40	2	Gile Mountain
15	2	30	5	Gile Mountain
16	1	20	5	Gile Mountain
17	1	30	2	Gile Mountain
18	5	20	2	Gile Mountain

Traverse GB

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
1	3	20	5	Waits River
2	2	30	5	Waits River
3	5	40	2	Standing Pond
4	5	50	2	Standing Pond
5	5	40	2	Standing Pond
6	3	30	5	Gile Mountain
7	2	20	5	Gile Mountain
8	10	75	2	Amphibolite

Traverse GB, continued

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
9	5	50	2	Amphibolite
10	3	30	5	Gile Mountain
11	2	30	5	Gile Mountain
12	5	30	2	Gile Mountain
13	3	40	5	Gile Mountain
14	2	20	2	Gile Mountain
15	3	20	5	Gile Mountain
16	2	30	5	Gile Mountain
17	3	40	2	Gile Mountain
18	1	20	5	Gile Mountain
19	2	10	2	Gile Mountain
20	2	20	5	Gile Mountain

Traverse GC

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
1	3	40	2	Waits River
2	5	50	2	Standing Pond
3	5	75	2	Standing Pond
4	5	40	2	Standing Pond
5	5	50	2	Standing Pond
6	2	30	5	Gile Mountain
7	3	20	5	Gile Mountain
8	2	20	5	Gile Mountain
9	10	75	2	Amphibolite
10	5	50	2	Amphibolite
11	3	40	5	Gile Mountain
12	2	30	5	Gile Mountain
13	3	20	2	Gile Mountain
14	1	20	5	Gile Mountain

Traverse GC, continued

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
15	3	40	2	Gile Mountain
16	1	30	2	Gile Mountain
17	2	20	5	Gile Mountain
18	3	20	10	Gile Mountain
19	3	40	5	Gile Mountain
20	2	30	2	Gile Mountain
21	1	20	5	Gile Mountain
22	3	20	5	Gile Mountain
23	2	10	2	Gile Mountain
24	3	40	5	Gile Mountain

Traverse GD

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
1	5	50	2	Standing Pond
2	3	40	2	Standing Pond
3	3	40	5	Standing Pond
4	2	50	2	Standing Pond
5	5	30	2	Standing Pond
6	10	40	2	Standing Pond
7	2	20	10	Gile Mountain
8	1	30	2	Gile Mountain
9	3	20	5	Gile Mountain
10	2	40	2	Gile Mountain
11	2	10	2	Gile Mountain
12	5	20	5	Gile Mountain
13	1	30	2	Gile Mountain
14	3	20	5	Gile Mountain
15	2	10	5	Gile Mountain
16	3	40	10	Gile Mountain

Traverse GD, continued

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
17	2	30	2	Gile Mountain
18	2	20	2	Gile Mountain
19	5	30	5	Gile Mountain
20	3	10	2	Gile Mountain
21	1	20	5	Gile Mountain
22	2	10	2	Gile Mountain
23	5	30	10	Gile Mountain

Traverse H

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
1	2	40	2	Gile Mountain
2	5	40	2	Gile Mountain
3	3	20	2	Gile Mountain
4	3	40	10	Gile Mountain
5	2	20	5	Gile Mountain
6	1	30	2	Gile Mountain
7	2	20	10	Gile Mountain
8	3	40	5	Gile Mountain
9	2	30	2	Gile Mountain
10	5	40	2	Gile Mountain
11	3	20	5	Gile Mountain
12	5	30	2	Gile Mountain
13	2	30	5	Gile Mountain
14	3	40	5	Gile Mountain
15	5	30	2	Gile Mountain
16	2	30	2	Gile Mountain
17	3	40	5	Gile Mountain
18	5	30	5	Gile Mountain
19	1	20	2	Gile Mountain

Traverse H, continued

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
20	2	20	5	Gile Mountain
21	1	30	5	Gile Mountain
22	3	20	2	Gile Mountain
23	2	40	2	Gile Mountain
24	2	30	2	Gile Mountain
25	3	20	5	Gile Mountain
26	2	20	5	Gile Mountain
27	5	40	2	Gile Mountain
28	2	30	2	Gile Mountain

Traverse I

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
1	3	40	2	Gile Mountain
2	2	30	2	Gile Mountain
3	5	40	2	Gile Mountain
4	2	20	5	Gile Mountain
5	3	30	5	Gile Mountain
6	2	30	5	Gile Mountain
7	1	20	2	Gile Mountain
8	2	40	10	Gile Mountain
9	3	20	5	Gile Mountain
10	2	30	5	Gile Mountain
11	2	40	2	Gile Mountain
12	3	40	5	Gile Mountain
13	1	20	5	Gile Mountain
13	1	20	5	Gile Mountain
14	3	20	2	Gile Mountain
15	2	30	2	Gile Mountain
16	3	20	10	Gile Mountain

Traverse I, continued

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
17	2	10	2	Gile Mountain
18	5	30	5	Gile Mountain
19	3	40	10	Gile Mountain
20	2	30	5	Gile Mountain
21	3	20	2	Gile Mountain
22	3	30	5	Gile Mountain
23	5	40	2	Standing Pond
24	5	50	2	Standing Pond
25	3	40	2	Standing Pond
26	5	75	5	Standing Pond
27	5	30	2	Standing Pond
28	10	40	2	Standing Pond
29	5	40	2	Standing Pond
30	5	50	2	Standing Pond
31	3	40	2	Standing Pond
32	5	30	5	Standing Pond
33	5	40	2	Standing Pond
34	3	50	2	Standing Pond
35	5	50	2	Standing Pond
36	5	30	2	Standing Pond
37	5	40	5	Standing Pond
38	3	50	2	Standing Pond
39	5	40	2	Standing Pond
40	2	30	5	Waits River
41	2	20	10	Waits River
42	3	20	5	Waits River
43	2	30	5	Waits River

Traverse I, continued

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
44	2	40	2	Waits River
45	5	40	5	Waits River
46	2	20	2	Waits River
47	3	30	5	Waits River
48	2	50	10	Waits River
49	2	20	5	Waits River
50	1	20	5	Waits River
51	3	20	5	Waits River
52	2	30	2	Waits River
53	1	20	5	Waits River
54	2	40	2	Waits River
55	2	30	2	Waits River
56	3	20	5	Waits River
57	2	30	5	Waits River
58	3	40	2	Waits River
59	2	30	5	Waits River
60	2	40	10	Waits River
61	3	20	2	Waits River
62	1	20	5	Waits River
63	3	40	10	Waits River
64	2	30	5	Waits River
65	2	20	5	Waits River
66	3	20	2	Waits River
67	2	30	5	Waits River
68	3	20	2	Standing Pond
69	5	50	2	Standing Pond
70	2	30	2	Standing Pond

Traverse I, continued

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
71	3	40	5	Standing Pond
72	2	20	5	Standing Pond
73	3	75	5	Standing Pond
74	5	30	2	Standing Pond
75	2	20	5	Standing Pond
76	5	50	2	Standing Pond
77	3	40	5	Standing Pond
78	5	20	2	Standing Pond
79	2	30	2	Gile Mountain
80	3	20	2	Gile Mountain
81	2	40	5	Gile Mountain
82	3	30	2	Gile Mountain
83	2	20	5	Gile Mountain
84	1	10	5	Gile Mountain
85	3	40	2	Gile Mountain
86	2	30	2	Gile Mountain
87	3	30	5	Gile Mountain
88	2	20	2	Gile Mountain
89	3	40	2	Gile Mountain
90	5	40	2	Gile Mountain
91	2	30	2	Gile Mountain
92	3	30	2	Gile Mountain
93	2	40	5	Gile Mountain
94	1	20	2	Gile Mountain
95	1	10	5	Gile Mountain
96	2	30	5	Gile Mountain
97	1	20	2	Gile Mountain

Traverse I, continued

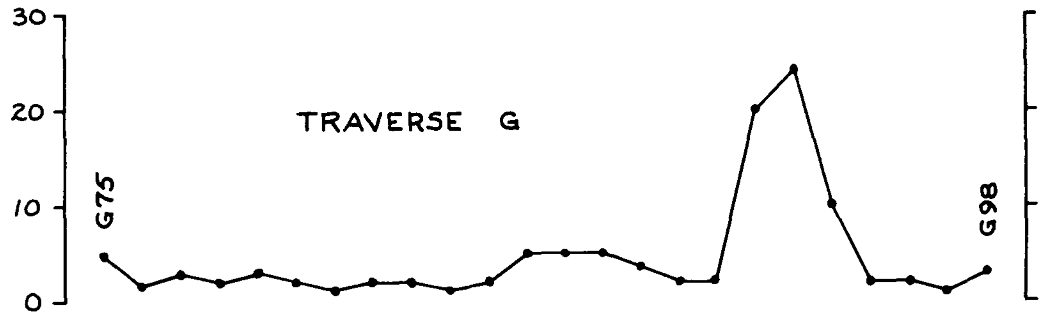
Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
98	3	40	2	Gile Mountain
99	2	30	5	Gile Mountain
100	3	30	5	Gile Mountain
101	5	40	2	Gile Mountain
102	3	75	10	Gile Mountain
103	2	30	2	Gile Mountain
104	3	40	5	Gile Mountain
105	2	40	2	Gile Mountain
106	3	50	2	Gile Mountain
107	5	40	5	Gile Mountain
108	2	30	2	Gile Mountain
109	3	20	5	Gile Mountain
110	2	30	5	Gile Mountain
111	1	20	5	Gile Mountain
112	3	40	2	Gile Mountain
113	2	30	2	Gile Mountain
114	3	30	2	Gile Mountain
115	5	40	5	Gile Mountain
116	3	30	5	Gile Mountain
117	2	40	2	Gile Mountain
118	3	40	2	Gile Mountain
119	2	30	2	Gile Mountain
120	3	20	5	Gile Mountain

Traverse J

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
1	5	50	2	Standing Pond
2	5	40	2	Standing Pond
3	2	40	5	Gile Mountain
4	3	20	2	Gile Mountain
5	2	30	2	Gile Mountain
6	3	40	5	Gile Mountain
7	2	30	2	Gile Mountain
8	1	20	2	Gile Mountain
9	3	40	5	Gile Mountain
10	2	30	2	Gile Mountain
11	3	20	2	Gile Mountain
12	1	20	2	Gile Mountain
13	2	40	10	Gile Mountain
14	2	30	5	Gile Mountain
15	3	30	2	Gile Mountain
16	3	20	5	Gile Mountain
17	5	40	2	Gile Mountain
18	2	30	2	Gile Mountain
19	3	40	5	Gile Mountain
20	5	50	2	Gile Mountain
21	2	30	2	Gile Mountain
22	3	40	5	Gile Mountain
23	2	30	10	Gile Mountain
24	2	40	2	Gile Mountain
25	1	20	5	Gile Mountain
26	2	30	2	Gile Mountain

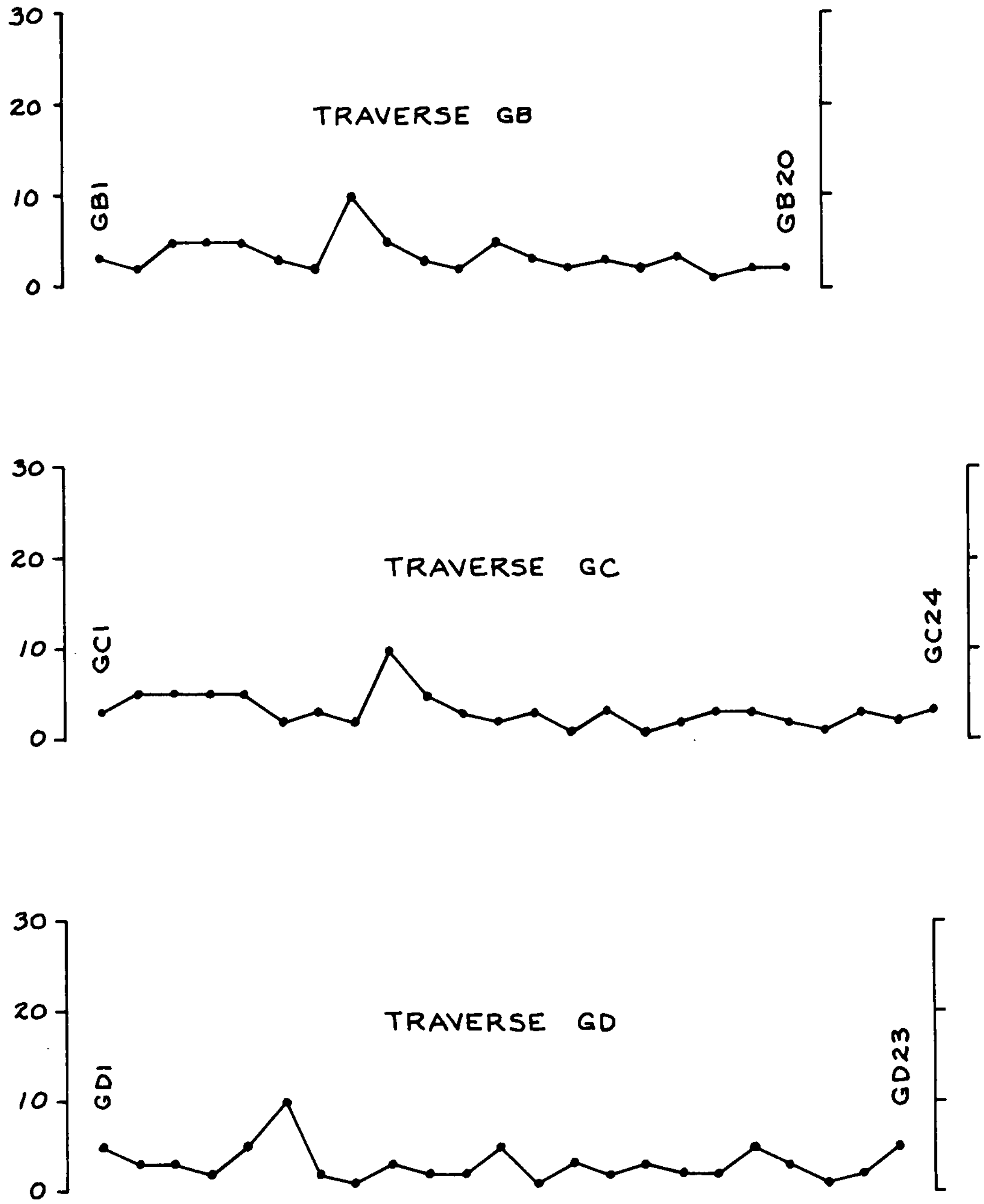
Traverse J, continued

Sample No.	ppm Cu	ppm Zn	ppm Pb	Underlying Formation
27	1	20	.5	Gile Mountain
28	3	40	5	Gile Mountain
29	2	30	2	Gile Mountain
30	5	75	2	Amphibolite
31	5	40	2	Amphibolite
32	5	50	2	Amphibolite
33	2	30	5	Gile Mountain
34	3	20	5	Gile Mountain
35	2	40	2	Gile Mountain
36	3	20	2	Gile Mountain
37	2	40	10	Gile Mountain



GEOCHEMICAL PROFILE SECTIONS

Scale: Ver. 1″ = 20 ppm Cu
Hor. 1″ = 1000′



GEOCHEMICAL PROFILE SECTIONS

Scale: Hor. 1″ = 1000′
Scale: Ver. 1″ = 20 ppm Cu