A GEOLOGICAL RECONNAISSANCE OF THE REGION AROUND THE EZ-JASPER CLAIMS, HASSELBERG LAKE AREA, 105A-13

Dr.T Liverton

Watson Lake, 23rd. February 2001

Watson Lake Mining Recorder's District

Work performed 18th. to 22nd. September 2000 on claims:
Jasper 1 (YB60248), 2 (YB60249), 3 (YB60250), 5 (YB60252), 7 (YB60254)
EZ 8 (YB91227), 13 (YB91232), 14 (YB91233), 15 (YB91234), 65(YB91290),
66 (YB91291), 73 to 82 (YB91302 to YB91311) for Stella Hearty.
Centre of area Latitude 60°57'N, Longitude129°54'W.

This report has been examined by the Geological Evaluation Unit under Section 53 (4) Yukon Quartz Mining Act and is allowed as representation work in the amount of $ 6895.55 .

M. Bell

for Regional Manager, Exploration and Geological Services for Commissioner of Yukon Territory.

CONTENTS

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LOCATION

The EZ and Jasper claims are located approximately 7 km NW of Hasselberg Lake on map sheet 105A-13 (Fig. 1). They are accessible by all-terrain vehicle (Argo 8x8) from the road to the Tuchitua River that leaves the Campbell Highway 200 m south of the CanTung (Nahanni Range Road) junction. Alternatively, there is a short airstrip suitable for small STOL aircraft at the NE end of Hasselberg Lake and the lake itself is excellent for seaplane use.

INTRODUCTION

The Hasselberg Lake area has been a producer of jade (nephrite) and small amounts of placer gold for many years. The jade produced has been in the form of boulders that are found within the fairly thick mantle of reworked glacial till below about 4200 feet elevation on the south facing slopes of the range to the NW of the lake.

The area around the EZ and Jasper claims have been sporadically prospected by Stella and Ron Hearty during at least the last 15 years. In addition to examining outcrop and float in the valleys they have conducted some geochemistry in the search for gold and base metals.

REGIONAL GEOLOGY AND LOCAL MINERALIZATION

The main published mapping is the Watson Lake G.S.C. 4 miles to one inch map sheet (Gabrielse, 1966) indicates that the north to NE part of the area is underlain by basic and ultramafic rock types (unit 11 of presumed Mississippian age) and that in the west by phyllite and siliciclastics (unit 1d: hornfels, schist and gneiss of presumed Proterozoic age): see Fig. 1. The presence of ultramafics is borne out by a 'disturbed' magnetic signature shown on the GSC 1:50,000 aeromagnetic sheet. However, the magnetic sheet shows that the magnetic anomalies extend southward at least to the main junction of the east creek (by UTM 51000E, 55000N). This could be the result of two conditions: either the ultrabasics extend further south than indicated on the geological map, or a considerable amount of

glacially transported ultramafic (magnetite-rich) float has been left by the last glaciation. The former possibility seems more likely considering the 1000' flight-height of the aeromagnetic survey.

Two scenarios are probable for gold mineralization in this area: (1) shear-zone hosted quartz veins or (2) 'listwänite-type' carbonate-altered thrust fault controlled mineralization (c.f. many of the showings around Atlin and also the Defot-Adsit area near Dease Lake). The presence of steeply-dipping roughly E-W striking quartz veins seen in the right branch of the main north creek some by the author 15 years ago would indicate the first possibility. This is also indicated by the lack of direct correlation of Cr with Au in the samples that the Heartys had analysed (see below), since Cr as mariposite phengite is prominent in the Atlin area.

The likeliest source of the jade boulders is the ultramafic rocks on the higher part of the ridge to the north (i.e. around 53000E, 58000N): see later notes.

THE ORIGINAL GEOCHEMICAL WORK

As an introduction the interpretation of the Heartys' geochemical results prepared during 1998 is given below:

GEOCHEMISTRY: NORTH TRIBUTARIES OF BOURGET CREEK, HASSELBERG LAKE AREA: RESULTS AS OF AUGUST 1998

The majority of geochemical sampling carried out over the claim block since 1990 was of outcropping rock, only two stream sediment and four water samples having been collected. Too few analyses are available to allow any sophisticated interpretation to be used. Despite this, some obviously anomalous metal values have been obtained and these indicate an immediate area for further work. Here Au, Ag, Cu, Co, Cr and Mg values will be examined (see Figs. 3 to 10).

Au: The majority of gold values in the rock have been returned as <5 ppb. Two, however, show what are clearly anomalous and a third is of marginal ore-grade (2000 ppb = 0.058 oz/short ton). The sample on the ridge (28791002) and two from the creek bed (MB199814 & 28792003) define a possible WNW-ESE trend. This is assuming that all samples represent in-situ material (the southeasternmost certainly does).

Ag: Silver values are either at or below detection at <1ppm, except for 28791002, which at 62 ppm (1.81 oz/short ton) is clearly anomalous.

As: Arsenic also shows two of the previously mentioned samples to be clearly anomalous (>50,000 & 1160 ppm), so this element is likely a good 'pathfinder' for gold. in addition sample 28796007 gave a result of 210 ppm which, with the remainder of

analyses showing <10 to 20 ppm, may indicate mineralization further to the north of the interesting gold results.

Cu: Copper does not show any distinctly anomalous results. Further work in the future might allow an estimate of reasonable background values and give a better interpretation.

Co: Cobalt does not obviously correlate with gold and arsenic. Values from specimens along the main creek (879010 southward to R95) are elevated in Co relative to the NW part of the sampled area. This likely reflects input from basic/ultramafic rocks outcropping in the NE corner of the sketch map area, i.e. some of that unit may extend further south than indicated on the GSC map.

Cr: There is not a direct correlation of Cr with Au. Values are variable between 40 and 370 ppm in rock, and likely reflect varying lithologies. If a value of <0.5ppb in water (19805W) represents background, then the 6.5 and 7.0 ppm results for 199802W and 199803W are indicating elevated concentrations derived from the basic/ultramafic bedrock.

Mg: Magnesium values were examined in order to gain some information regarding rock type. Analyses from the NW part of the area have from 0.01 to 2.72% Mg and those from the central creek from 0.01 to 10.05%. The NW area is mapped as phyllite etc., so the lower contents of Mg are consistent with this. Values of several % indicate basic or even ultrabasic rock types in the central creek (the low value of MB199814 is consistent with the sample being from a quartz vein, as has been indicated) .

THE 2000 SEASON GEOLOGICAL RECONNAISSANCE

During the autumn of 2000 the readily accessible parts of the claim blocks were traversed as a first step in geological mapping of the area. Location of outcrops was by use of GPS receiver. Geological notes are given on Fig. 12, as well as the outer boundaries of the claim blocks. These have been adjusted slightly from those shown on the Government claim sheet to fit the observed GPS coordinates of several claim posts that were located.

The southernmost rock exposures seen were in the canyon, just north of the creek junction with Bourget Creek (450780E, 6754518N). Here the canyon cuts through andalusite-bearing schist. To the immediate north are micaceous quartzites and basaltic lavas, showing considerably less-well developed foliation than the schist. Basic volcanics and sediments continue up the east side of the right fork of the creek to 52183E, 56310N. On the opposite side of the creek amygdaloidal and pink zeolite (?) altered volcanics crop out along the ridge crest (51571E, 55610N). The western side of the upper part of the east fork of the creek has outcrop of diorite, with hornfels in the sediments immediately south. Further west, the opposite slopes of the dividing ridge have frequent outcrop of pyroxenite. Further exposures of gabbro and ultramafic intrusions are found in the NE corner of the

region examined. The approximate contact of the intrusions is shown on Figs. 11 & 12. The trend of the contact indicates that the basic/ultramafic rocks are indeed intrusive since the irregular geometry of the contact is not consistent with a faulted contact. As an intrusive basic-ultrabasic suite these intrusions likely correlate with the Permian suite to the north, on map sheet 105H (D. Murphy, pers. comm., see also Murphy, 2000).

Within the volcanic-sediment sequence in the south of the area (50780E, 54518N) is a steeply-dipping, E-W striking quartz vein from which the anomalous gold value was obtained. This is found at the mouth of the canyon which has been eroded into micaceous quartzites. Due to the creek still being in flood it was not possible to resample the material this last season.

At the extreme NE corner of the area traversed (53690E,59070N) between coarse outcropping pyroxenite and gabbro is a zone of serpentine alteration. This contains pebble-sized pieces of jade. The ultramafics also contain significant areas of extreme alteration where the rock consists of talc and siderite, sometimes with the carbonate pseudomorphing pyroxene. The greatest extent of this talc alteration is within the VIVI claims of J.P. Ross, but It has been noted elsewhere, particularly at (53794E, 57654N), just north of the EZ claim boundary, and at (52895E, 57090N) on the EZ 20 claim.

Three types of mineral exploration target are possible:

i) Within the volcanic-metasedimentary sequence the known Au-bearing quartz vein(s) are an obvious prospect. In addition, there is the possibility of listwänite-type Au mineralization to occur within the volcanic sequence, particularly in the western portion of the EZ claims, where sheared volcanics have been observed.

ii) The region of ultramafics is the likely source of the placer jade. Serpentine and jade have been observed.

iii) The amount of talc alteration of the ultramafics is significant. Depending on Fe content of the talc, it might represent an economic target.

RECOMMENDATIONS

This present work has been only an initial reconnaissance of the claims. The whole claim block deserves careful geological mapping and proper prospecting. There is sufficient rock exposure on the EZ 71-84, 1-4, and west to the 8-23 claims for a good job of mapping to be possible. Much of the EZ 32-56 claims would have considerable till cover, but the creek and spurs are likely to show some rock exposure. At the same time as mapping is carried out, any volcanics or quartz veins should be sampled for rock geochemistry to prospect for gold. Prospecting for both jade and talc would be simply by examination of all exposures possible over the outcrop of the ultramafics. In addition, since the earlier geochemical work has indicated the possibility of quartz-vein hosted gold

between EZ40 and EZ67 claims, some detailed geochemical sampling should be attempted there. At present it is uncertain whether the depth of till cover would permit the use of soil sampling (a considerable depth of cover was note below 4200 ft. elevation immediately to the east). Two approaches to prospect this gold occurrence are recommended:

i) Stream sediment sampling to obtain heavy mineral concentrates at close-spaced intervals (say 100m) up the creek to see whether a sharp cutoff in gold content occurs, indicating the approximate location of outcrop below and;

ii) To establish a small grid over the region and sample soils for geochemistry (for both Au and potential pathfinder elements). A minimum of 8 grid lines with sample interval of 25m is estimated (Fig 13).

Estimates of the time needed for this work are:

A. Follow-up of the known gold.

Stream sediment: collection and concentration of large samples, e.g. 20 l bucket-full.	7	days
Grid preparation and sampling	12	days

B. EZ 1-23, 24-40 and 47-56 portion of the claims:

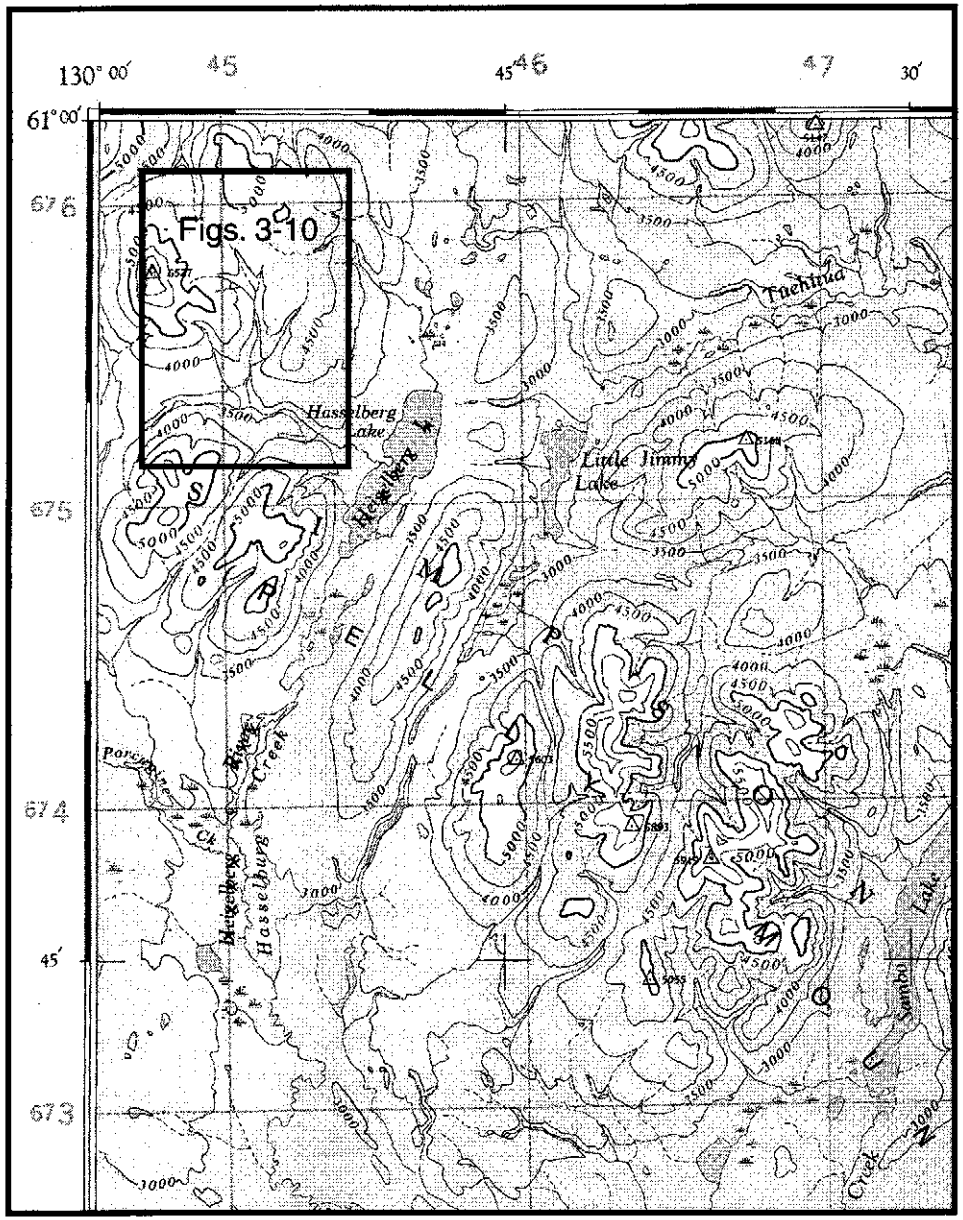
Geological mapping:	10	days
Prospector	5	days
Rock geochemistry, volcanics (say)	40	samples
Sampling of known quartz veins (assay for Au)	20	samples

C. EZ 72-84 portion of claims:

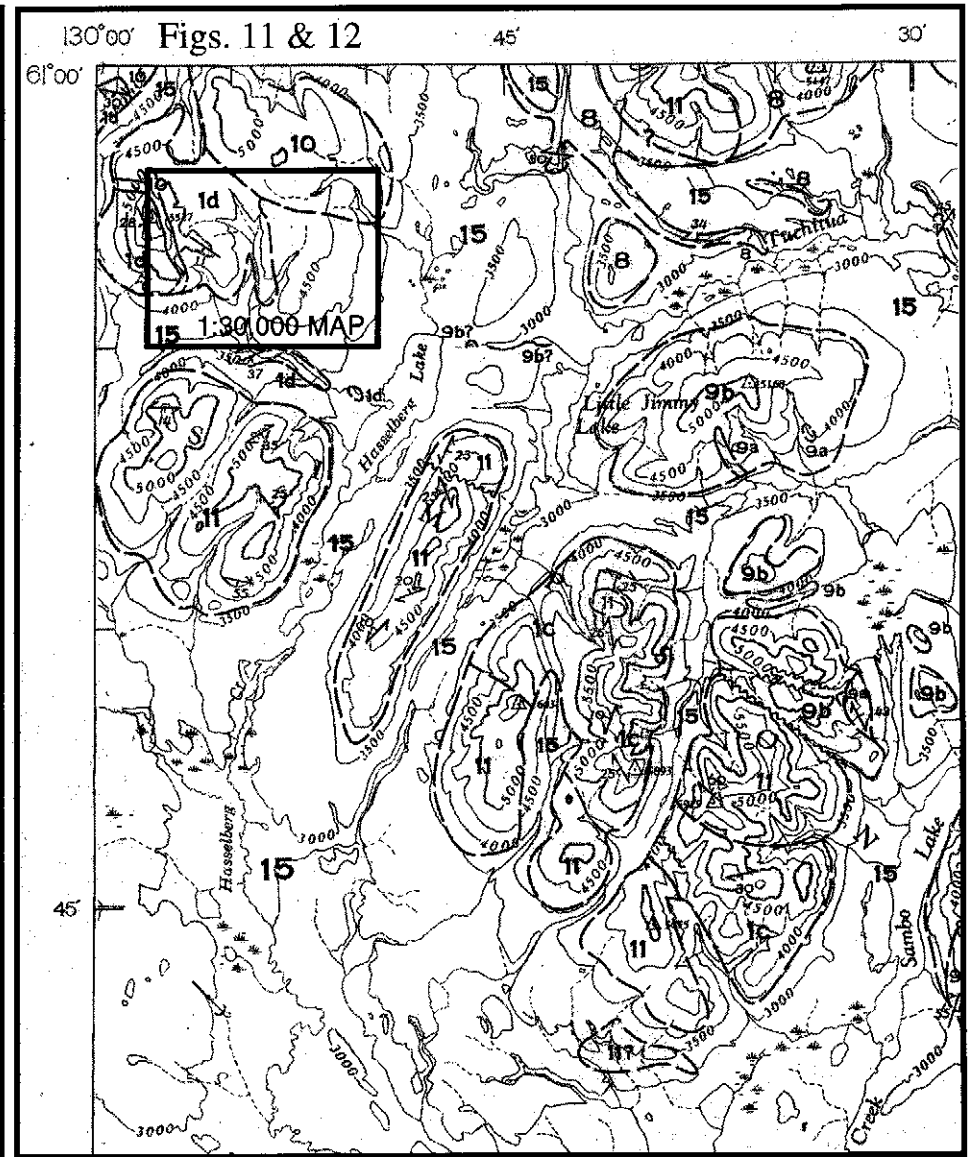
Geological mapping	4	days

Estimated costs are:

Subsistence 22 man-days @ $35.00	$ 770.00
Truck	$ 120.00
Argo transport in field	$ 2200.00
Soil / sediment analysis (256 @ $27.00)	$ 6912.00
Rock analysis (40 @ $33.00)	$ 1320.00
Geologist's time 14 @ $400.00	$ 5600.00
Prospector say total 10 days @ $120-	$ 1200.00
Total	$ 18122.00



LOCATION MAP: 105A (1:250,000)



REGIONAL GEOLOGY: WATSON LAKE SHEET
(ENLARGED TO 1:250,000 SCALE)

Figure 1: Topographic and geological maps giving location of the detailed maps.

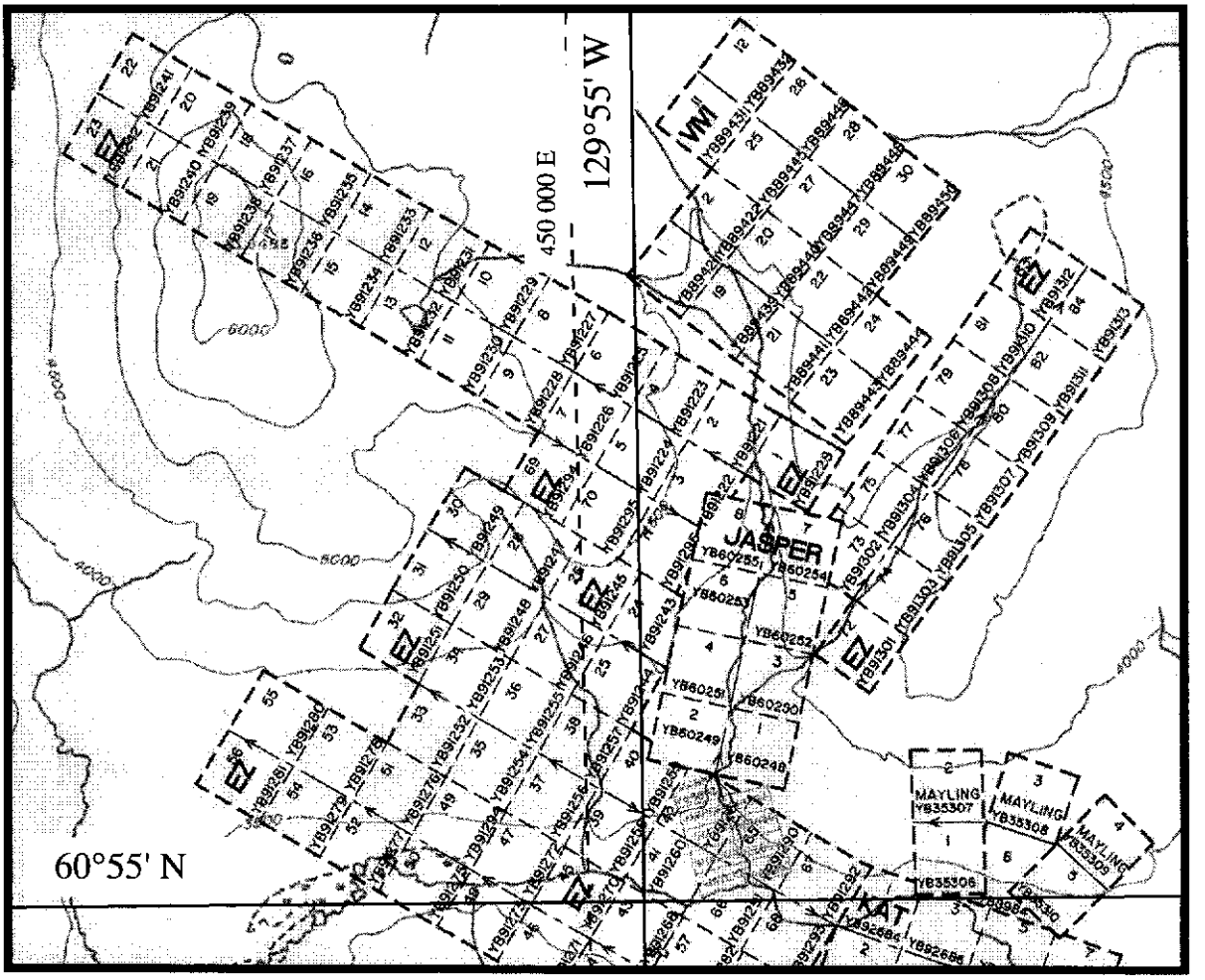


Figure 2. Portion of claim map 105A-13 showing the EZ and Jasper claim blocks. Scale 1:50,000.

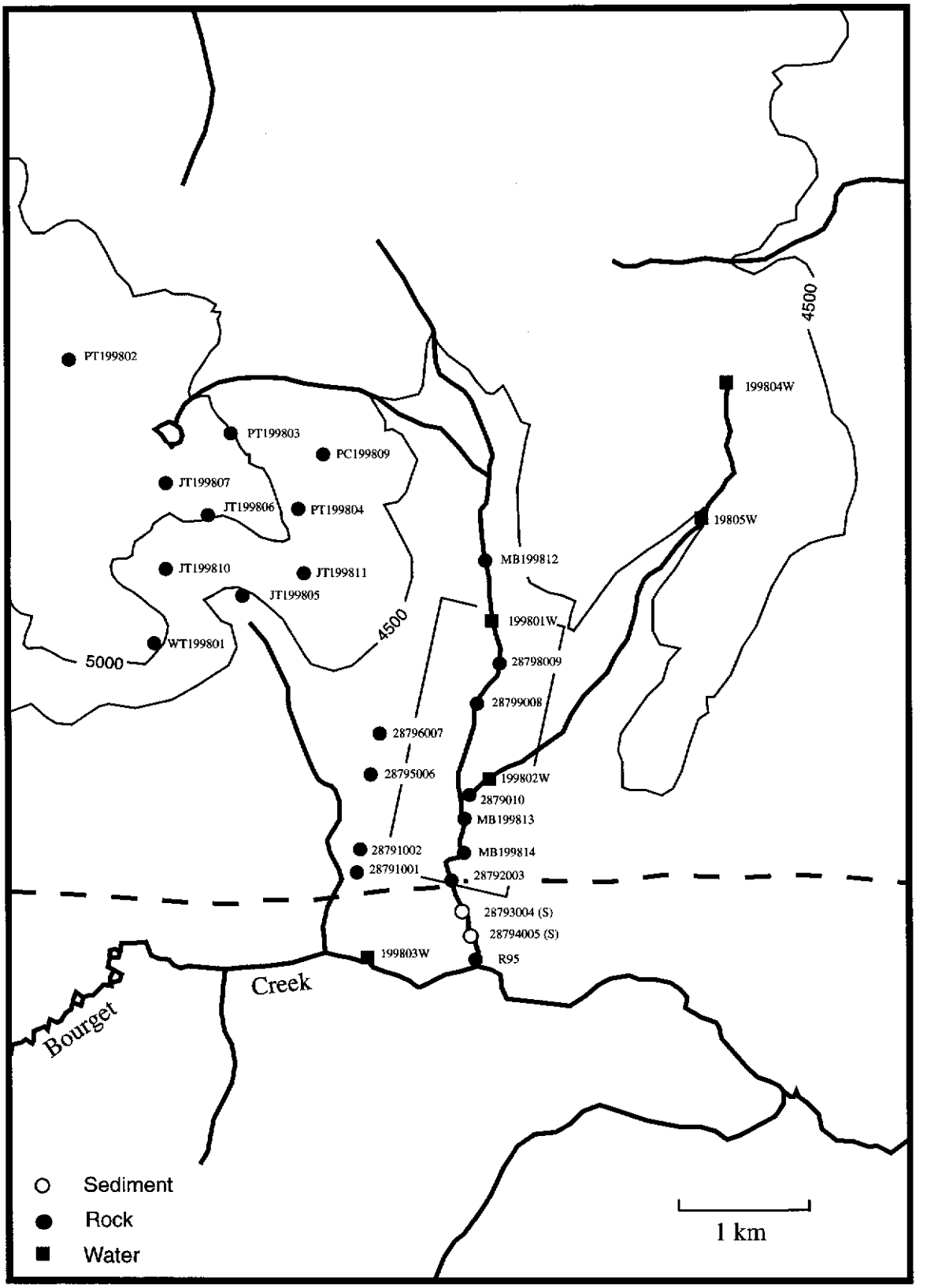


Figure 3. Geochemical sampling.

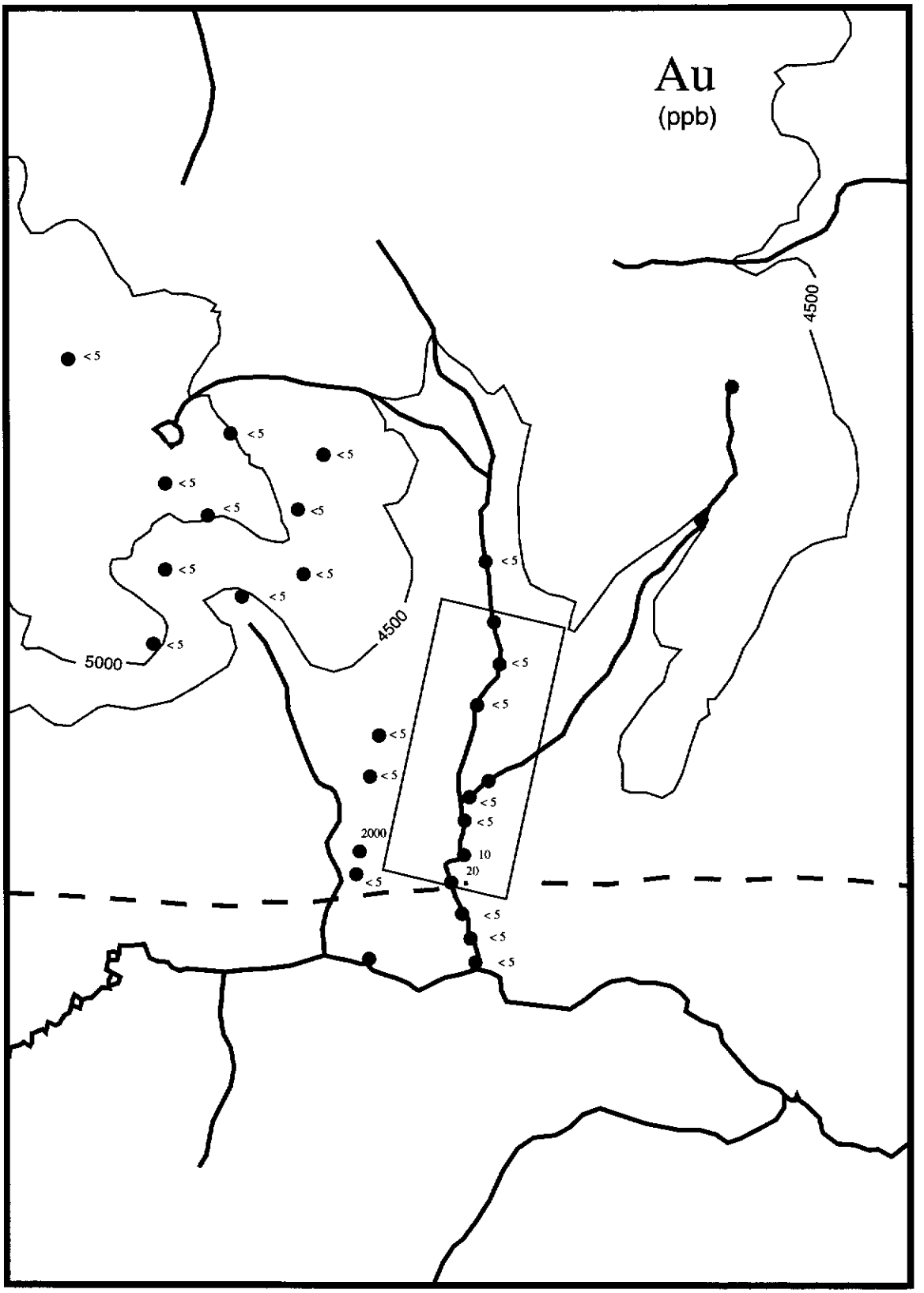


Figure 4. Geochemistry: Au results.

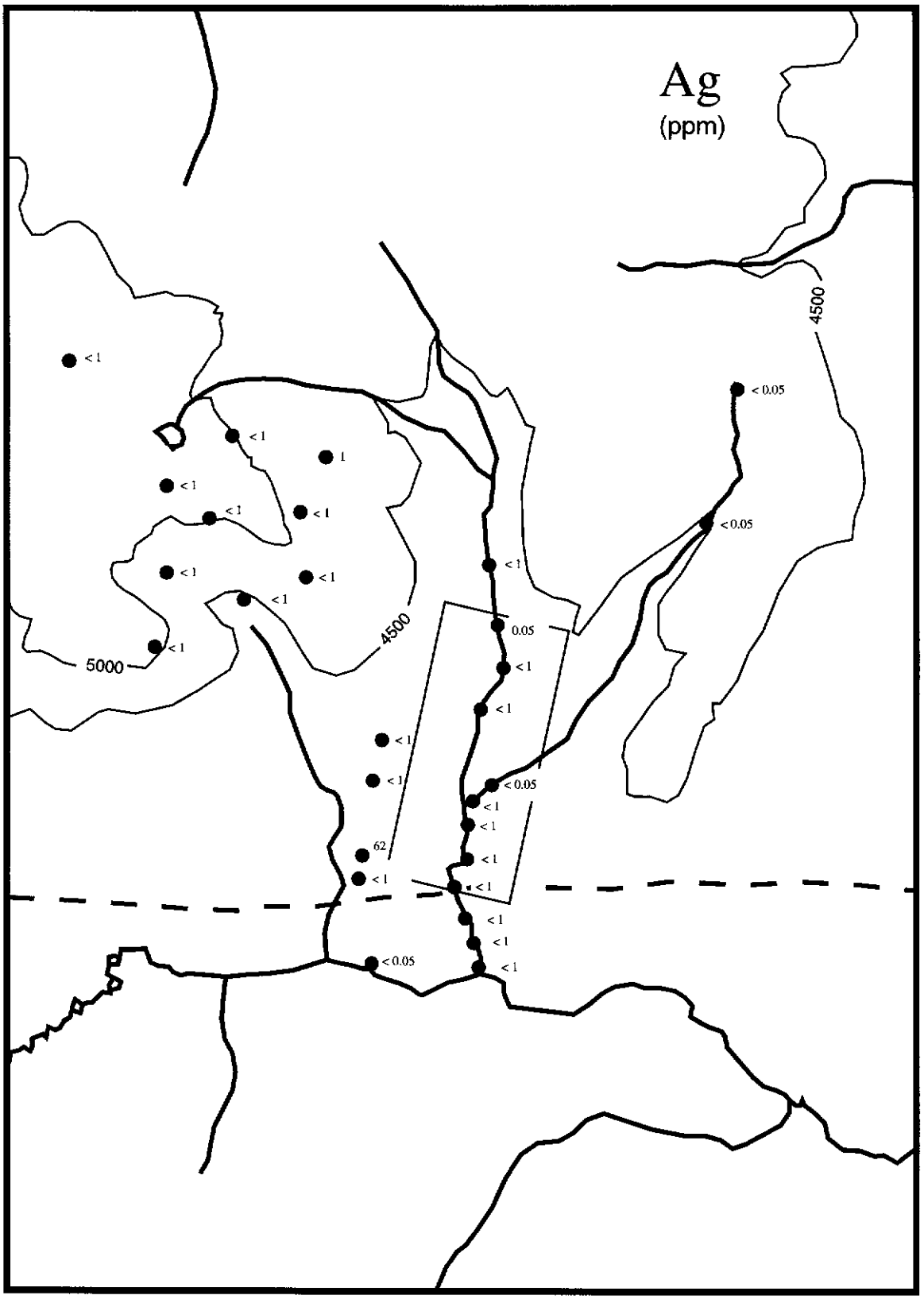


Figure 5. Geochemistry: Ag results.

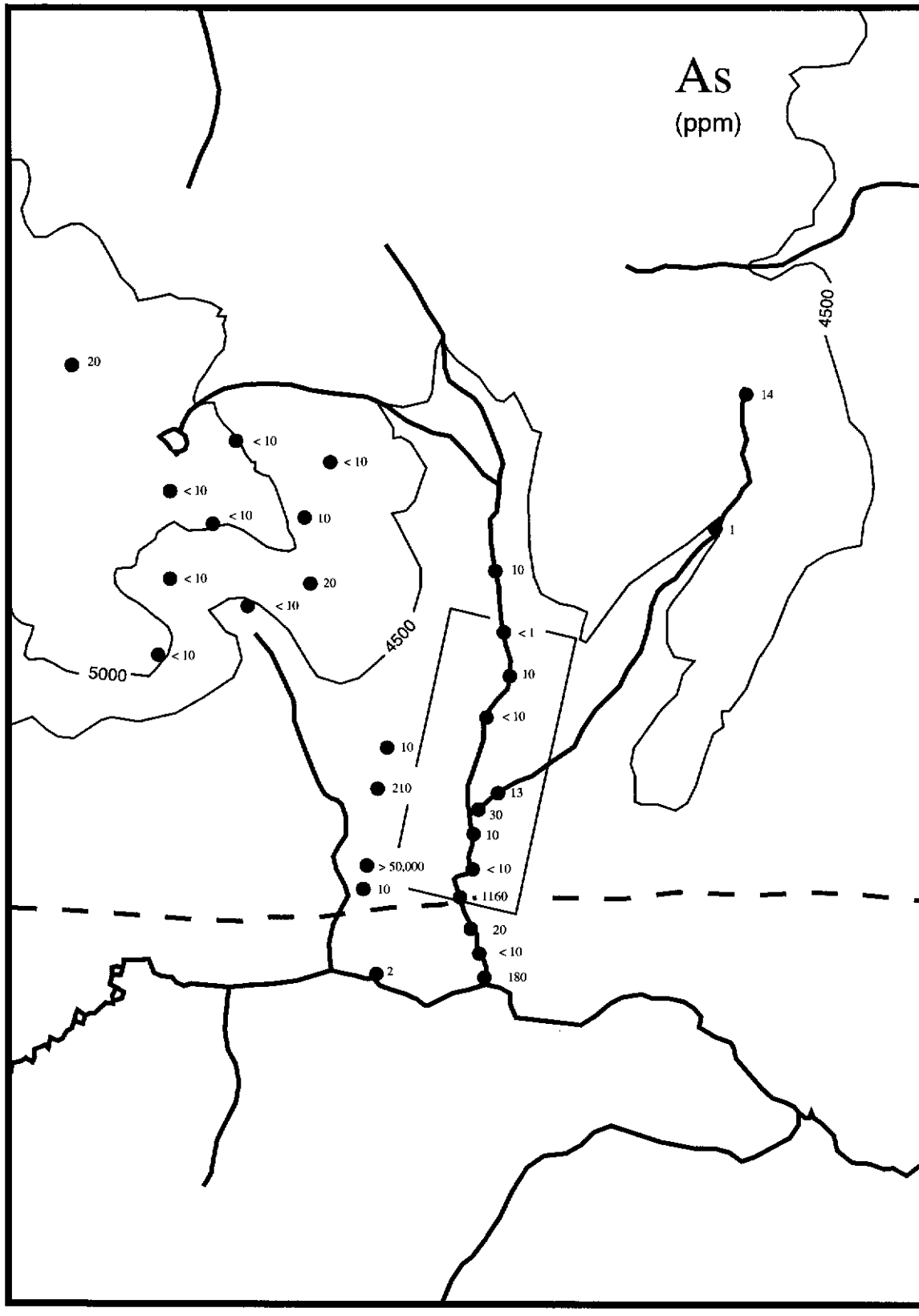


Figure 6. Geochemistry: As results.

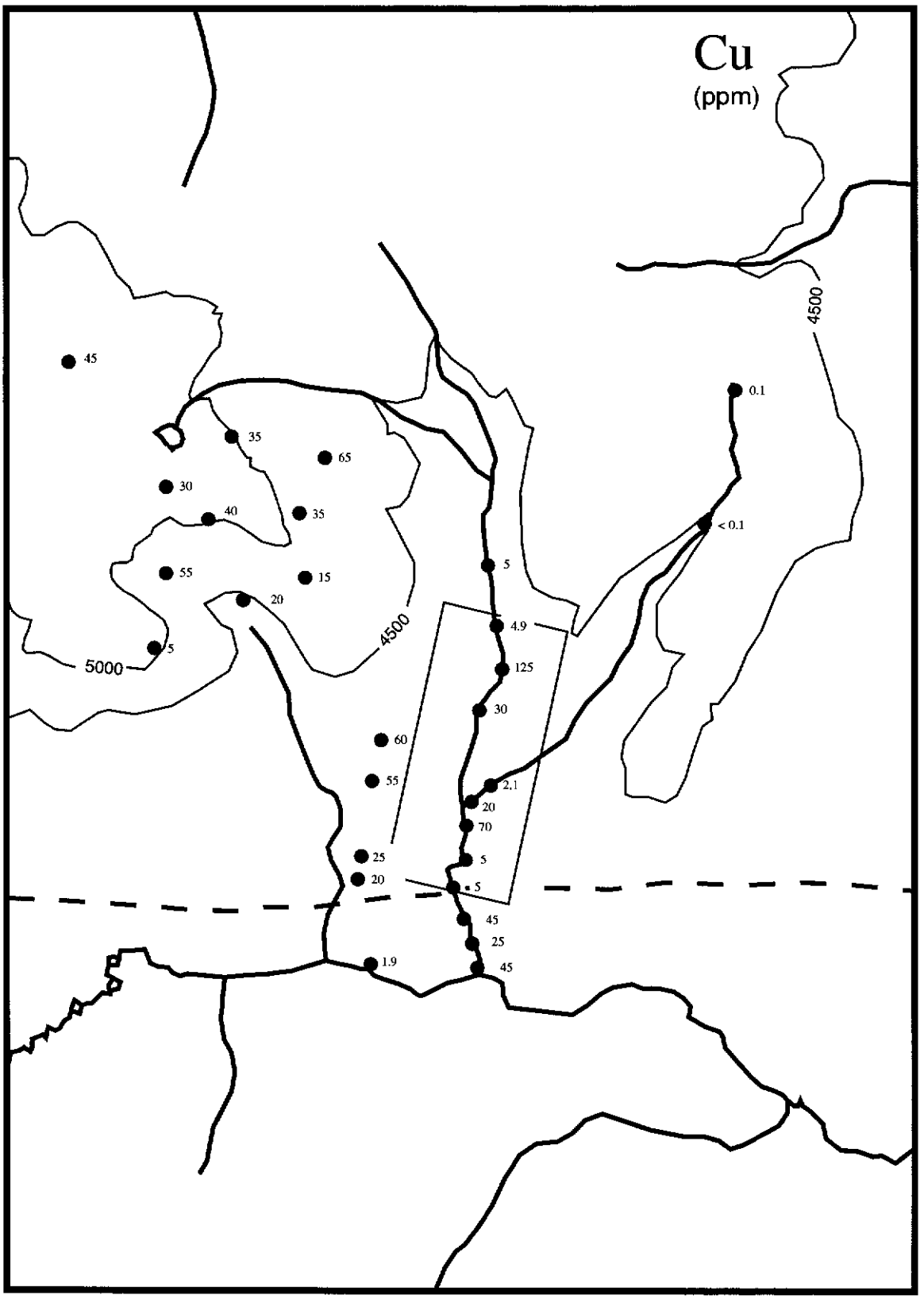


Figure 7. Geochemistry: Cu results.

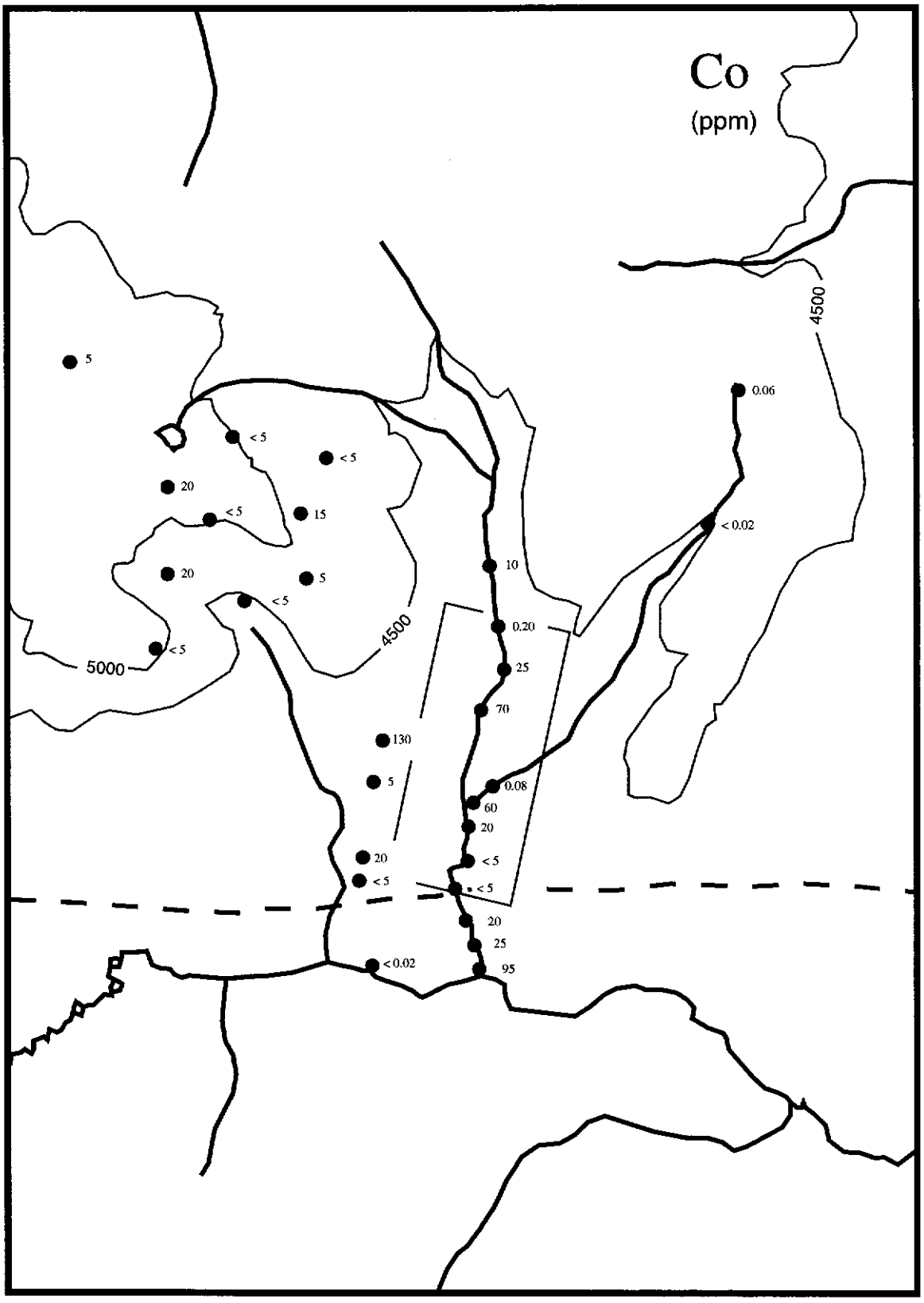


Figure 8. Geochemistry: Co results.

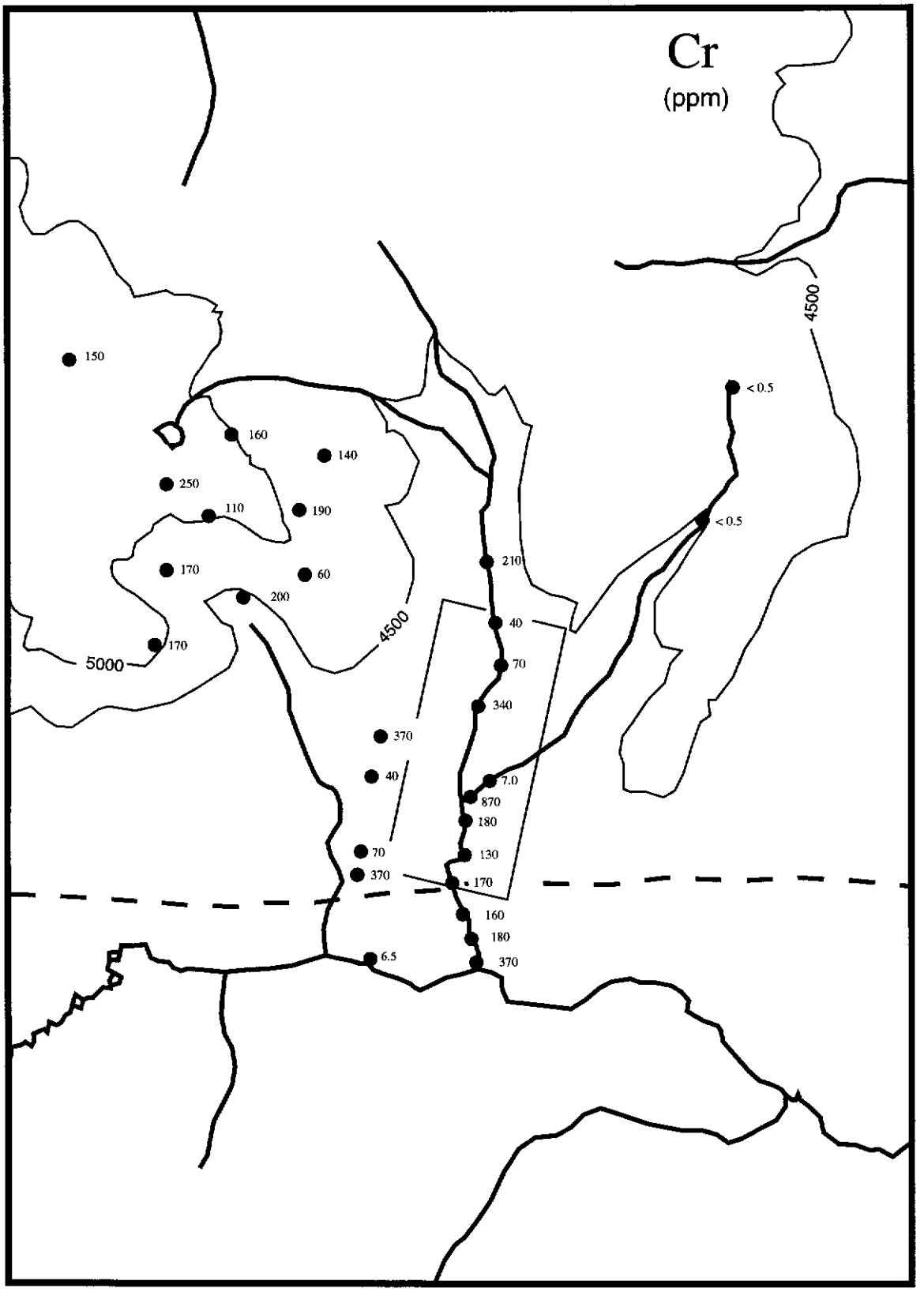


Figure 9. Geochemistry: Cr results.

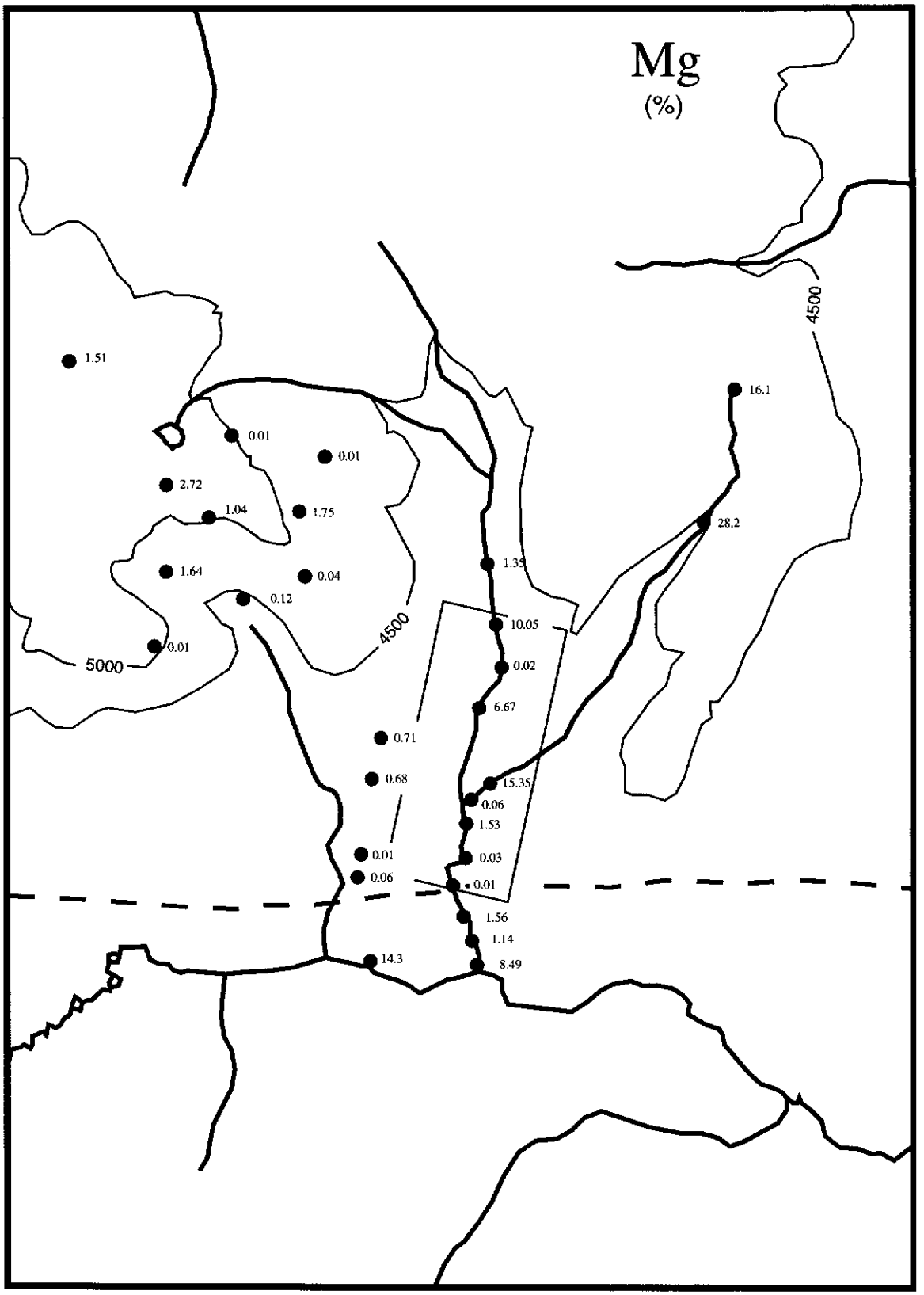


Figure 10. Geochemistry: Mg results (%).

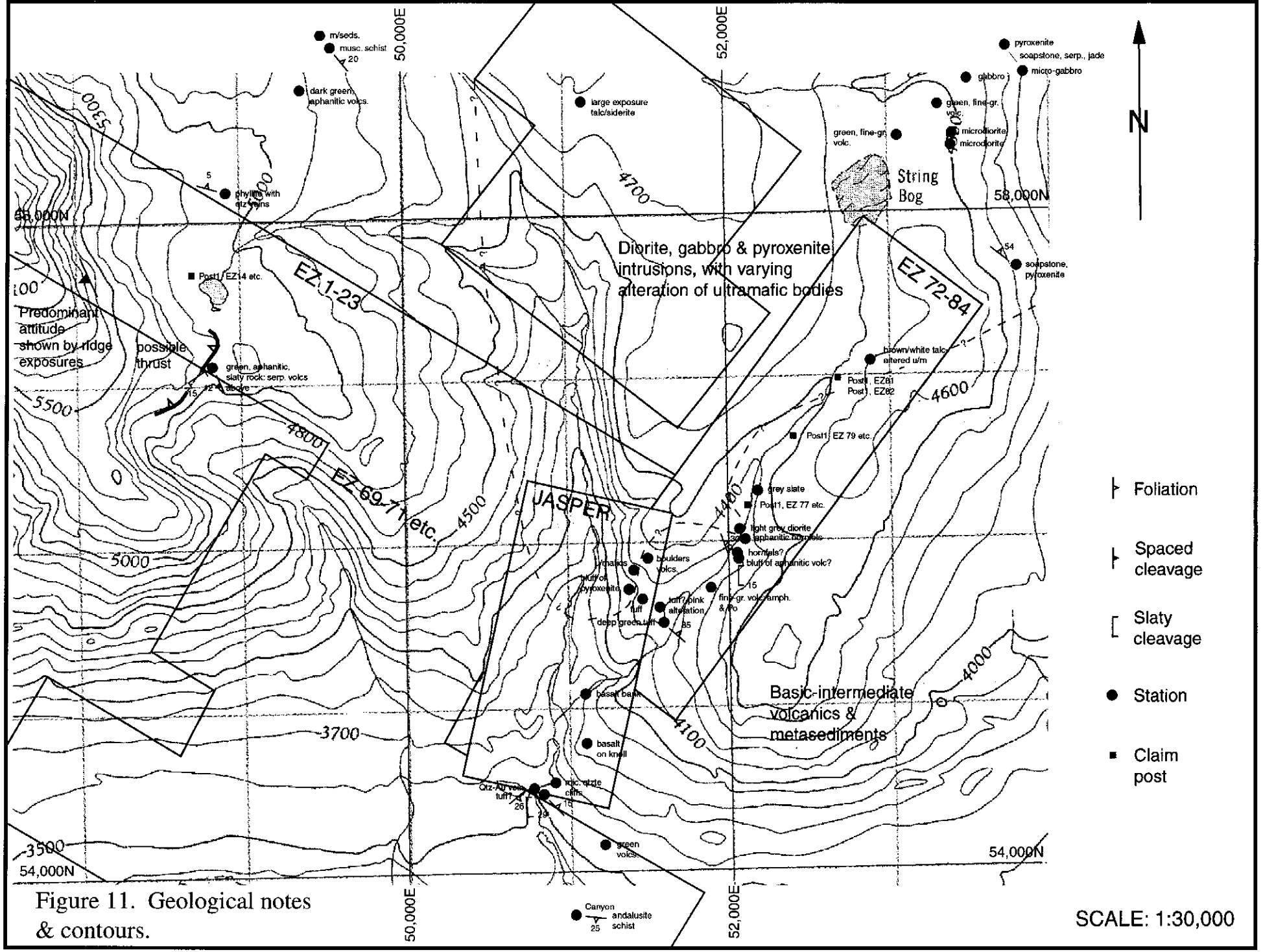


Figure 11. Geological notes & contours.

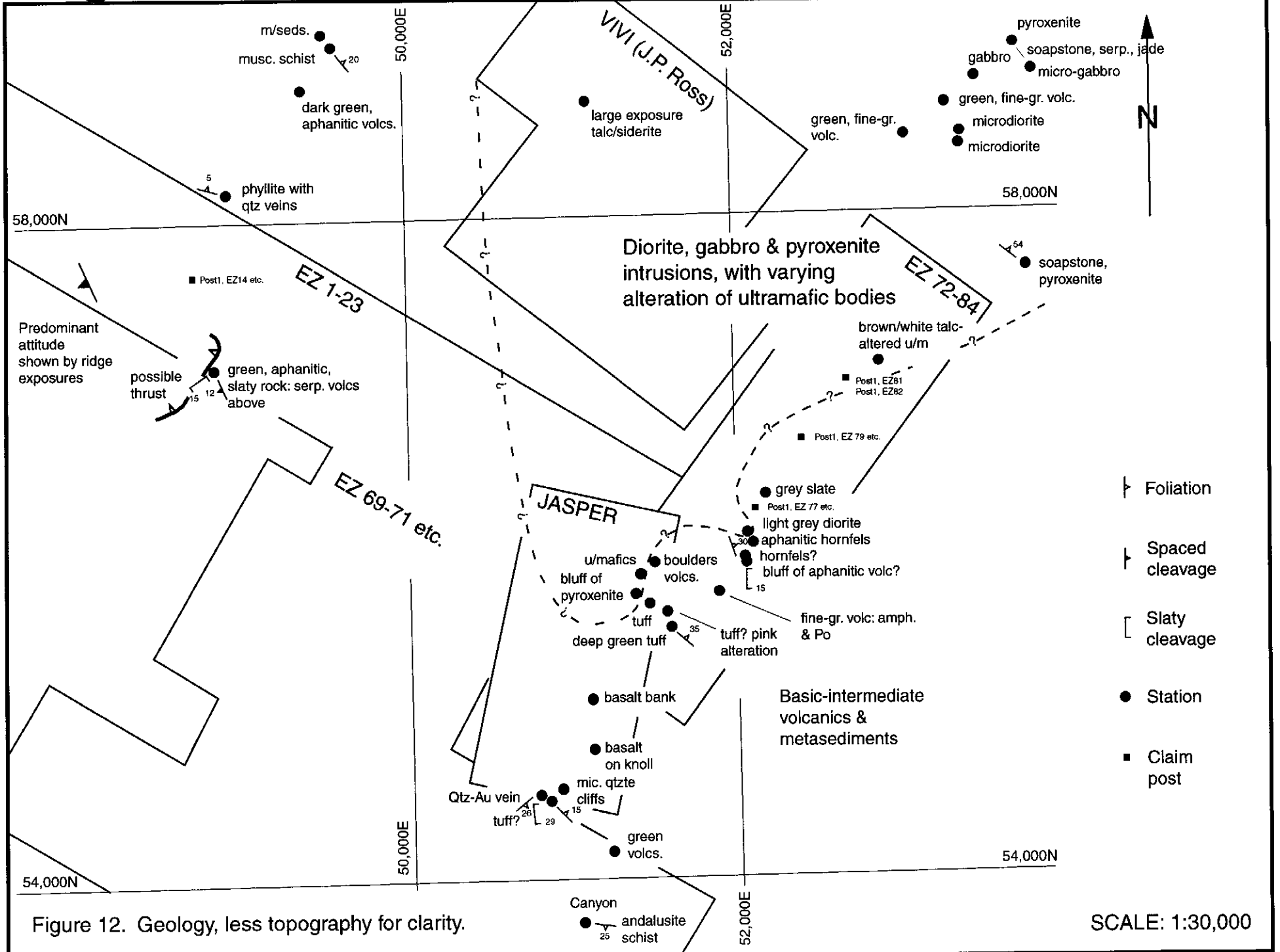


Figure 12. Geology, less topography for clarity.

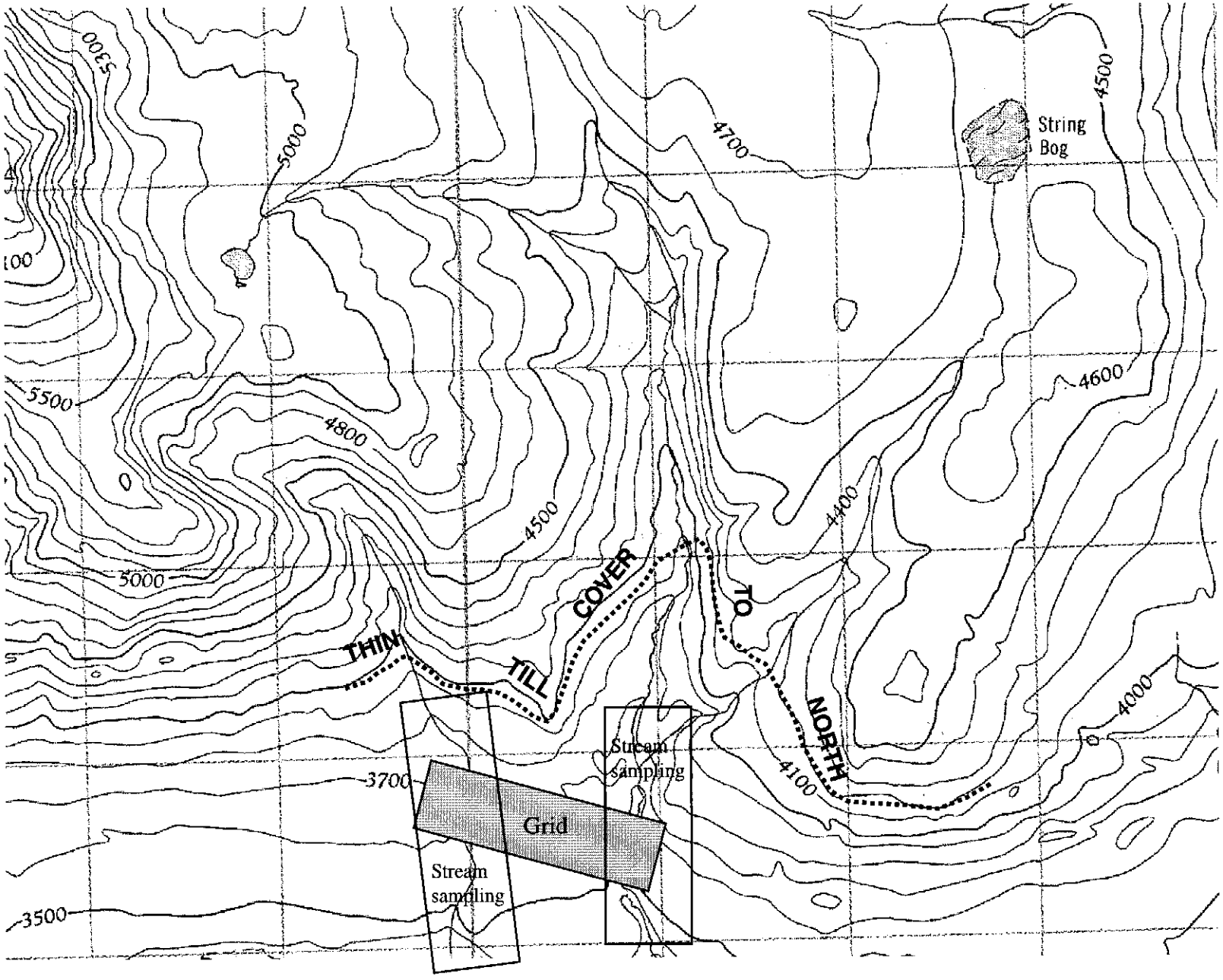


Figure 13. PROPOSED GRID LAYOUT AND STREAM GEOCHEMISTRY FOR Au

APPENDIX 1: GEOLOGICAL NOTES

Abbreviated notes are given here for the various locations with GPS coordinates available (easting first, northing second). All attitudes of foliation are given as strike and dip relative to magnetic north.

51040, 53735 east side of canyon. Andalusite schist, foliation form dip slope 065/25SW.

50780, 54518 aphanitic green-grey ? volcanic. Prominent foliation 050/26SE, spaced cleavage 174/29E.

50828, 54479 micaceous quartzite in east face of canyon. Foliation 135/15NE. Iron-stained, but no sulphides obvious.

50902, 54552 east side of canyon. Cliffs below are micaceous quartzite.

51097, 55086 10 m high bank of basalt boulders: mostly very fine-grained, but shows occasional 2mm plagiocalse laths.

51091, 54788 aphanitic ? basalt on knoll.

51213, 54172 green-grey aphanitic volcanic in 10m high bluff.

53794, 57654 exposure, 15 x 10m, of soapstone (anastomosing foliation 127/54NE). Fresh pyroxenite 5m south.

52895, 57090 brown/white spotted talc-altered ultramafic: pyroxenes pseudomorphed.

52692, 56998 Post 1, EZ 81; Post 1, EZ82.

52406, 56640 Post 1, EZ 79 etc.

52183, 56310 suboutcrop of grey slate.

52123, 56217 Post 1, EZ 77 etc.

52067, 56074 W. side of creek: light grey, ≤1mm grainsize diorite.

52091, 56009 Opposite side of creek: green-grey aphanitic ? hornfels exposure for 50m south.

52053, 55935 distinctly foliated quartzite or hornfels. Foliation 160/30E.

52060, 55905 aphanitic green ? volcanic.

51883, 55728 green fine-grained volcanic: radiating 0.5mm amphiboles and trace of

pyrrhotite.

51571, 55610 green, aphanitic volcanic with ovoid pink masses to 10 cm (breccia?).

51596, 55518 deep green ? tuff. Foliation 130/35NE.

51459, 55663 tuff continues down west side of ridge.

51376, 55726 bluff of pyroxenite. Ultramafics continue to: 51405, 55844.

51490, 55913 many boulders of volcanics. Contact probably just below (west).

53064, 58463 Deep green, fine-grained volcanic.

53316, 58653 Further exposure of same.

53408, 58479 grey-green, 1.5mm g/s diorite.

53402, 58402 microdiorite, lightly finer-grained.

53504, 58810 SW side of knob. Mottled deep and light green rock, ≤1mm grainsize. Probably altered μgabbro.

53561, 58839 similar μgabbro, but 30m on 350°mag the rock shows 4mm pyroxenes.

53748, 59004 fine grained pyroxenite on ridge. 2mm g/s.

53690, 59070 exposure 5x5m containing jade in serpentinite.

51117, 58707 Large outcrop area of white soapstone with irregular 1 cm veins of brown carbonate.

49389, 58813 dark green aphanitic ? volcs.

48931, 58186 mass of white quartz, trend 130°M, in phyllite. Foliation in phyllite 105/5N.

48833, 57128 Base of steep slopes, green, aphanitic slaty rock - may be highly sheared volcanic. Slaty cleavage 056/15SE; spaced cleavage 155/12SW. Float of serpentinised volcanics above.

48717, 57692 Post 1, EZ 14 etc.

49578, 59070 micaceous schist, foliation 140/20NE.

Timothy Lewis

Water Lake, 23rd February 2001

REFERENCES

Gabrielse, H. 1966. Watson Lake map sheet. Geological Survey of Canada map 19-1966, scale 1:253440.

Murphy, D.C. 2000. Preliminary geological map of part of 'Tuchitua River North' area (105H/4), southeastern Yukon (1:50 000 scale). Open File 2000-16, Indian and Northern Affairs Canada, Exploration and Geological Services Division Yukon Region.

COST STATEMENT

Dr. T. Liverton	4 days @ $700 per day	$ 2800.00
Dr. T. Liverton: travel	1 day @ $400	$ 400.00
Report preparation		$ 1500.00
Field assistants (2)	{3x 11-hour days &	
	2x 8-hour days @ $15.00 per hour}	$ 1470.00
Truck, 1 return trip	190 km @ 0.42	$ 79.80
Argo	5 days @ $100.00	$ 500.00
Fuel		$ 60.00
Supplies		$ 85.75
Total		$ 6895.55

STATEMENT OF QUALIFICATIONS

Timothy Liverton

Academic qualifications:
BSc in geology and geophysics, University of Sydney conferred, 1965
BSc (Hons) in economic geology, University of Adelaide, conferred 1968
PhD in geochemistry, petrology and structural geology, University of London 1992,
Thesis title: 'Tectonics and Metallogeny of the Thirtymile Range, Yukon Territory, Canada' pp. 325.

26 years experience in mining and exploration geology in Australia, Canada, USA, Norway, Portugal and Brazil

1997-1998 Visiting Professor in Economic Geology at the Universidade de Brasília

Fellow of the Geological Society, Member of the Geological Society of America, Fellow of the Geological Association of Canada, Member of the Society of Economic Geologists.