

means of the SIP method. There are additional class 2 anomalous zones of gold in the spots of (A10.5 - A11.5)·(B10 - B11.5)·(C10 - C11)·(D11) and (E9.5 - E10)·(G9.5)·(H10) in the south of the SIP survey area, and class 2 anomalous zones of silver almost overlap these. This area is located at an upper limestone formation and no particular mineralization was recognized through the geological survey. However, referring to anomalous areas of gold and silver in the neighborhood of stocks of tonalite and quartz diorite along A. Sabul outside the area of the geophysical survey, as described later, concealed intrusions of tonalite and quartz diorite could be distributed in this anomalous area.

### 5-2-2 Areas Outside of Geophysical Survey

#### (1) Correlation between path-finder elements

The correlation among all path-finder elements and the graph are shown in Table II-3-8 and Fig. II-3-19. The correlation between zinc and silver is poor but others are favorable. Especially the correlation between zinc and lead is highly favorable with the correlation coefficient of 0.75 in consideration that the expected deposit in this area is the lead-zinc deposit.

#### (2) Histogram

The maximum and minimum values of each path-finder element are gold 270 ppb, 1 ppb, silver 3.9 ppm, 0.1 ppm, copper 660 ppm, 15 ppm, lead 3000 ppm, 1 ppm, and zinc 4700 ppm, 28 ppm, and a histogram was prepared after converting these values to logarithms. While silver which has low grade values shows an asymmetric L-shape distribution, other elements of gold, copper, lead and zinc show normal frequency distribution (Fig. II-3-18).

#### (3) Anomalous Areas

As was done in the analysis results of processing of the geophysical survey area, the average value, standard deviation and resulting thresholds ( $H + S.D.$ ,  $H + 2 \times S.D.$  and  $H + 3 \times S.D.$ ) were calculated. The threshold of ( $H + S.D.$ ) was set as the anomalous value of Class 2 and the threshold of ( $H + 2 \times S.D.$ ) was set as the anomalous value of Class 1, and any area which indicated an anomalous value of 2 points or greater was regarded as an anomalous area. Since the samples were collected in as uniform a distribution as possible by collecting them at a rate of

average 7 samples per km<sup>2</sup>, anomalous values were extracted out of the drawn contour of equi-analysis values (Table II-3-7, Fig. II-3-21 - 26).

The area where the class 2 anomalous area in overlap of copper, lead and zinc with gold and silver exist and are distributed in the Barute outcrop to Patahajang silicification zone to A. Mabobar of the A. Mandagang upstream in a range of 3 km long by 1 km wide. Within this anomalous area, there are class 1 anomalous zones of copper, lead and zinc in the Barute - Patahajang area and in the A. Mababar upstream.

Class 2 anomalous areas of gold and silver are distributed in the ridge of T. Mandagang and from K. Simpang Pining to the A. Saladi upstream. Stocks of tonalite - quartz diorite intrude in the anomalous zones of Barute - A. Mabobar and A. Saladi associating with the anomalous area. The mountain ridge of T. Mandagang consists of lower Limestone Formation and is in the same geological conditions as the A. Saladi anomalous area, thus there is a possibility of concealed tonalite and quartz diorite intruding into the Limestone Formation as similar to the situation in the physical survey area.

Table II-3-7. List of Mean Value, Standard Deviation and Threshold Value in Muara Sipongi Area B (Pagar Gunung - Patahajang Area)

a) SIP Survey Area

Element	Max	Min	Mean	S.D. (log)	M+S.D.	M+2xS.D.	M+3xS.D.
Au (ppb)	175	1	5	0.5958	21	83	
Ag (ppm)	10.5	0.1	0.29	0.5268	0.97	3.29	
Cu (ppm)	415	12	48	0.2757	91	172	324
Pb (ppm)	9,500	1	20	0.7463	115	643	3,587
Zn (ppm)	4,900	31	127	0.4561	364	1,042	2,979

(population: 229)

b) Outside Area of SIP Survey

Element	Max	Min	Mean	S.D. (log)	M+S.D.	M+2xS.D.	M+3xS.D.
Au (ppb)	270	1	11	0.5884	45	175	
Ag (ppm)	3.9	0.1	0.25	0.4430	0.71	1.98	
Cu (ppm)	660	15	58	0.2634	106	195	359
Pb (ppm)	3,000	1	26	0.5395	90	313	1,084
Zn (ppm)	4,700	28	198	0.3593	274	627	1,436

(population: 198)

**Table II-3-8: List of Coefficient of Correlation between Path-finder Elements on Geochemical Survey in Muara Sipongi Area B**

**a) SIP Survey Area**

	Au	Ag	Cu	Pb	Zn
Au		0.550666	0.192713	0.562439	0.512393
Ag			0.120403	0.622877	0.321714
Cu				0.335302	0.718206
Pb					0.752058
Zn					

(population: 229)

**b) Outside area of SIP survey**

	Au	Ag	Cu	Pb	Zn
Au		0.463509	0.505905	0.476082	0.427362
Ag			0.038335	0.410928	0.156529
Cu				0.471667	0.770808
Pb					0.782223
Zn					

(population: 198)



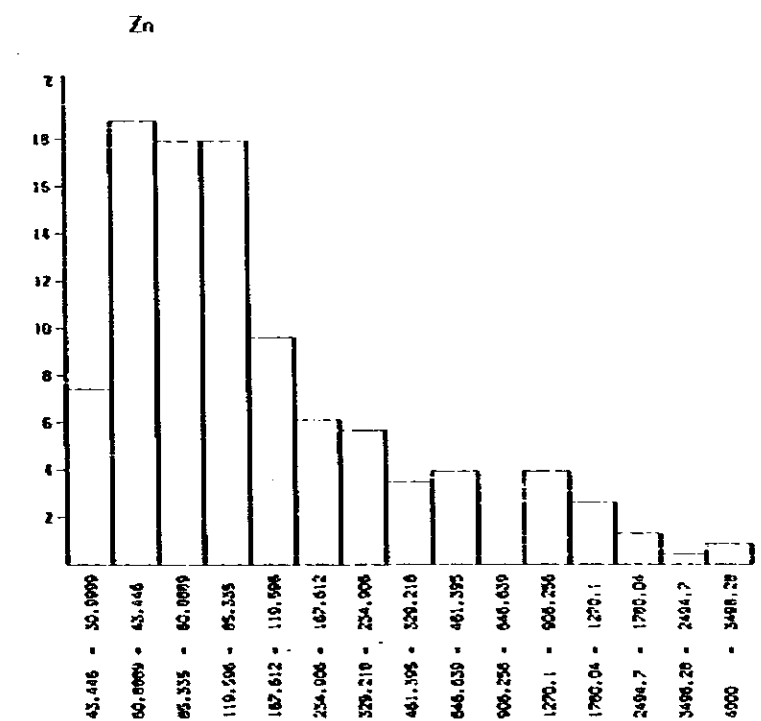
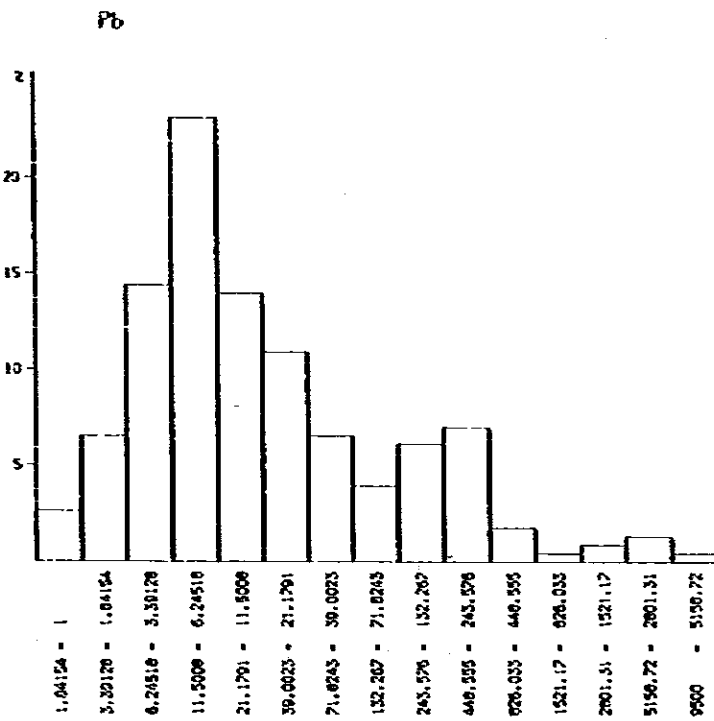
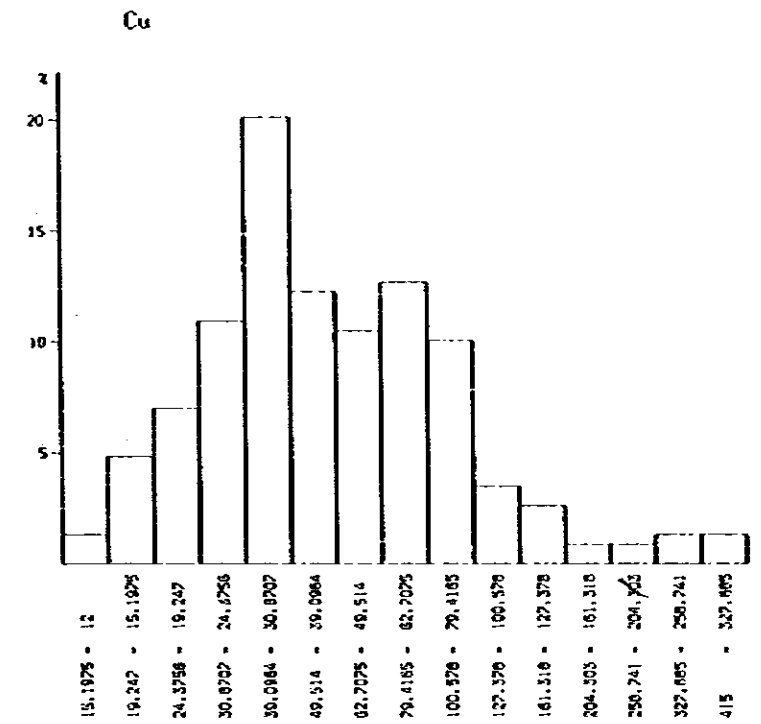
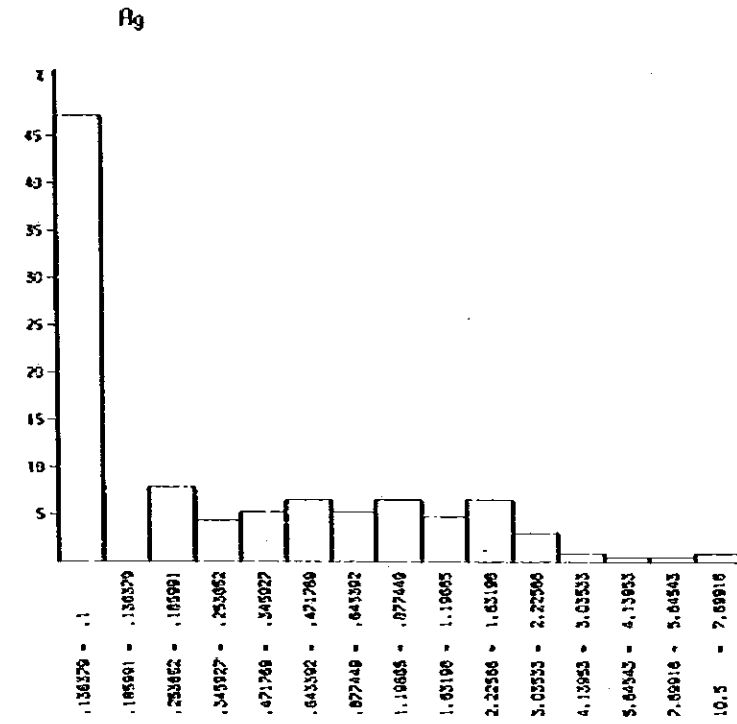
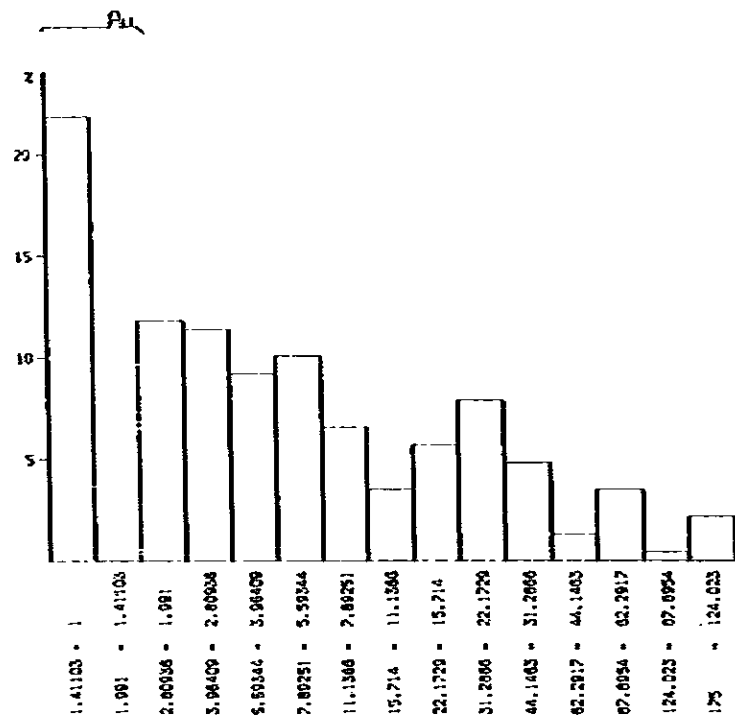
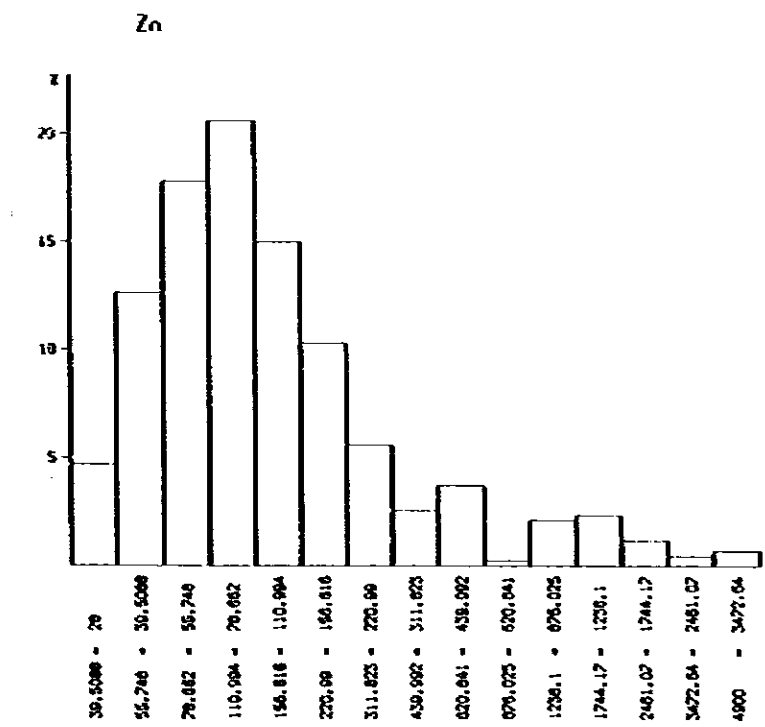
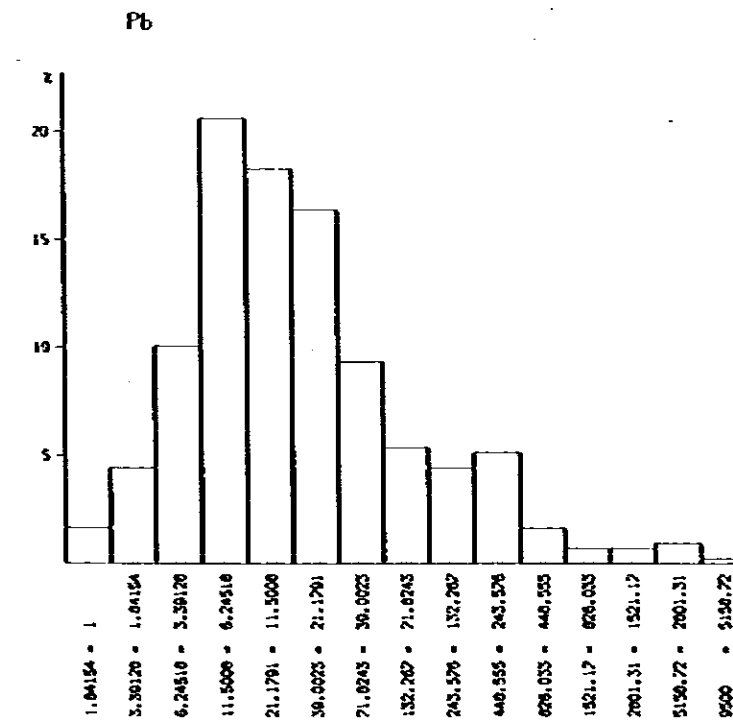
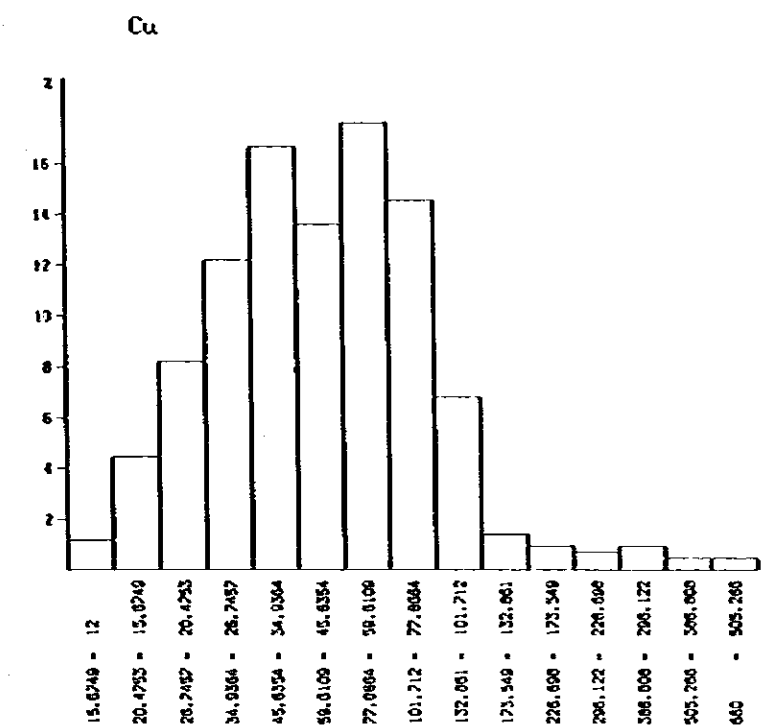
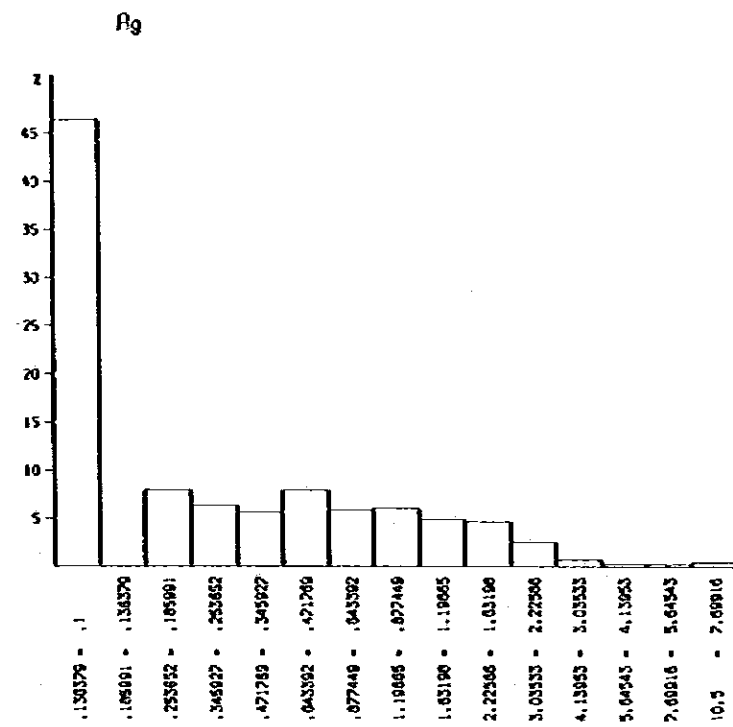
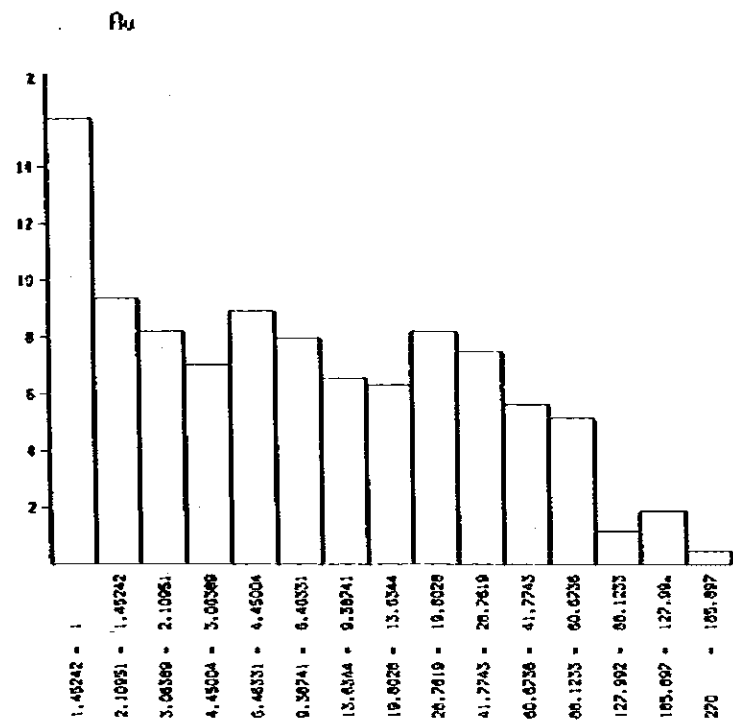


Fig. 11-3-18 Histogram of Geochemical Analysis in Kuala Sipongi Area B (SIP survey area)



Histogram of Geochemical Analysis in Muara Sipongi Area B (Outside area of SIP survey)

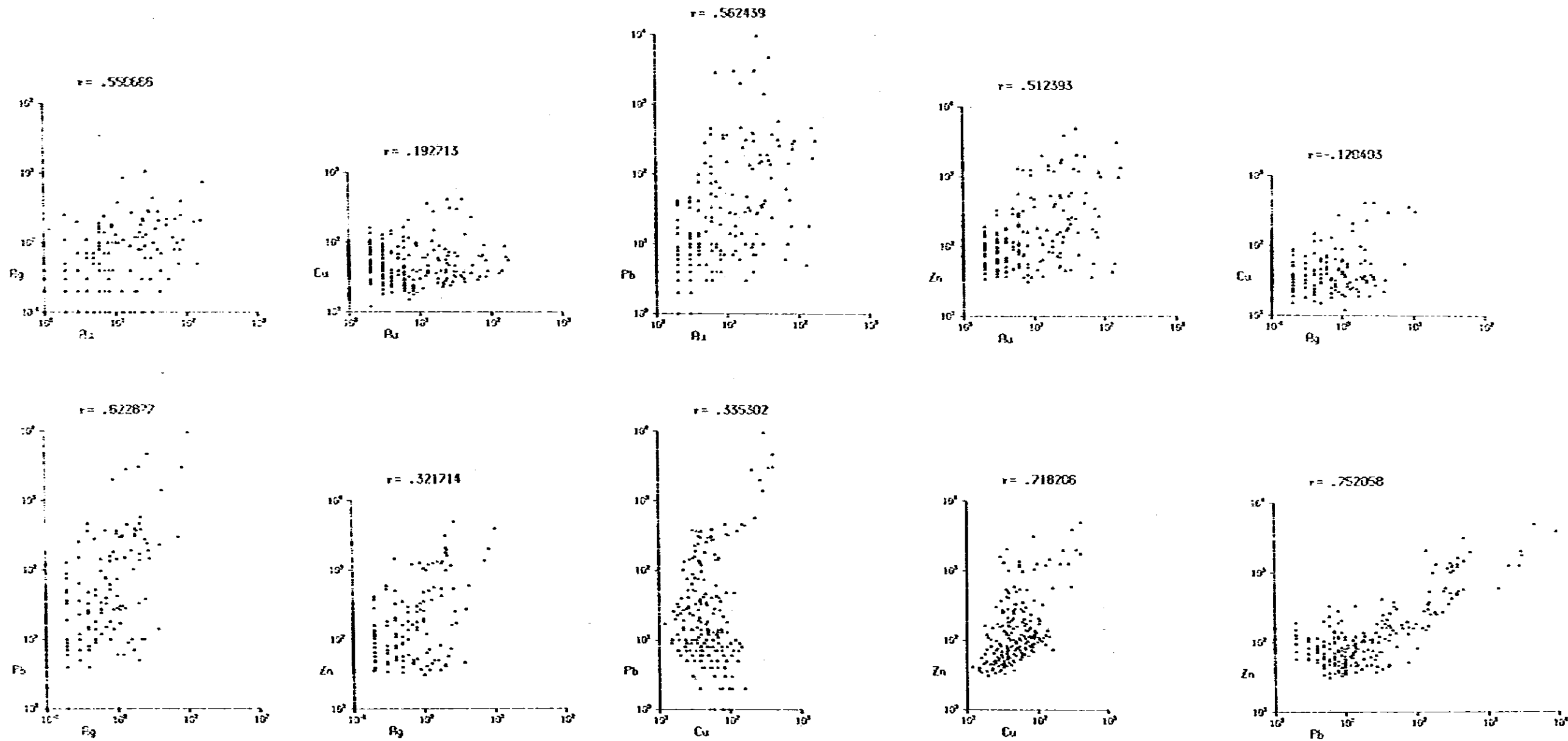
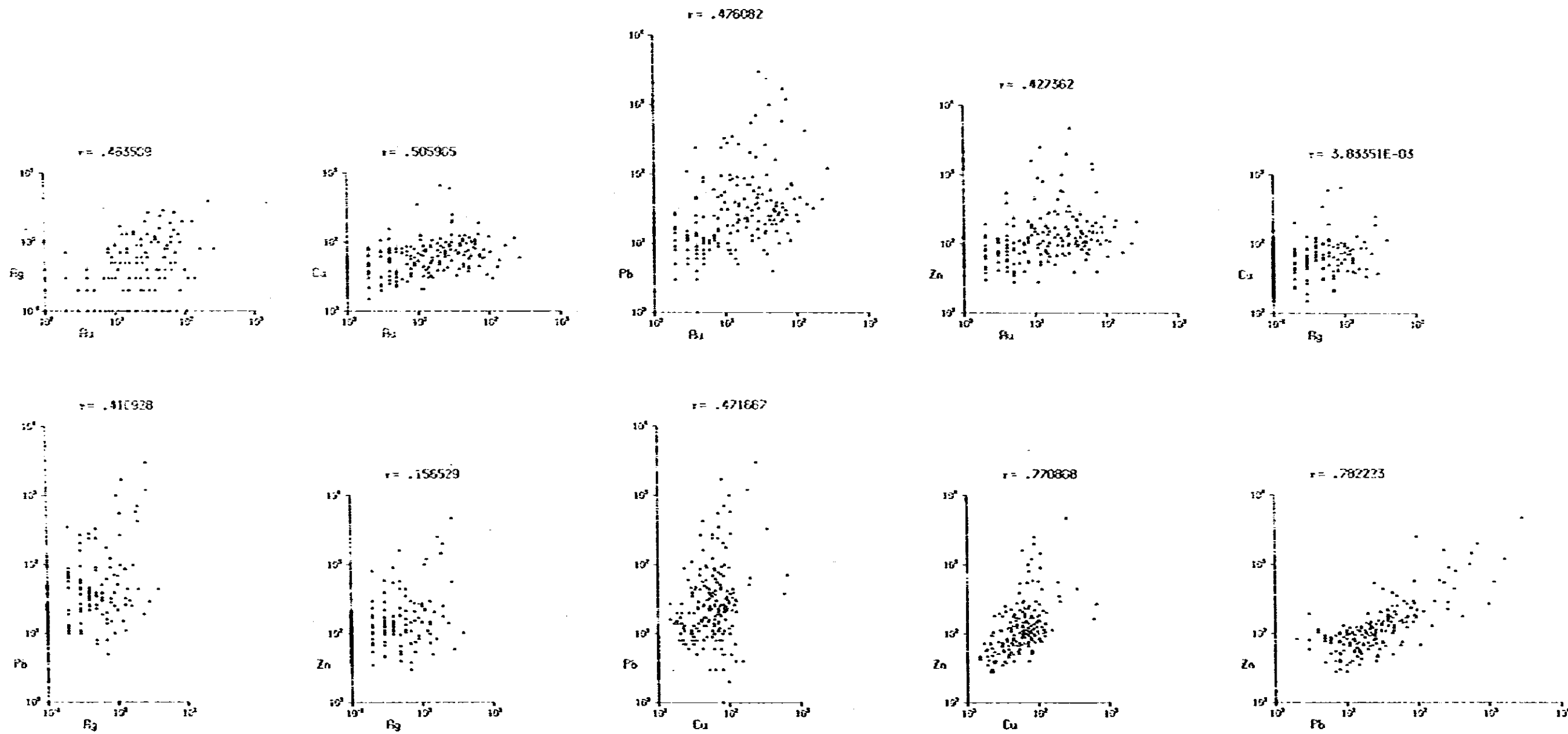


Fig. 11-3-19 Coefficient of Correlation of Geochemical Path-finder Elements in Kuara Sipongi Area B (SIP survey area)





Coefficient of Correlation of Geochemical Path-finder Elements  
 in Huara Spongi Area B (Outside area of SIP survey)

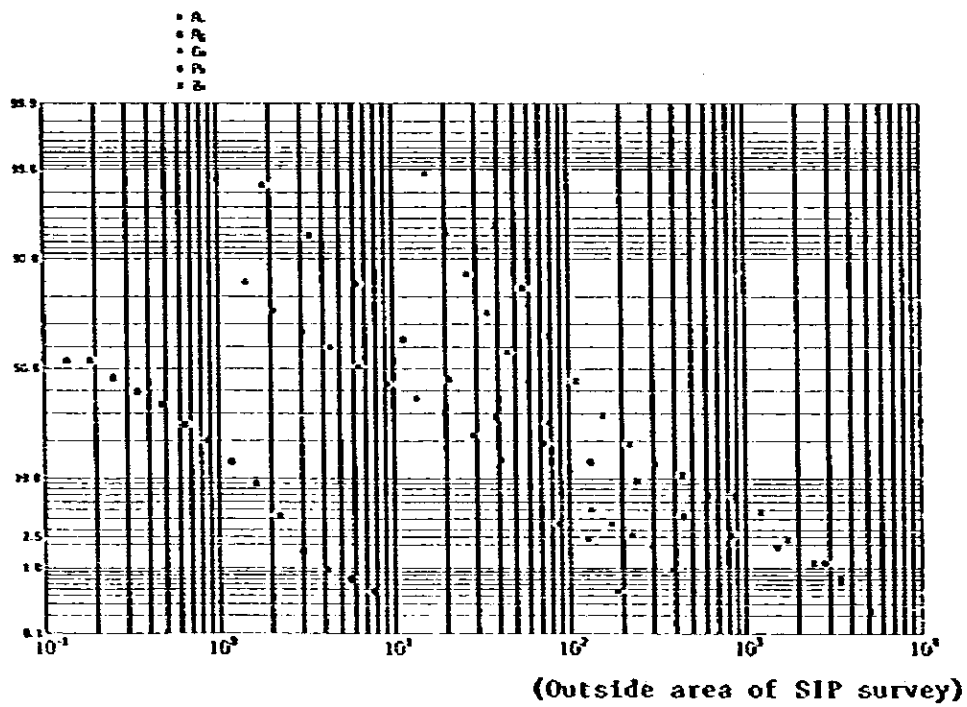
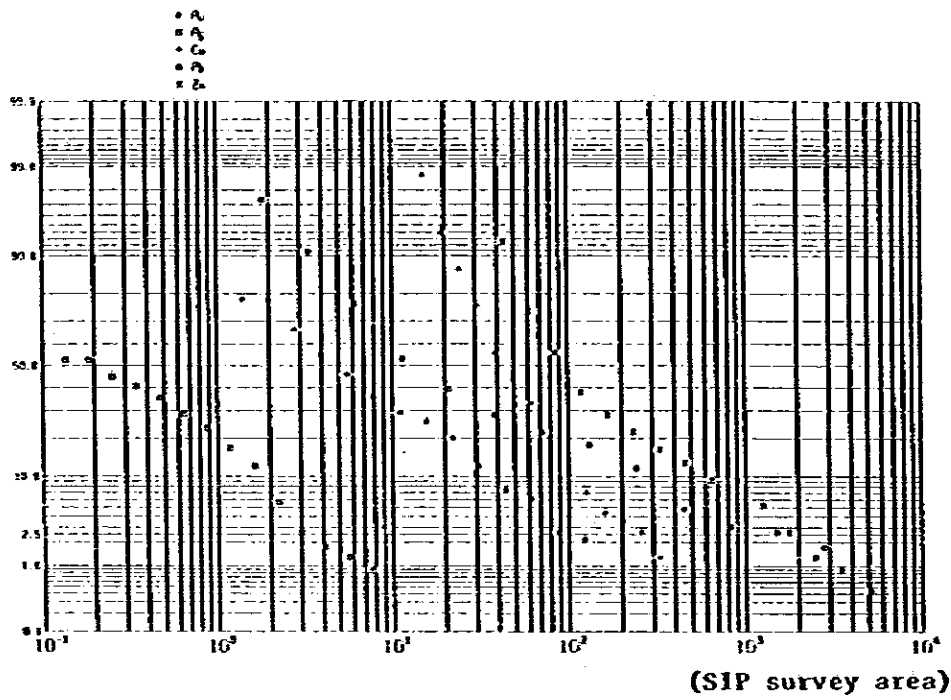
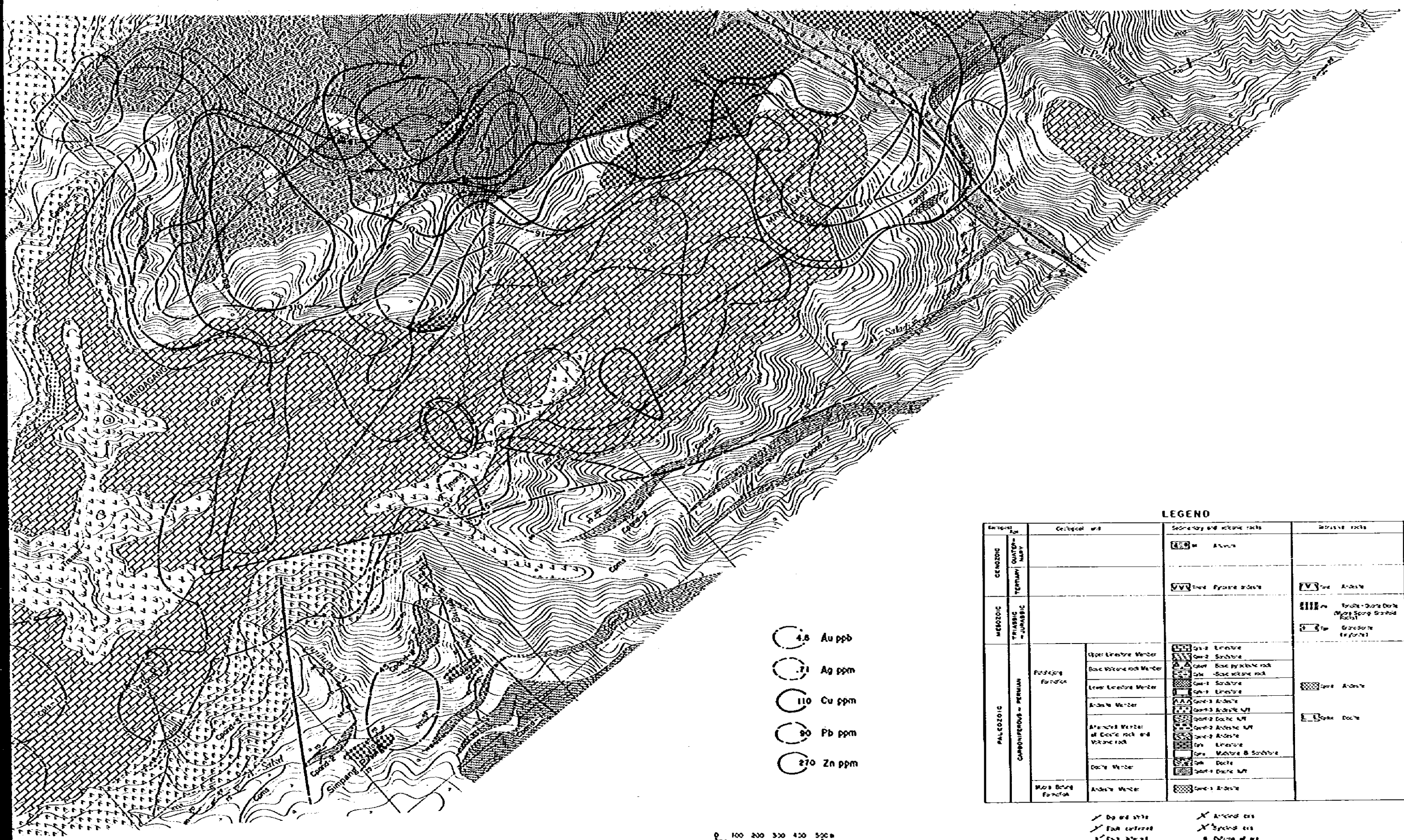


Fig. II-3-20 Cumulative Frequency Distribution of Geochemical Path-finder Elements, in Fuara Siperigi Area B





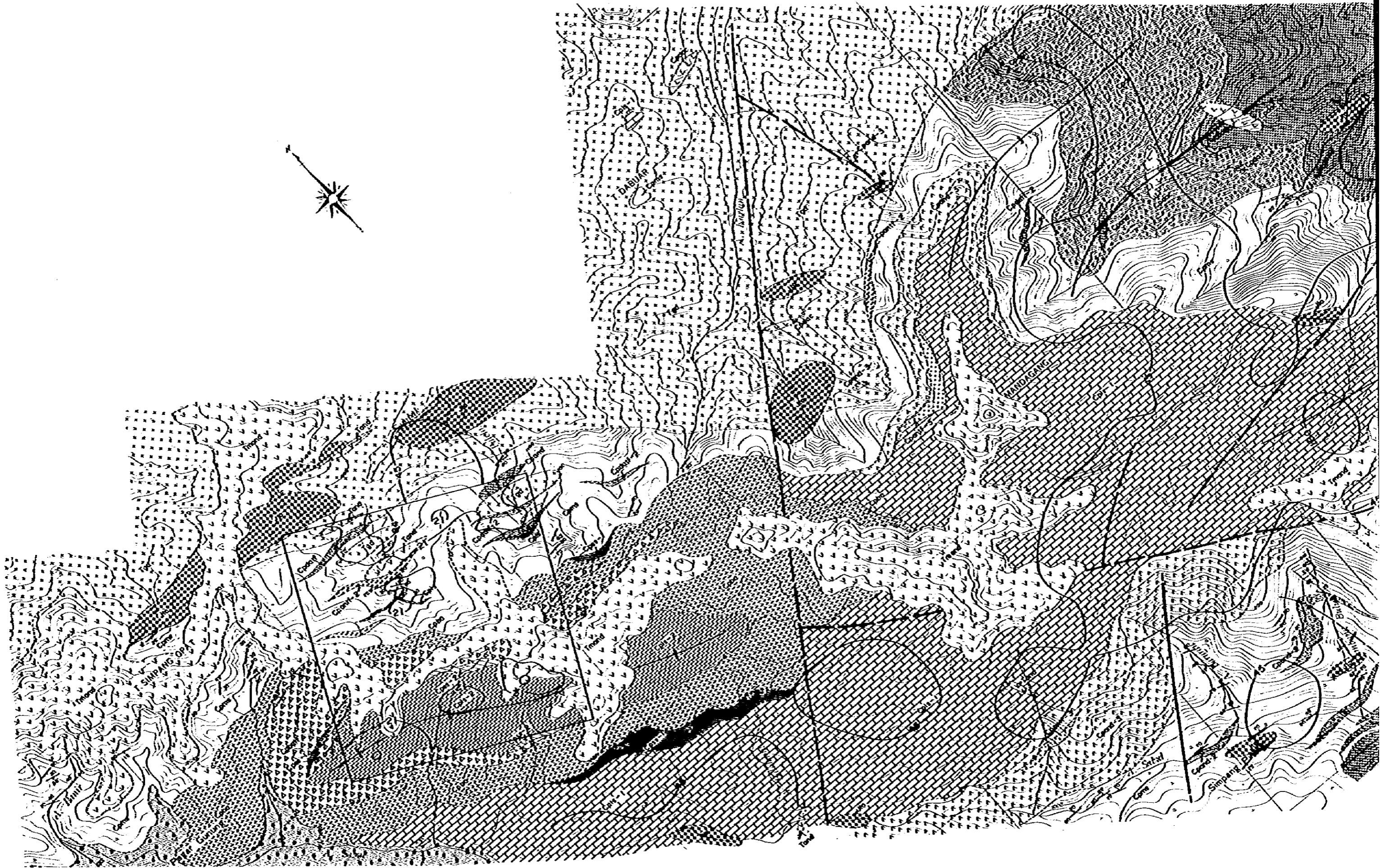


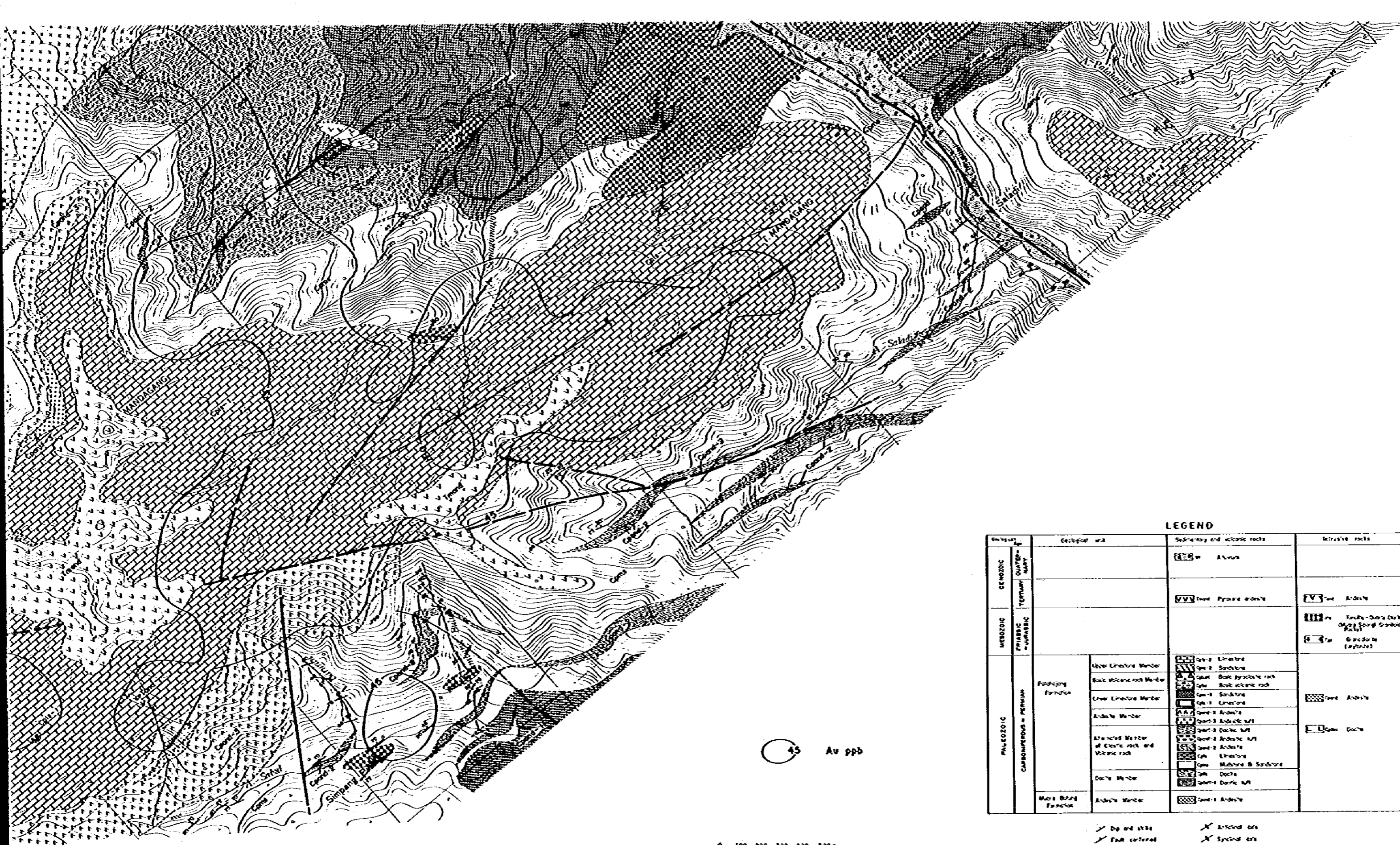
**LEGEND**

Geological unit		Secondary and volcanic rocks	Intrusive rocks
CENOZOIC	QUATERNARY	Q1 Alluvium	
	TERTIARY	T1 Tuff T2 Pyroclastic rocks	T3 Andesite
MESOZOIC	TRIASSIC - JURASSIC		J1 Granite J2 Granite (porphyry)
	PALEOZOIC CARBONIFEROUS - PERMIAN	Pondok Formation	Q1-2 Limestone
Q2-2 Sandstone			
Q3-2 Basic pyroclastic rock			
Q4-2 Basic volcanic rock			
Q1-1 Sandstone			
Q2-1 Limestone			
Q3-1 Andesite			
Q4-1 Andesite MP			
Q1-2 Doche MP	D1 Doche		
Q2-2 Andesite MP			
Q3-2 Andesite	D2 Doche		
Q4-2 Limestone			
Q1-3 Limestone	D3 Doche		
Q2-3 Andesite B Sandstone			
Q3-3 Doche			
Q4-3 Doche MP			
Q1-1 Andesite Member	Q1-1 Andesite		

- ↘ Dip and strike
- ↘ Fault covered
- ↘ Fault blind
- ✕ Anomaly cut
- ✕ Special cut
- Circle of cut

Fig. II-3-21 Map of Geochemical Anomaly in Huara Sipongi Area B (Au, Ag, Cu, Pb, Zn)





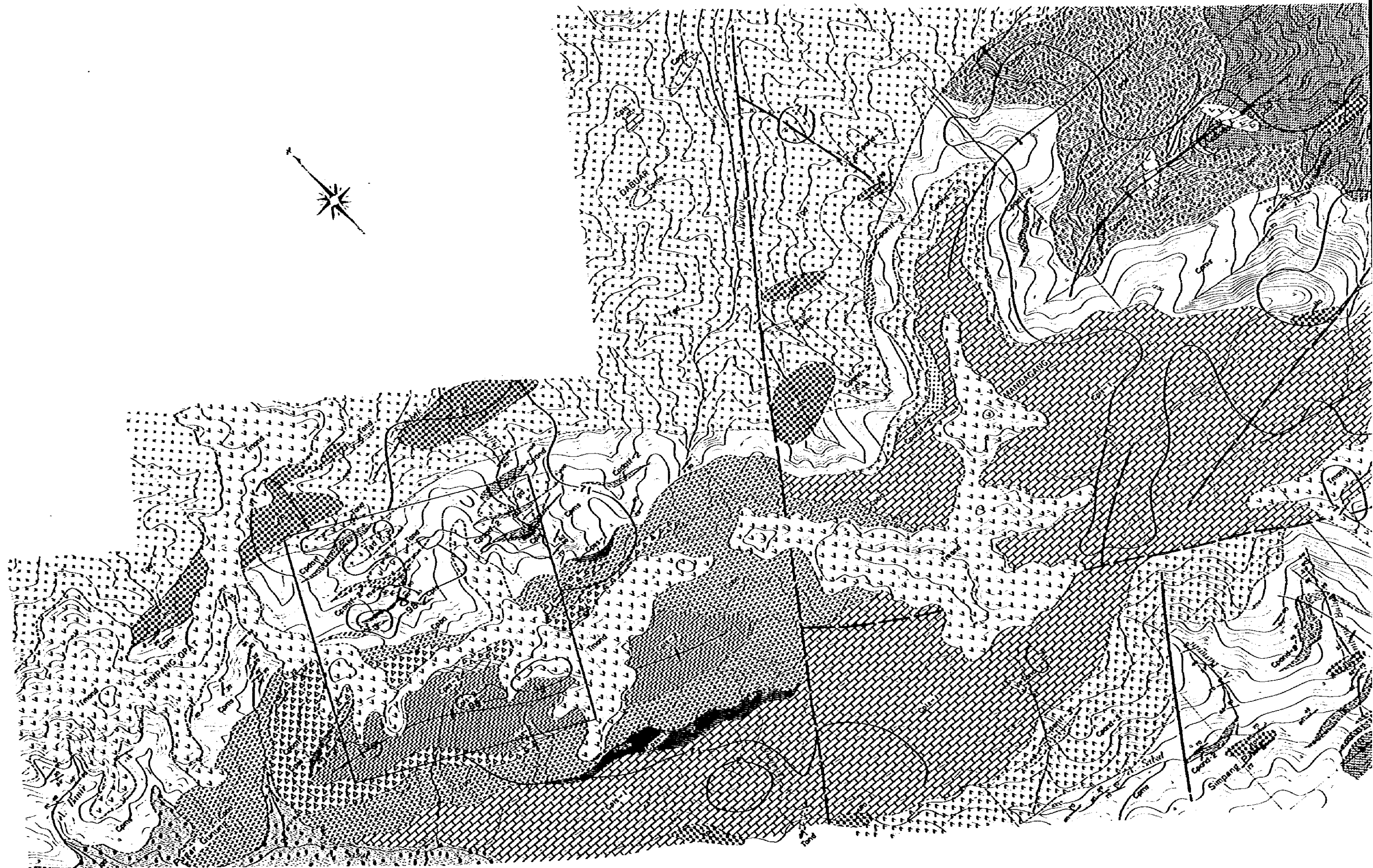
**LEGEND**

Geological Era	Geological Unit	Secondary and volcanic rocks		Intrusive rocks	
		Symbol	Description		
CENOZOIC	QUATERNARY	[Symbol]	Alluvium		
	TERTIARY	[Symbol]	Lower Pliocene andesite	[Symbol] Andesite	
MESOZOIC	TRIASSIC - JURASSIC	[Symbol]		[Symbol] Tephrite - Quartz Dolerite [Symbol] Quartz Diorite [Symbol] Granite	
		[Symbol]		[Symbol] Granite (syntect)	
PALEOZOIC	CARBONIFEROUS - PERMIAN	Padocong Formation	[Symbol]	Unit 2 Limestone	
			[Symbol]	Unit 2 Sandstone	
			[Symbol]	Basic Volcanic rock Member	
			[Symbol]	Unit 1 Sandstone	
			[Symbol]	Unit 1 Limestone	
			[Symbol]	Unit 3 Andesite	
			[Symbol]	Unit 3 Andesite Muff	
[Symbol]	Unit 2 Dolerite Muff				
[Symbol]	Unit 2 Andesite Muff	[Symbol] Dolerite			
[Symbol]	Unit 2 Andesite				
[Symbol]	Unit 2 Limestone				
[Symbol]	Unit 1 Limestone & Sandstone				
[Symbol]	Unit 1 Dolerite				
[Symbol]	Unit 1 Dolerite Muff				
Micro Boring Formation	Andesite Member	[Symbol]	Unit 1 Andesite		

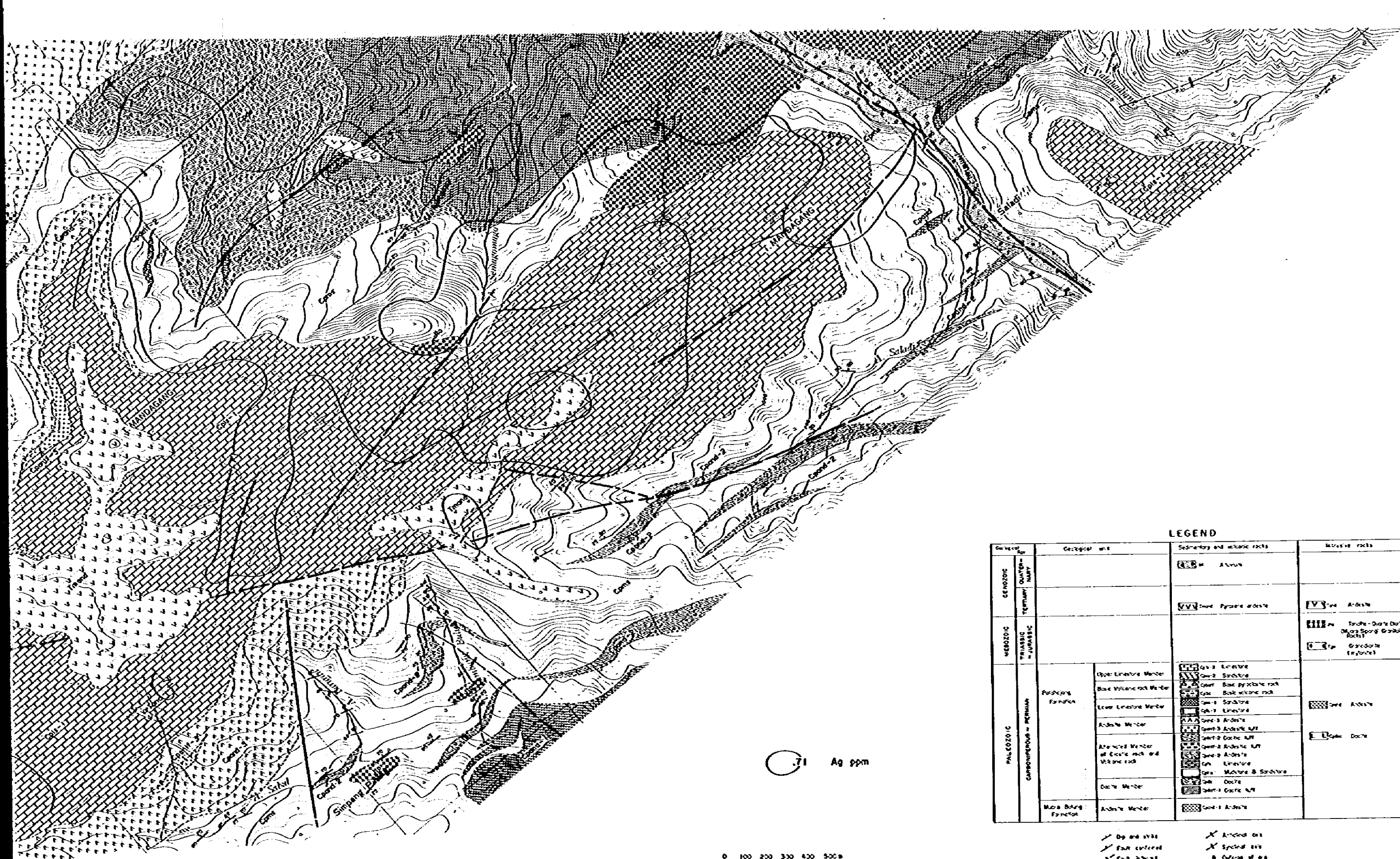
- [Symbol] Dip and strike
- [Symbol] Fault control
- [Symbol] Fault direction
- [Symbol] Anomalous ore
- [Symbol] Syntect ore
- [Symbol] Outcrop of ore

0 100 200 300 400 500m

Fig. 11-3-22 Map of Geochemical Anomaly in Huara Sipongi Area B (Au)







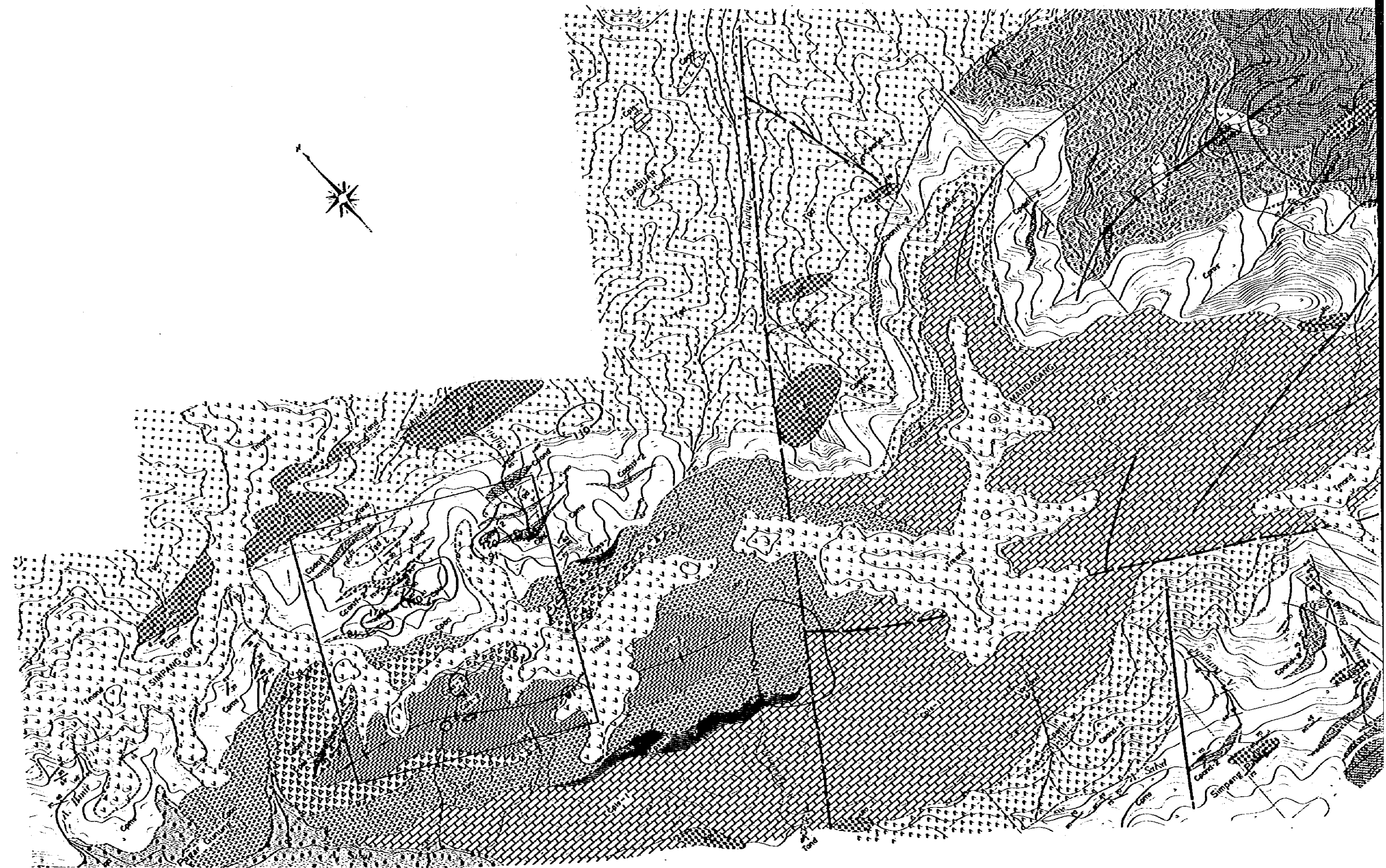
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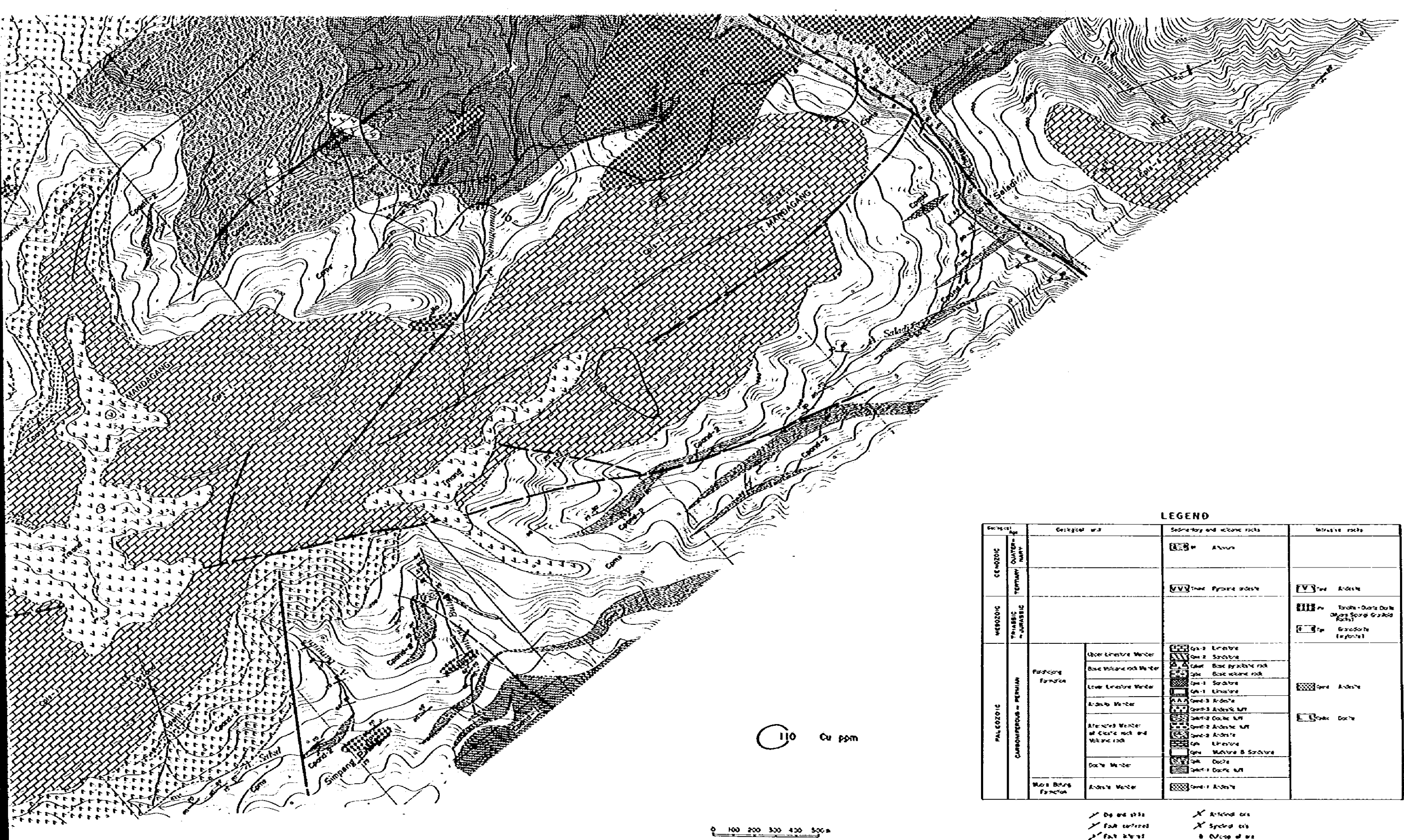
Geological Unit	Geological Unit	Sedimentary and volcanic rocks	Intrusive rocks
CENOZOIC	QUATERNARY	Q1-Q4 Alluvium	
	TERTIARY	T1-T2 Basal pyroclastic rock	T1-T2 Andesite
MESOZOIC	TRIASSIC - JURASSIC		T1-T2 Traps - Quartz Dike Mura Spring Graboid Rocks
			T1-T2 Granite (Intruded)
PALEOZOIC	CARBONIFEROUS - PERMIAN	Posidonia Formation	
		Upper Limestone Member	Q1-2 Limestone
		Base Volcanic rock Member	Q1-2 Sandstone Q1-2 Basal pyroclastic rock Q1-2 Basal volcanic rock
		Lower Limestone Member	Q1-1 Sandstone
		Andesite Member	Q1-1 Limestone Q1-1 Andesite Q1-1 Andesite Mf
		Advanced Member of Andesite rock and Volcanic rock	Q1-2 Andesite Mf Q1-2 Andesite Mf Q1-2 Andesite Mf Q1-2 Limestone Q1-2 Mixture of Sandstone
		Andesite Member	Q1-2 Andesite Mf Q1-2 Andesite Mf Q1-2 Andesite Mf
Mura Spring Formation	Q1-1 Andesite	Q1-1 Andesite	

- Diagonal lines / Dip and strike
- Double line // Fault contact
- Single line - Fault offset
- Star symbol ✱ Andesite dike
- Star symbol ✱ Syenite dike
- Circle symbol ○ Quartz dike

0 100 200 300 400 500m

Fig. II-3-23 Map of Geochemical Anomaly in Muara Sipongi Area B (Ag)



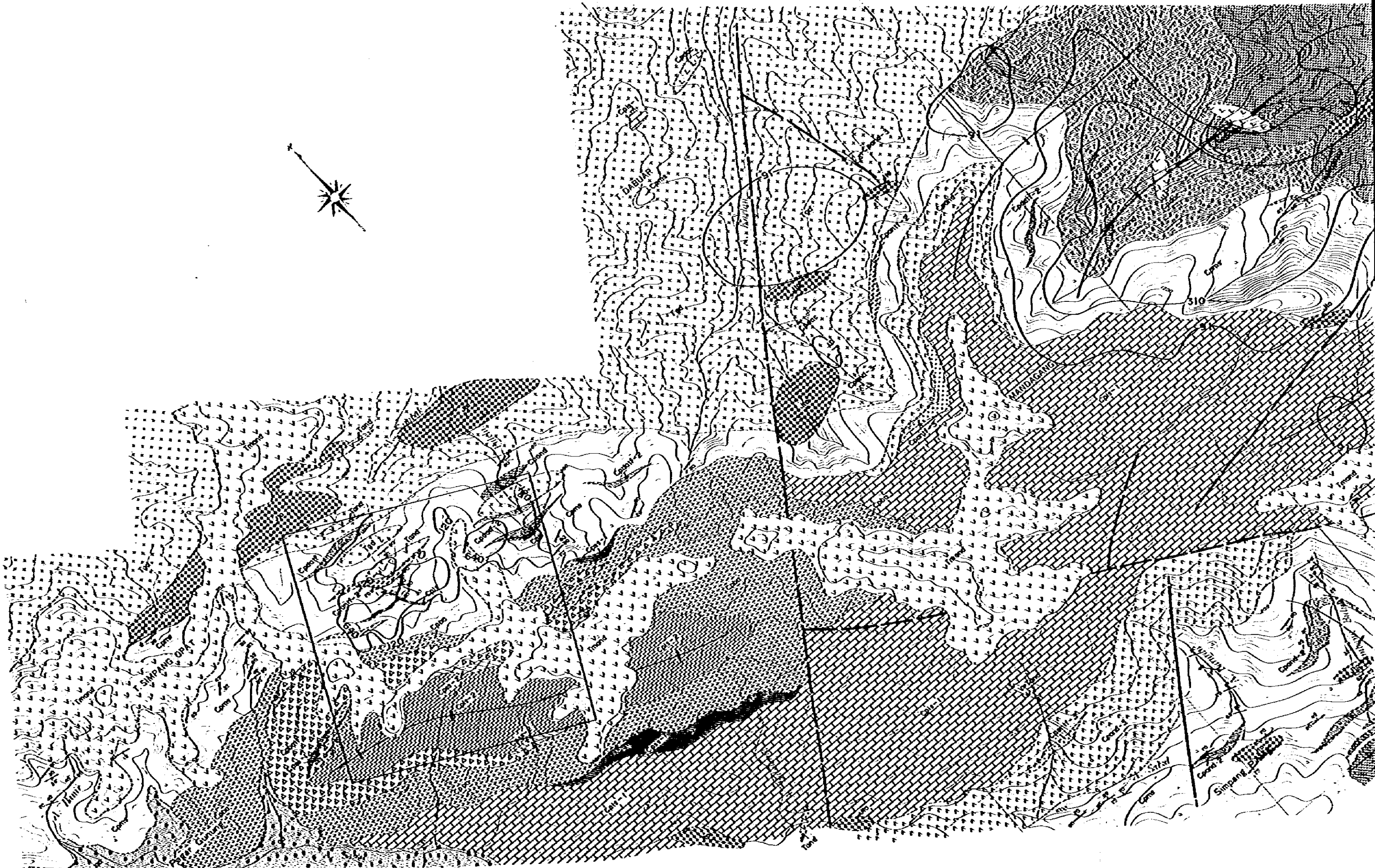


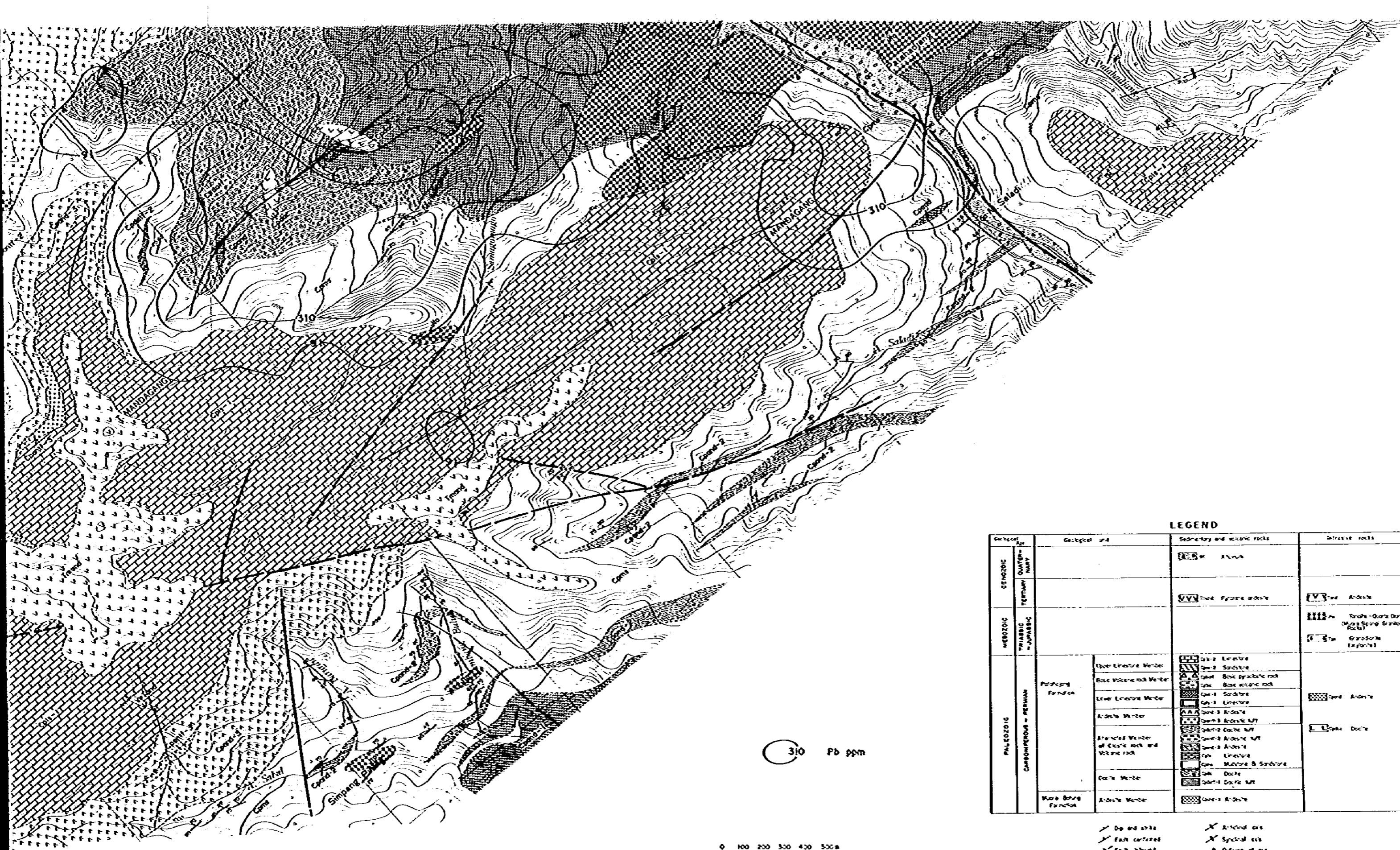
**LEGEND**

Geological Age		Geological unit		Secondary and volcanic rocks		Intrusive rocks	
CENOZOIC	QUATERNARY			AB	Alluvium		
	TERTIARY			VV	Pyroclastic ash	IV	Andesite
MEZOZOIC	TRIASSIC - JURASSIC					III	Trochite - Quartz Dolerite (Myers Spring Granitic Rocks)
PALAEZOIC	CARBONIFEROUS - PERMIAN	Pahang Formation	Upper Limestone Member	Qp-2	Limestone	Qp-4	Andesite
			Qp-2	Sandstone			
			Qp-3	Basic pyroxenic rock			
			Qp-4	Basic volcanic rock			
			Lower Limestone Member	Qp-1	Sandstone		
			Qp-1	Limestone			
			Andesite Member	Qp-3	Andesite		
			Qp-3	Andesite MP			
Andesite Member of basaltic rock and volcanic rock	Qp-2	Andesite MP					
Qp-2	Andesite						
Qp-1	Limestone						
Qp-4	Mudstone & Sandstone						
Dolerite Member	Qp-4	Dolerite					
Qp-1	Dolerite MP						
Moreh Basin Formation	Andesite Member	Qp-1	Andesite				

- / Dip and strike
- / Fault normal
- / Fault thrust
- X Anticline axis
- X Syncline axis
- o Closure of ore

Fig. II-3-24 Map of Geochemical Anomaly in Huara Sipongi Area B (Cu)





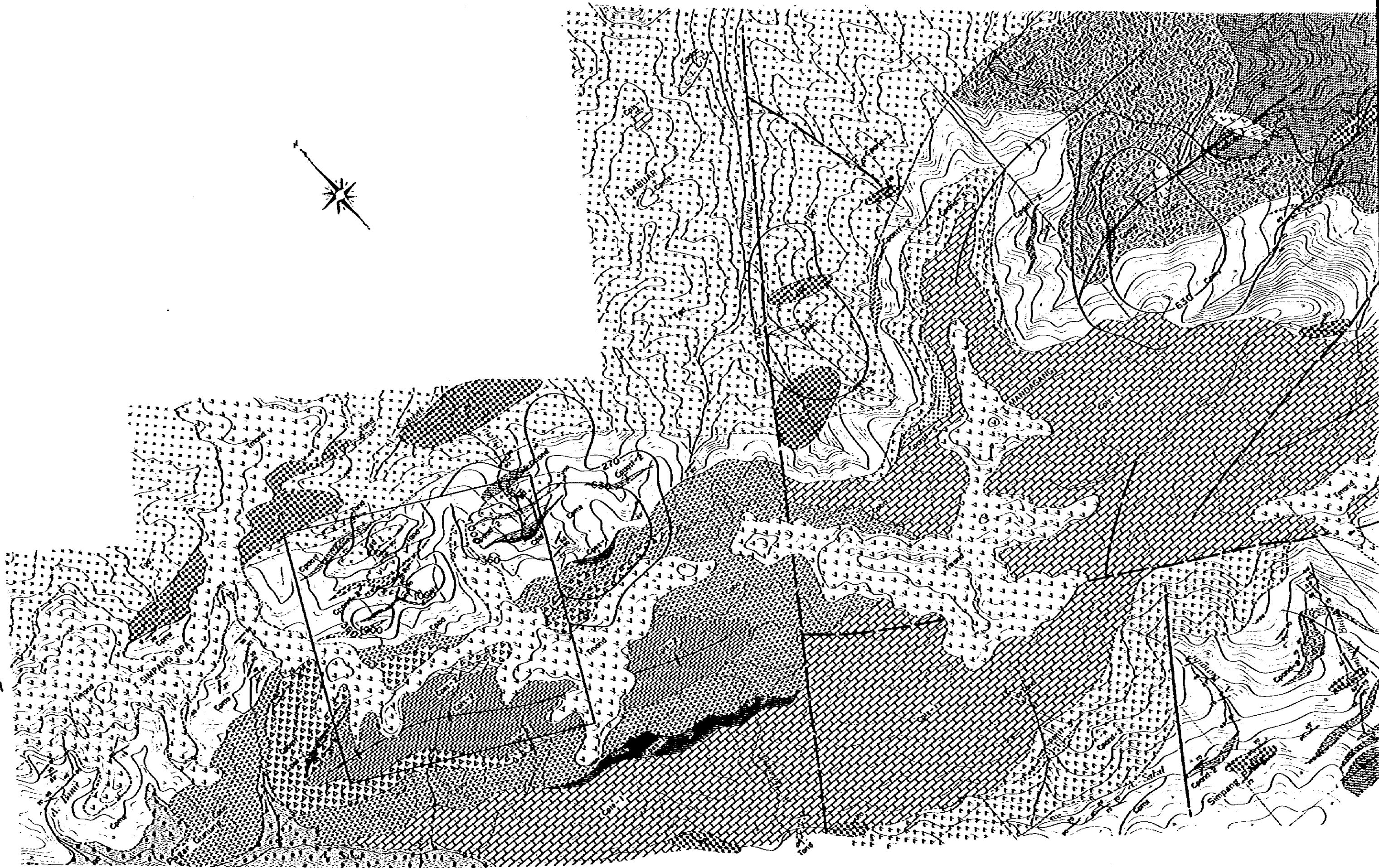
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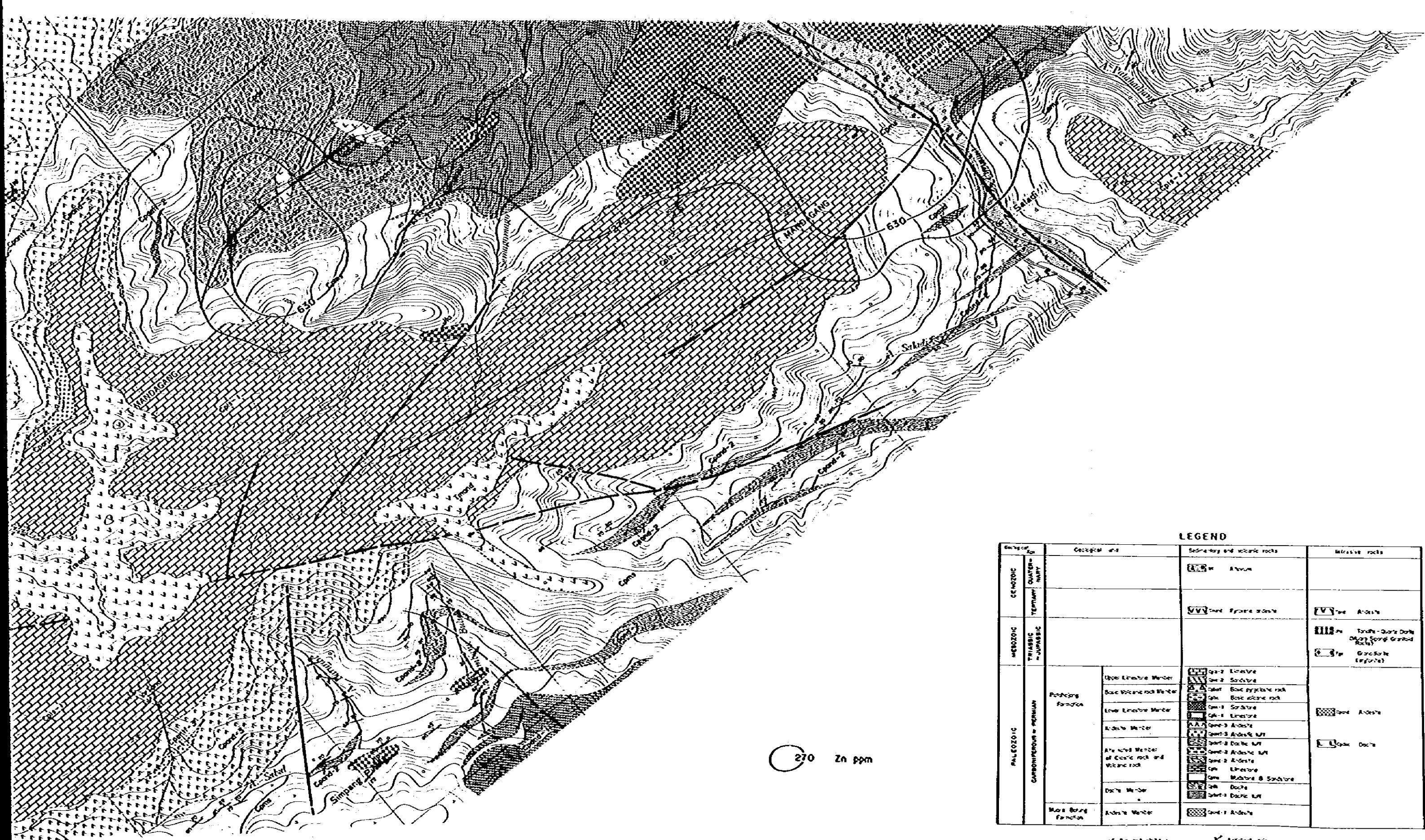
Geological	Geological unit		Secondary and volcanic rocks	Metasite rocks		
	Quaternary	Tertiary				
CENOZOIC	QUATERNARY		<p>□ Alluvium</p>			
	TERTIARY		<p>□ Basal pyroclastic andesite</p>	<p>□ Andesite</p>		
MESOZOIC	TRIASSIC - JURASSIC			<p>□ Trachyte-Quartz Dolerite (Muss Spring Granitoid Rocks)</p> <p>□ Granodiorite (Lipohat)</p>		
		PALEOZOIC	CARBONIFEROUS - PERMIAN	Folding Function	<p>□ Qm-2 Limestone</p> <p>□ Qm-2 Sandstone</p> <p>□ Qm-1 Basal pyroclastic rock</p> <p>□ Qm-1 Basal volcanic rock</p>	
					<p>□ Qm-1 Limestone</p> <p>□ Qm-1 Sandstone</p>	<p>□ Andesite</p>
					<p>□ Qm-3 Andesite</p> <p>□ Qm-3 Andesite MPT</p>	
					<p>□ Qm-2 Dolerite MPT</p> <p>□ Qm-2 Andesite MPT</p> <p>□ Qm-2 Andesite</p> <p>□ Qm-1 Limestone</p> <p>□ Qm-1 Mixture of Sandstone</p>	<p>□ Dolerite</p>
					<p>□ Qm-1 Dolerite</p> <p>□ Qm-1 Dolerite MPT</p>	
					<p>□ Andesite Member</p>	<p>□ Andesite</p>
					<p>□ Andesite Member</p>	
					<p>□ Andesite Member</p>	
					<p>□ Andesite Member</p>	
<p>□ Andesite Member</p>						

- ↗ Dip and strike
- ↘ Fault centered
- ↗ Fault normal
- ✕ Anticline axis
- ✕ Synclinal axis
- Outcrop of ore

0 100 200 300 400 500m

Fig. II-3-25 Map of Geochemical Anomaly in Muara Sipongi Area B (Pb)





0 100 200 300 400 500m

**LEGEND**

Geological age		Geological unit	Secondary and volcanic rocks	Metasite rocks
CEANOZOIC	QUATERNARY		Qa-0 Alluvium	
	TERTIARY		Ta-0 Sandstone	Ta-1 Andesite
MESOZOIC	TRIASSIC - JURASSIC			M-1a Tuffite-Quartz Dark Oligo-Spong Granoid Rocky
				M-1b Gneissite (epidote)
PALEOZOIC	CARBONIFEROUS - PERMIAN	Porphyry formation	Qa-2 Limestone	Ma-1 Andesite
			Qa-2 Sandstone	
			Qa-1 Basic volcanic rock	
			Qa-1 Basic volcanic rock	
			Qa-1 Sandstone	
			Qa-1 Limestone	
			Qa-2 Andesite	
			Qa-2 Andesite tuff	
			Qa-2 Andesite tuff	
			Qa-2 Andesite tuff	
Qa-1 Limestone				
Qa-1 Limestone & Sandstone				
Qa-1 Dacite	Ma-2 Dacite			
Qa-1 Dacite tuff				
Ma-2 Andesite	Ma-2 Andesite			

- / Dip and strike
- / Fault centered
- / Fault offset
- X Arched axis
- X Synclinal axis
- o Offcrop of sea

Fig. II-3-26 Map of Geochemical Anomaly in Muara Sipongi Area B (Zn)

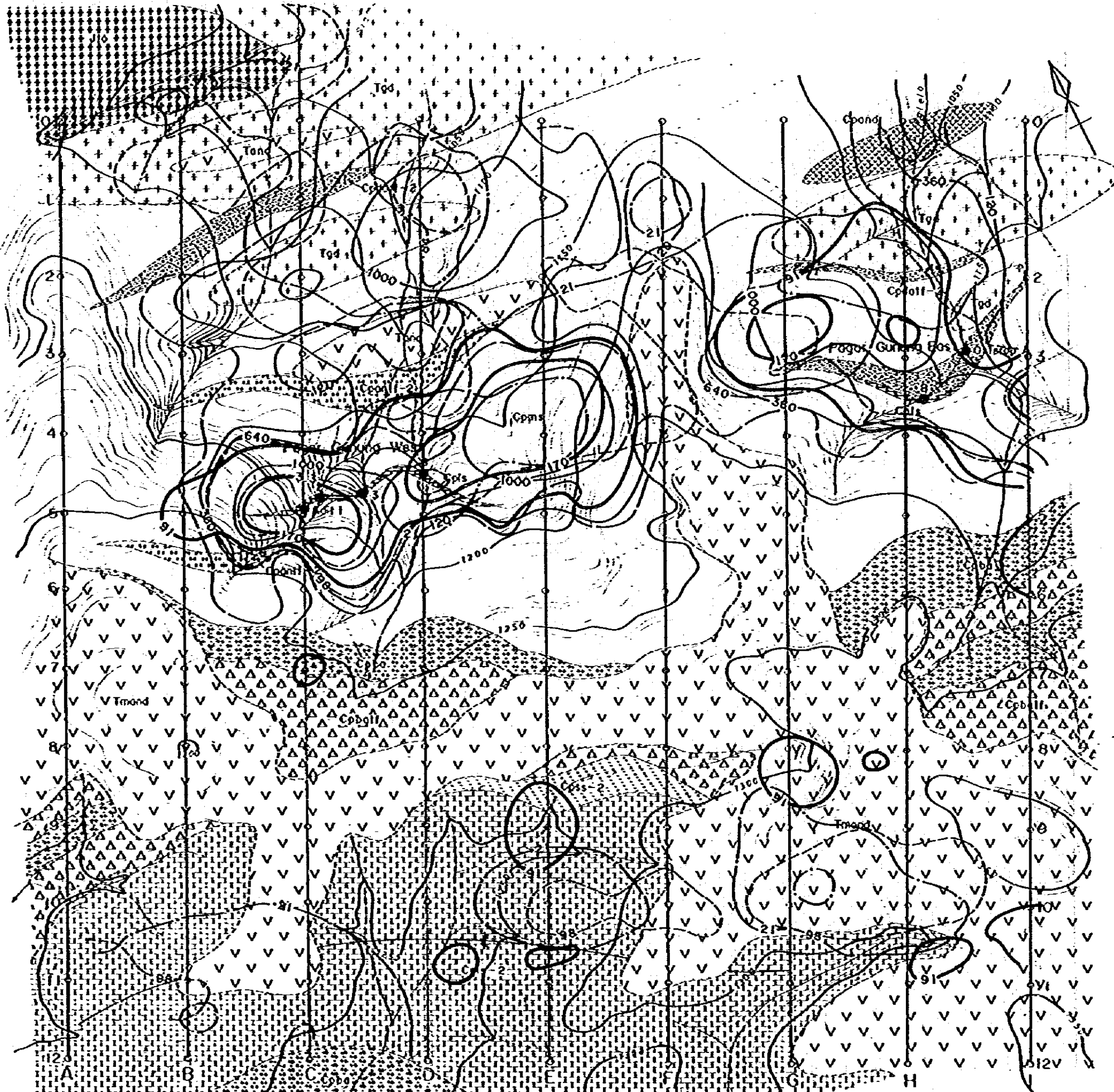
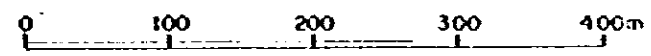


Fig. II-3-27 Map of Geochemical Anomaly in Pagar Gunung Ore Deposit Area, Ruara Sipongi Area B (Au, Ag, Cu, Pb, Zn)

- 21 Au ppb
- 98 Ag ppm
- 91 Cu ppm
- 120 Pb ppm
- 360 Zn ppm

Scale 1:5,000





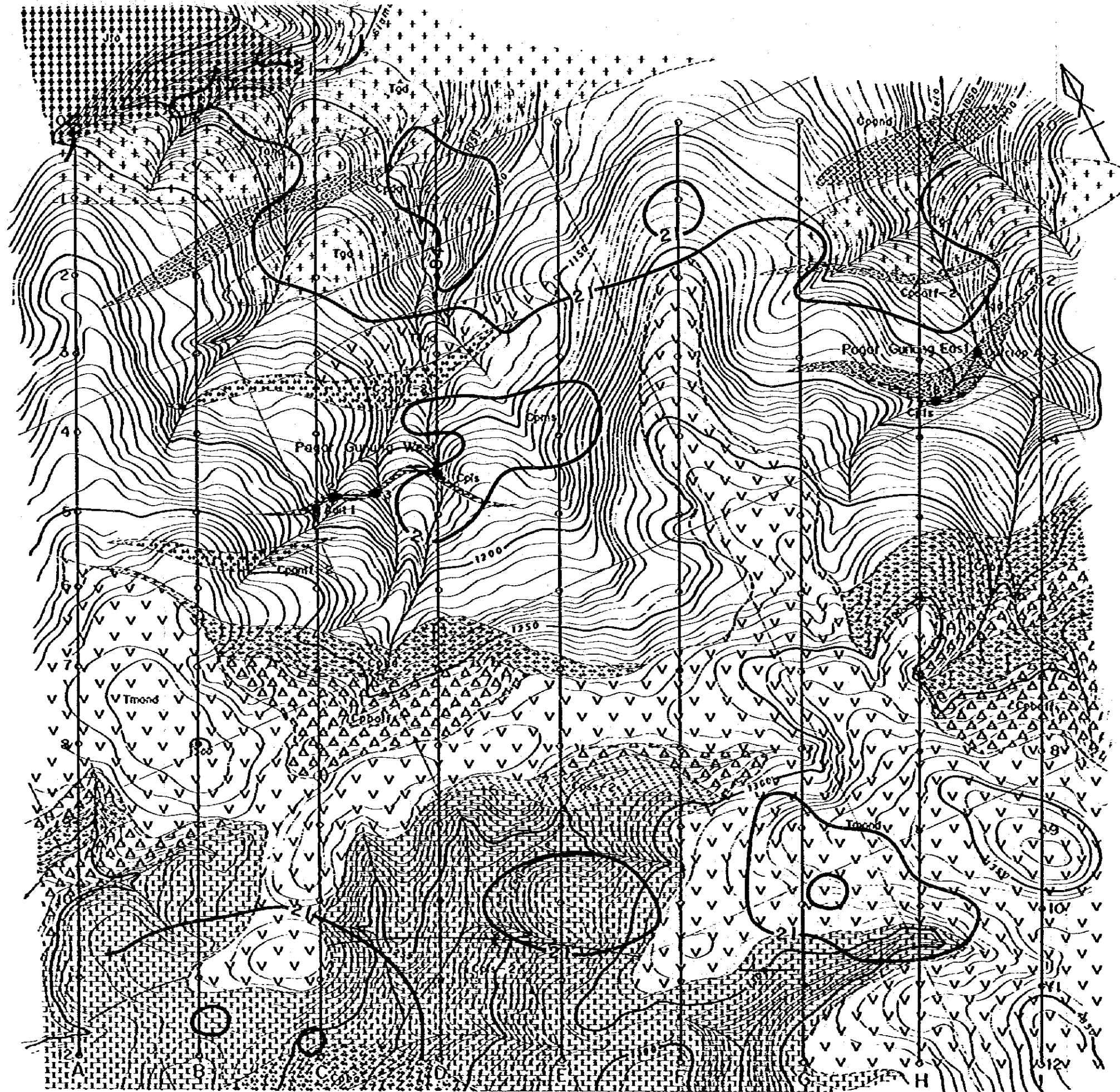


Fig. 11-3-28 Map of Geochemical Anomaly in Pagar Gunung Ore Deposit Area, Huara Sipongi Area B (Au)

21 Au ppb

Scale 1:5,000



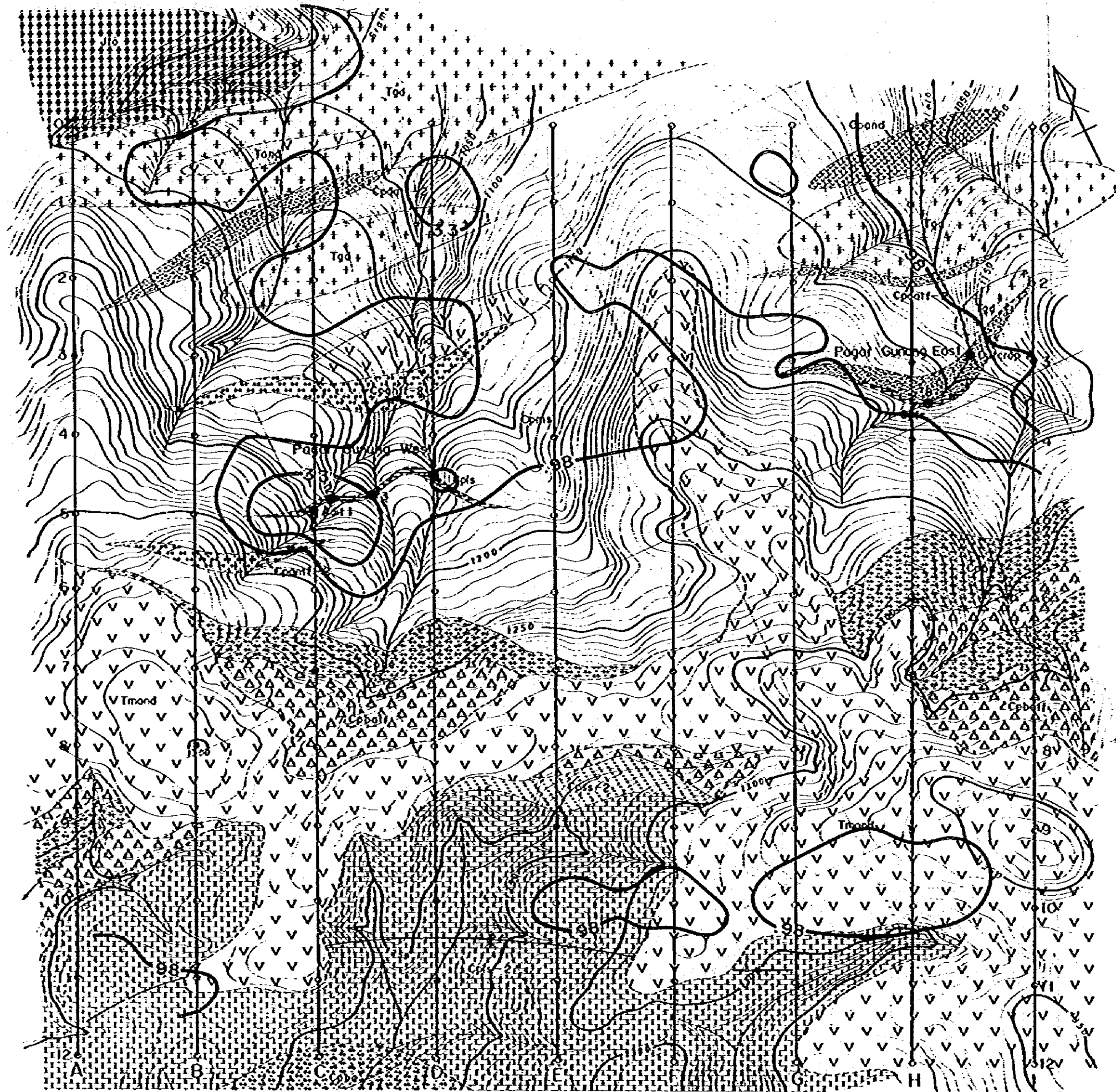


Fig. 11-3-29 Map of Geochemical Anomaly in Pagar Gunung Ore Deposit Area, Muara Sipongi Area B (Ag)

.98 Ag ppm

Scale 1:5,000  
 0 100 200 300 400m

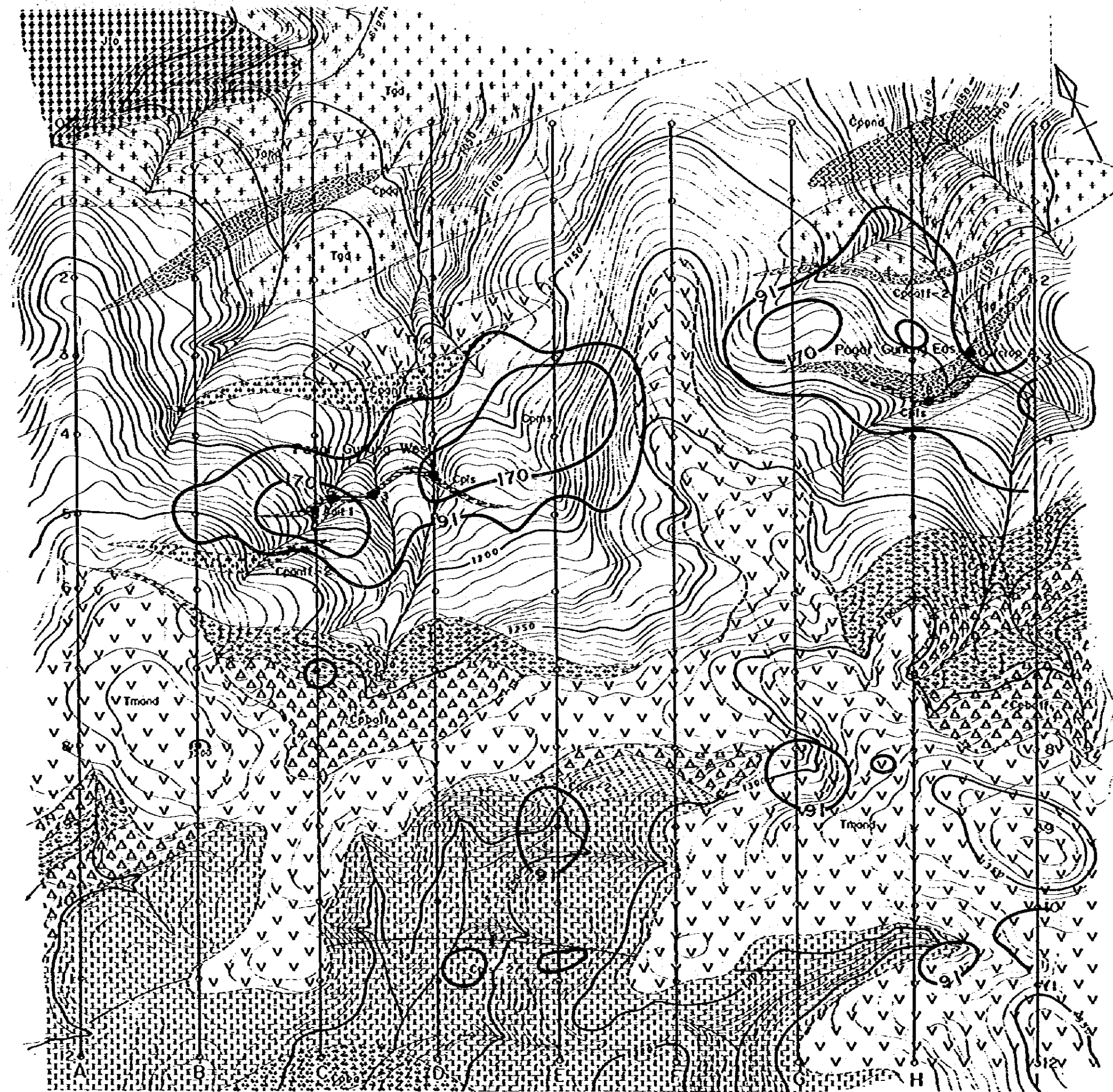
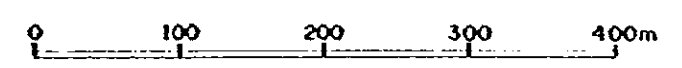


Fig. 11-3-30 Map of Geochemical Anomaly in Pagar Gunung Ore Deposit Area, Huara Sipongi Area B (Cu)

91 Cu ppm

Scale 1:5,000



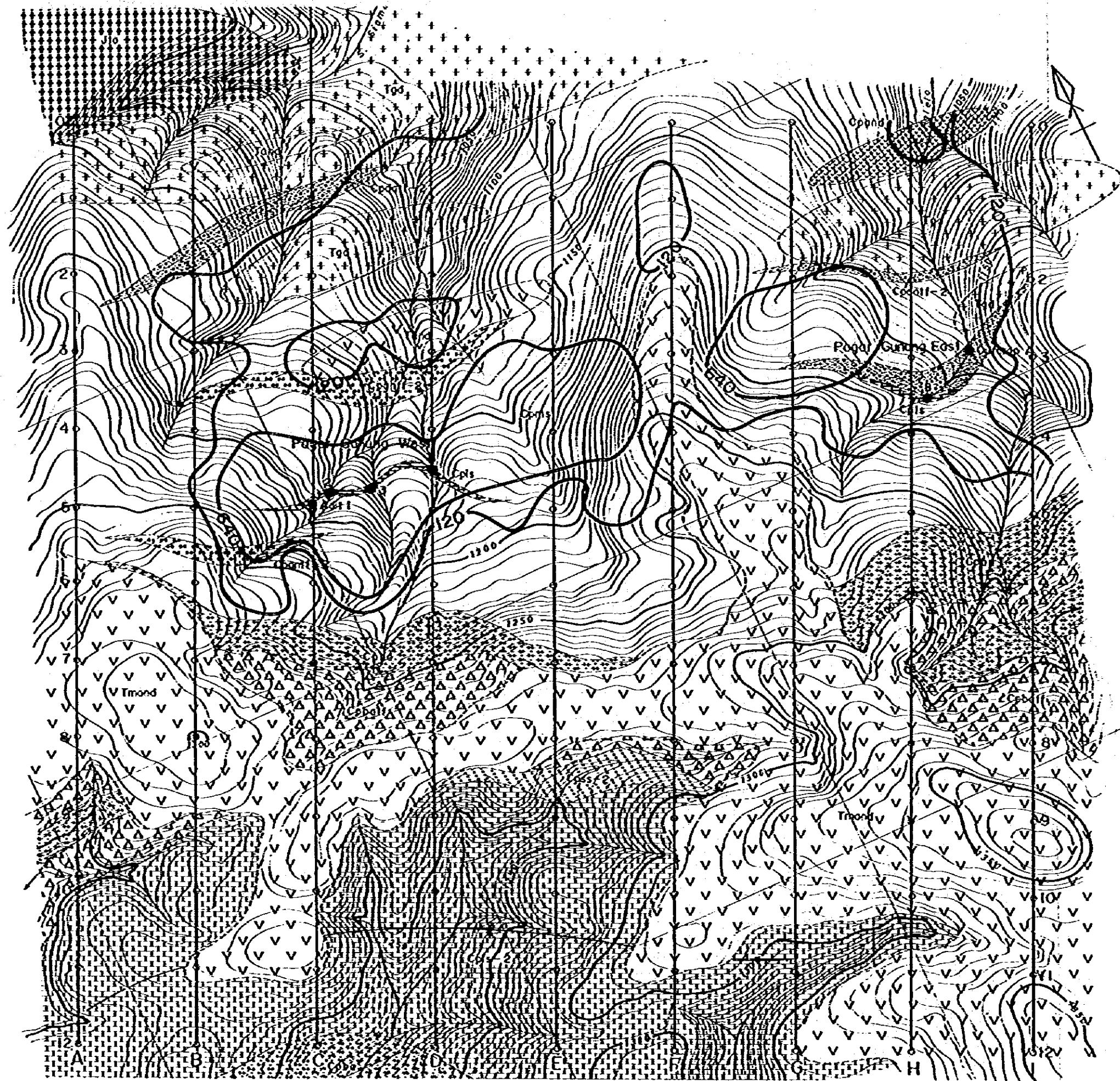


Fig. II-3-31 Map of Geochemical Anomaly in Pagar Gunung Ore Deposit Area, Kuara Sipongi Area B (Pb)

120 Pb ppm

Scale 1:5,000  
 0 100 200 300 400m

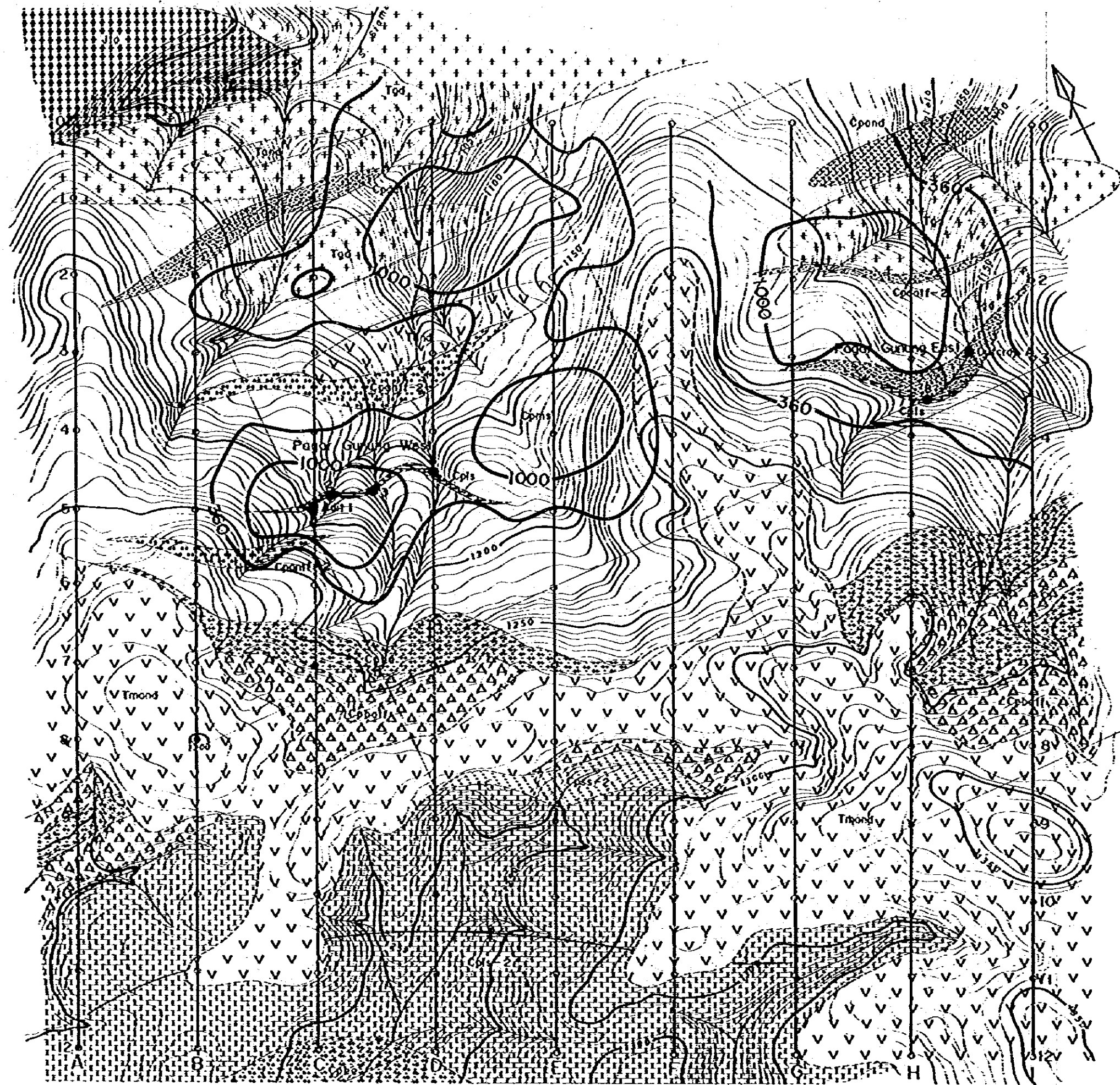


Fig. 11-3-32 Map of Geochemical Anomaly  
in Pagar Gunung Ore Deposit Area,  
Huara Sipongi Area F (Zn)

360 Zn ppm

Scale 1:5,000

