modererate scores are widely distributed in the central part of the Campo Mineral Occurrence. Negative scores are distributed locally in the Gata Mineral Occurrence.

As aforementioned, the most important indication of the mineralization is presented in the first principal component and the second impotance is in the third principal component. Followings are the characteristics of the Occurences :

The Campo Mineral Occurence : Scores of the first and third pricipal components are mainly positive.

The Gata Mineral Occurence : Scores of the first principal component are mainly positive, and those of the third principal component is positive and negative.

3-3-5 Discussion

Principal component analysis comes to pick up two factors : mineralization and weathering.

(1) Mineralization

The high to moderate scores of the first principal component are distributed exclusively in both Occurrences. The first principal component is composed of factors of Au, Ag, Cu, Pb, Zn, As and (S) and it implies the mineralization of the Campo Mineral Occurrence and Gata Mineral Occurrence. This is almost harmonious with the results of the first principal component of soil geochemical survey mentioned later (Fig.48).

(2) Weathering

The principal components except the first component tend to show positive scores in the Campo Mineral Occurrence and negative scores in the Gata Mineral Occurrence. This may originate from the difference in the weathering, leaching of elements and erosion between the two Occurrences. The topography of the Campo Mineral Occurrence is considerably steep while that of the Gata Mineral Occurrence shows gentle slope.

3-4 Geochemical Survey (Soil)

Soil geochemical survey was done in the whole Lahuy Island. The population of the assay values in the Reconnaisance and Detailed Survey Areas were quite differnt i.e. the content of elements were quite different. If the assay values of the two Areas are combined and processed together, then the threshold value become 60ppm in case of Cu. However, if this 60 ppm is applied for the Reconnaissance Survey Area, only four samplers become anomaly values. So the analysis was carried out independently in two Areas. Total number of samples were 812 : the Detailed Survey Area 106, the Reconnaisance Survey Area 706.

3-4-1 Sampling

As a rule, samples were taken on the lines with 100m x 200m grid except the Campo and Gata Mineral Occurrences, where sampling was done by 100m x 100m grid. One kilogram of B horizon soil was taken at each point. Samples were dried under natural condition and shieved. Minus 80 mesh fraction was halfed between both parties and samples of Japanese were analyzed.

3-4-2 Pathfinder and Analytical Method

Following 11 elements were selected for pathfinder elements:

Au,Ag,As,Sb,Hg,Cu,Pb,Zn,Mo,Fe,S

Analytical methods and detection limits are the same as in case of stream sediment geochemical survey in Catanduanes island.

3-4-3 Soil Geochemical Survey in the Detailed Survey Area

(1) Analysis of Geochemical Data

Common logarithm was used in statistis processing. For the samples under the detection limits, the half values of the lower detection limits were used for calculation.

(1-1) Statistic Analysis

Basic statistic values are shown in Table 37. Hg was excluded from processing as only one sample is over the detection limit.

Average Au content in soil, 422 ppb is by far higher than those of basalt, granodiorite and granite(4 ppb respectively; Berkman, 1976). On the contrary, content of Ag is very low.

Scatter diagrams and correlation coefficients of the assay values of soil samples are shown in Fig.39 and Table 38 respectively.

Au shows strong correlation with Pb and moderate correlation with Cu and Zn. This is harmonious with the fact that Au content of ore becomes higher when the ore is accopanied by galena, sphalerite and amethyst in Lahuy Island.

There is also strong correlation between Cu, Pb and Zn.

Micposcopic observation revealed that Au exists at the grain boundaries between pyrite and quartz, and Au is included in pyrite and spharerite together with galena and chalcopyrite. It implies that the mineralization of Au and galena, chalcopyrite, sphalerite, pyrite took place almost at the same time.

These facts suggest important characters of the gold mineralization in Lahuy Island.

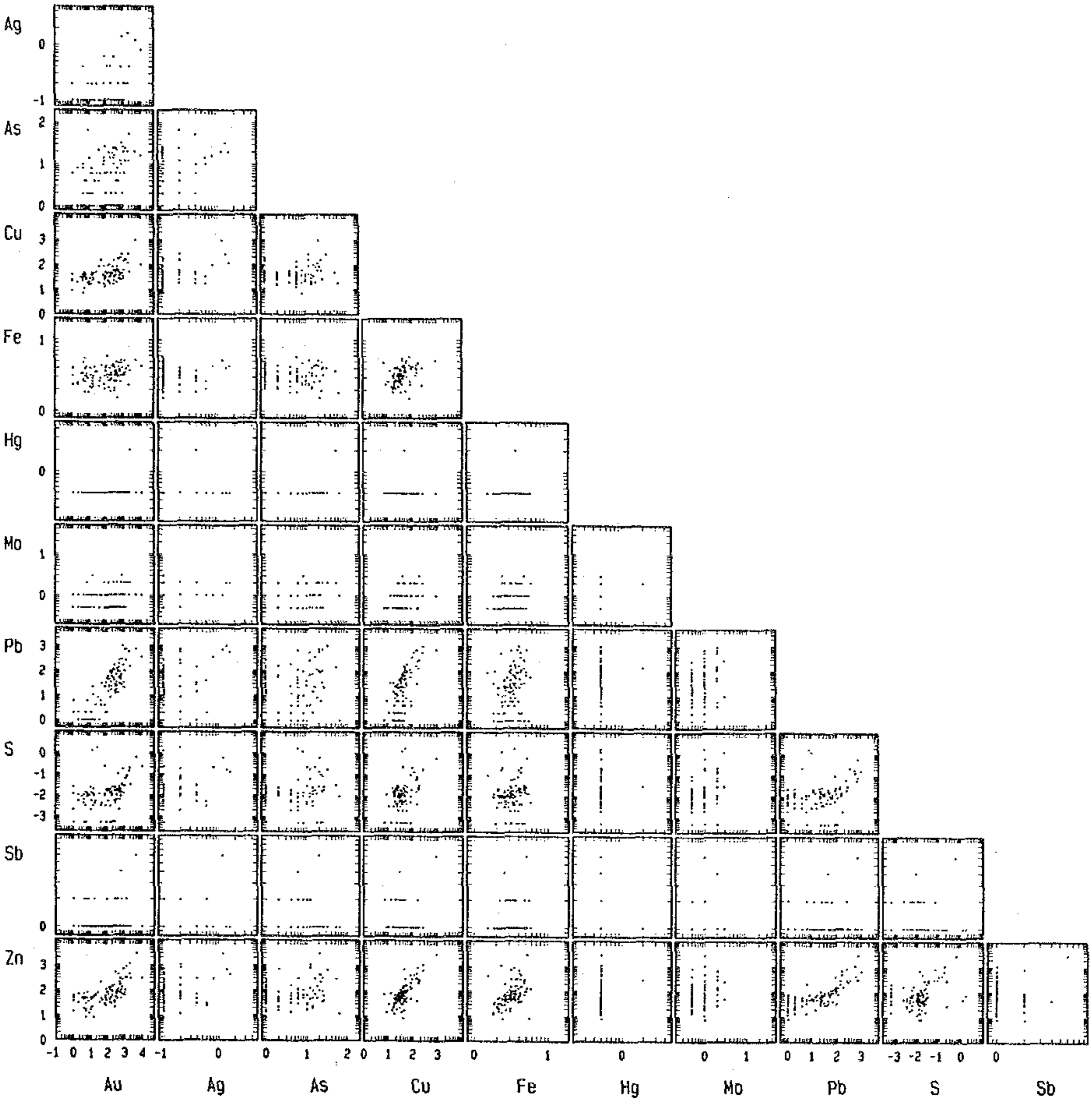


Fig.39 Scatter Diagram (soil, Detailed Survey Area)

Table 37 **Basic Statistic Values of Elements (Soil, Detailed Survey Area)**

Element	Unit	Maximum	Minimum	Average	Av.-log	Stand.Dev.
Au	ppb	9930	1	422.453	1.896	0.937
Ag	ppm	1.6	<0.2	0.177	-0.885	0.265
As	ppm	64	<2	7.557	0.549	0.541
Cu	ppm	900	7	58.491	1.598	0.328
Fe	%	5.82	1.53	3.312	0.504	0.120
Mo	ppm	3	<1	0.892	-0.113	0.222
Pb	ppm	968	<2	79.264	1.182	0.865
S	%	1.71	<0.001	0.054	-1.990	0.685
Sb	ppm	6	<2	1.208	0.053	0.136
Zn	ppm	2830	8	141.396	1.844	0.442

Average Au contents in soil, 422 ppb is by far higher than those of basalt, granodiorite and granite(4 ppb respectively; Berkman, 1976). On the contrary, content of Ag is very low.

Scatter Diagrams and Correlation Coefficients of the analytical values of soil are shown in Fig.31 and Table 38 respectively.

Table 38 **Correlation Coefficients between Elements (Soil, Detailed Survey Area)**

	Au	Ag	As	Cu	Fe	Mo	Pb	S	Sb	Zn
Au	1.000									
Ag	0.329	1.000								
As	0.302	0.358	1.000							
Cu	0.556	0.346	0.159	1.000						
Fe	0.237	0.050	-0.073	0.392	1.000					
Mo	0.252	0.353	0.286	0.362	0.103	1.000				
Pb	0.850	0.355	0.237	0.676	0.321	0.375	1.000			
S	0.354	0.384	0.221	0.393	0.030	0.302	0.329	1.000		
Sb	0.027	0.138	0.080	0.087	0.088	-0.029	0.000	0.035	1.000	
Zn	0.644	0.376	0.237	0.741	0.390	0.289	0.759	0.337	0.105	1.000

(2) Classification of Anomarous Values

Mean value and standard variation together with frequency distribution and cumulative frequency distribution curves were used to set threshold value. Frequency distribution and cumulative frequency distribution are shown in Fig.40. Classification is based on $1/2\sigma$. For elements Au, Ag, S, Sb, Zn , two steps of classifications are set to distinguish the high anomalies. This classifications is shown in Table 39.

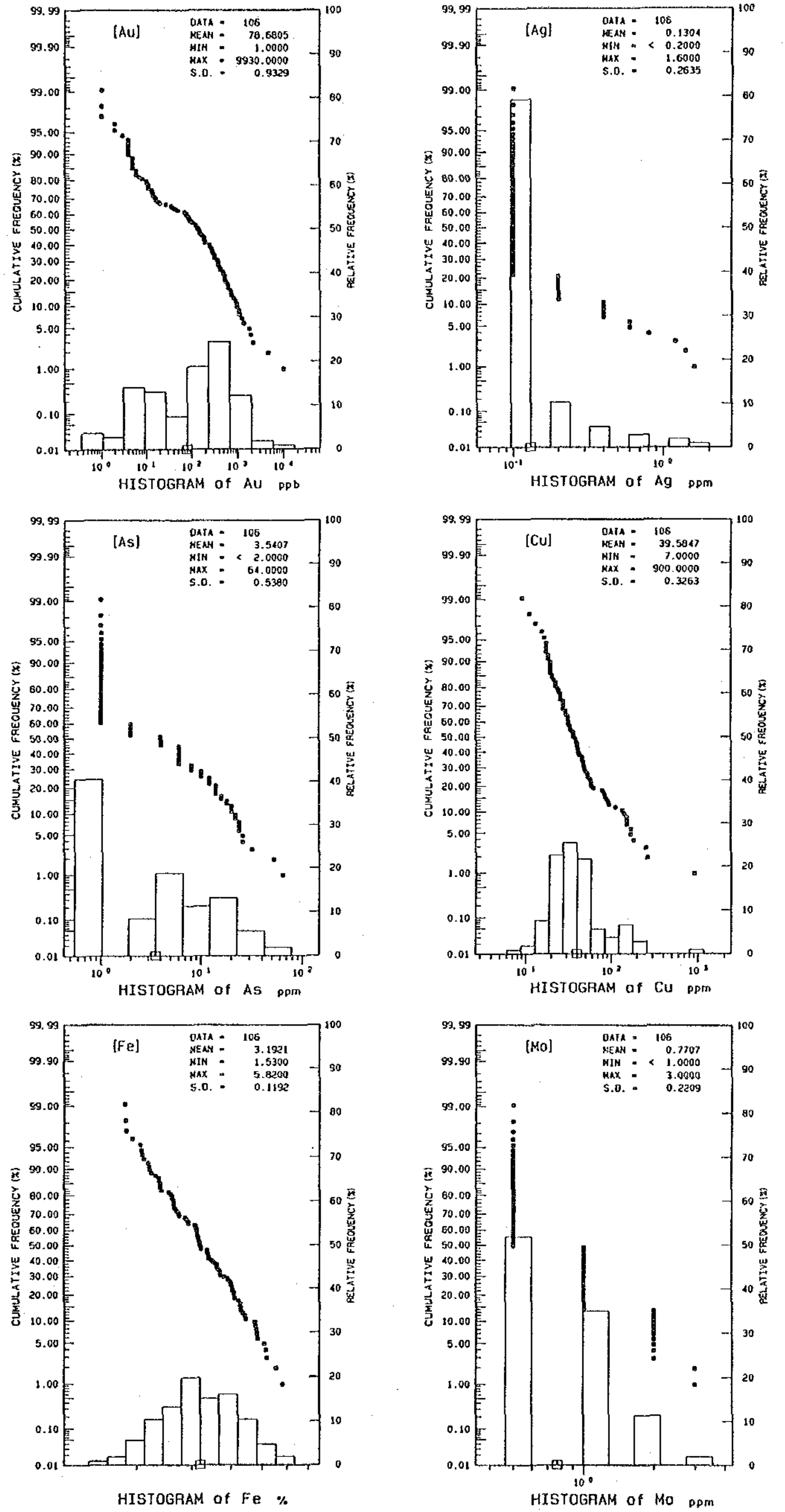


Fig.40 Frequency Distribution and Cumulative Frequency Distribution (soil, Detailed Survey Area)(1)

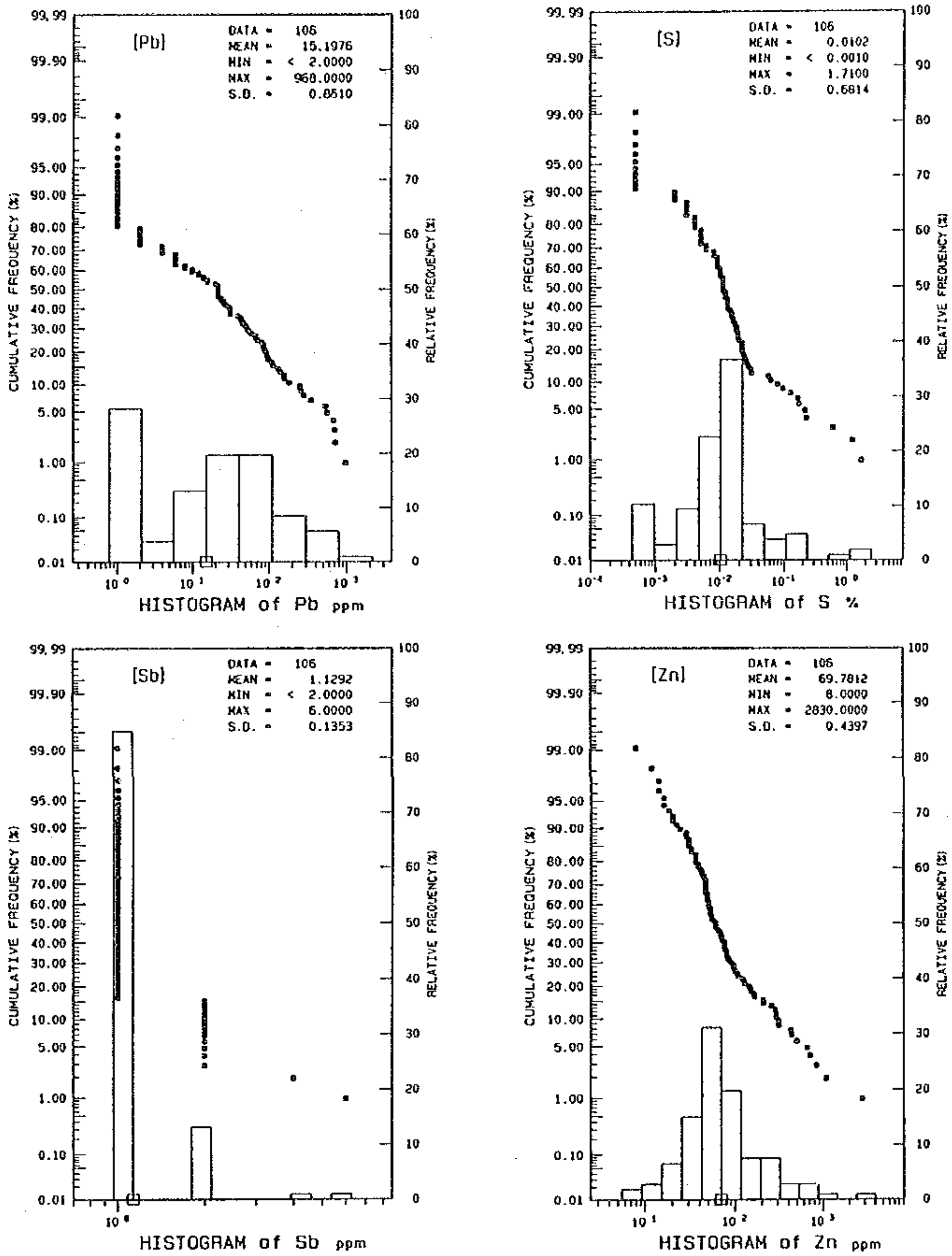


Fig.40 Frequency Distribution and Cumulative Frequency Distribution (soil, Detailed Survey Area)(2)

Table 39 **Classification of Geochemical Anomalies (Soil, Detailed Survey Area)**

Au	M(78.68ppb)	M+1.5 σ(1973.41ppb)
Ag	M+1.5 σ(0.324ppm)	M+3 σ(0.805ppm)
As	M+1.5 σ(22.70ppm)	
Cu	M+1.5 σ(122.17ppm)	
Fe	M+1.5 σ(4.818%)	
Mo	M+1.5 σ(1.653ppm)	
Pb	M+1.5 σ(297.35ppm)	
S	M+ σ(0.049%)	M+2 σ(0.235%)
Sb	M+ σ(1.542ppm)	M+3 σ(2.875ppm)
Zn	M+1.5 σ(318.63ppm)	M+2.5 σ(876.98ppm)

(3) Distribution of Anomaly Areas

Distribution of geochemical anomalies is shown in Fig.41.

(Au) Au anomaly zones distribute widely in the Campo and Gata Mineral Occurrences. In the Campo Mineral Occurrence, Au content is higher on the southern slope of E-W trending ridge and there are points with very high content of Au on the southern slope of the ridge and on the beach. The beach is contaminated with slime and waste of the old mine. Villagers panns gold at the beach. Onthe other hand, in the Gata Mineral Occurrence, Au content is relatively high and homogeneous except one spot point of high content in the southeastern part.

(Ag) There are anomalies of Ag in the southern part, central portion of the mountain ridge, and on the coast of the Campo Mineral Occurrence.

(As) As anomalies are distributed in the southeastern part and the western part of the Gata Mineral Occurrence. They are also located in the southern part of the Gata Mineral Occurrence. One spot anomaly is located in the southeastern part of the water resevoir.

(Cu) Anomalies of Cu are distributed in the southern and western parts of the Campo Mineral Occurrence. Besides, there are spotted anomalies on the coast and in the western part of the resevoir. There is a spot anomaly in the southern part of the Gata Mineral Occurrence.

(Fe) Anomalies of Fe are located in the southern part of the Campo Mineral Occurrence. Spot anomaly is situated on the coast near the Occurrence. The anomalies are also distributed in the western part of the Gata Mineral Occurrence. There is a spot anomaly at the northern part of the swampy lowland of the Gata Mineral Occurrence.

(Mo) Anomalies of Mo are distributed in the southern parts of the Campo Mineral Occurrence. They are also scattered in the Gata Mineral Occurrence and in its periphery.

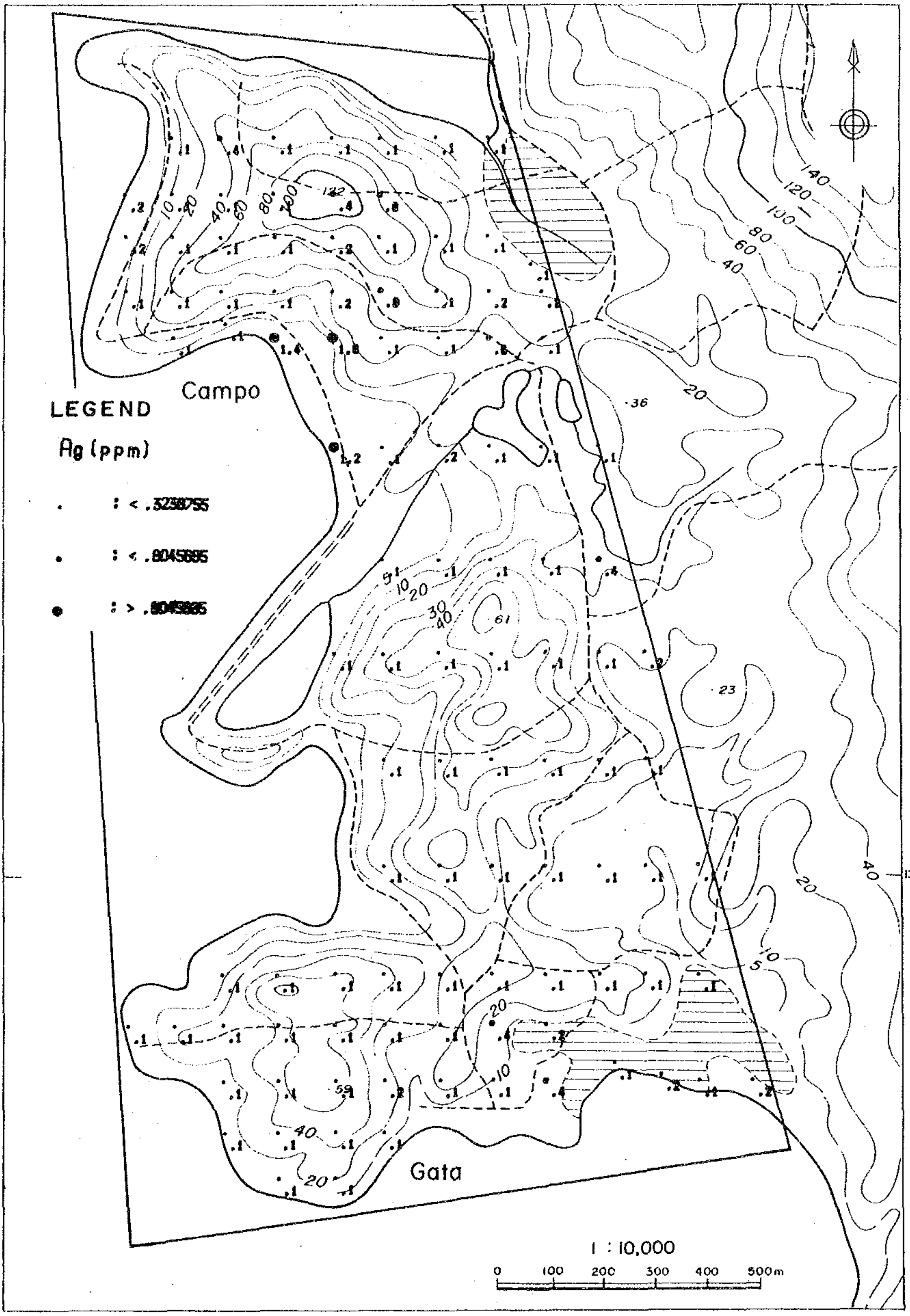


Fig.41 Distribution of Geochemical Anomalies (soil, Detailed Survey Area)(1)

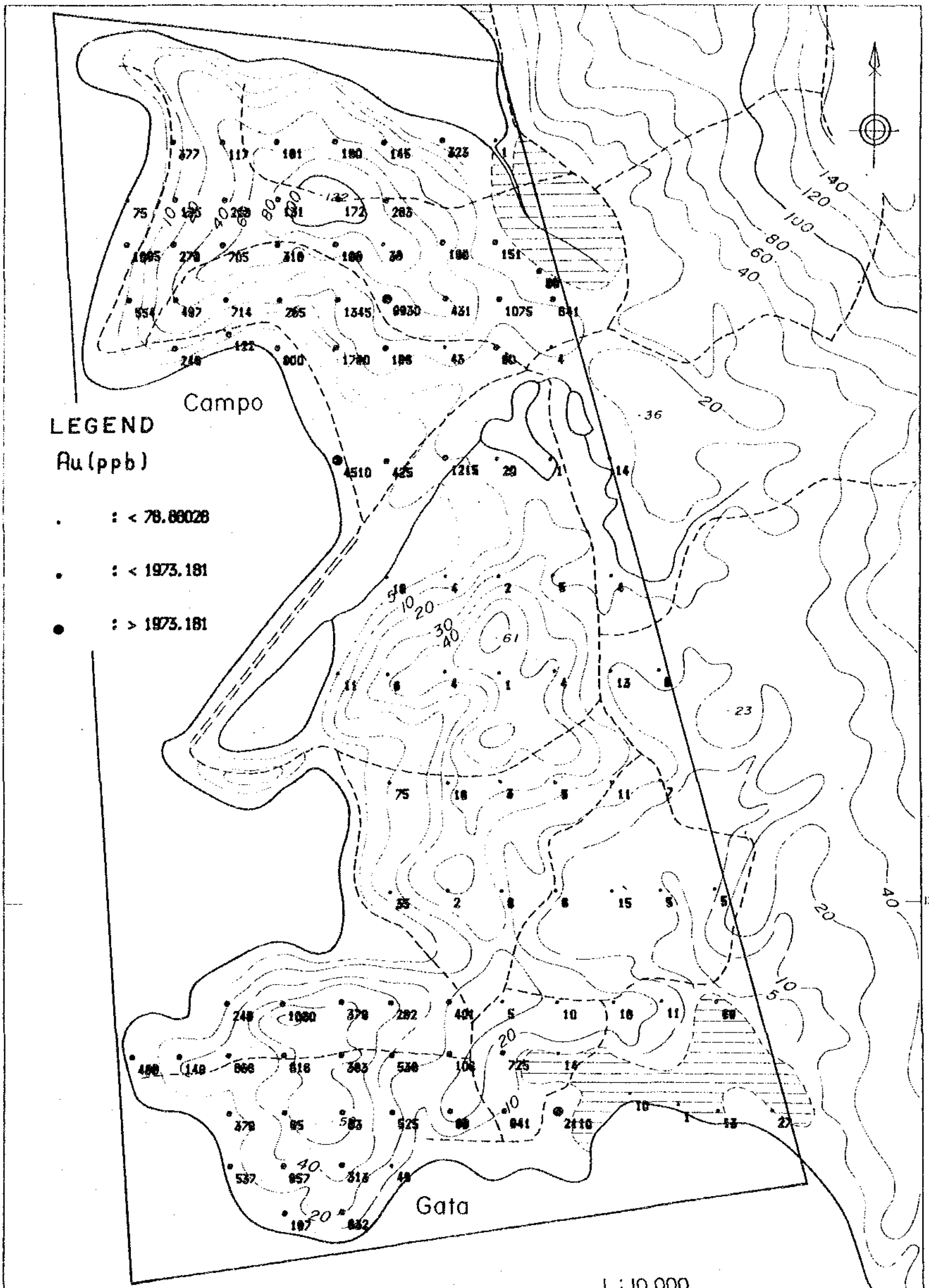


Fig.41 Distribution of Geochemical Anomalies (soil, Detailed Survey Area)(2)

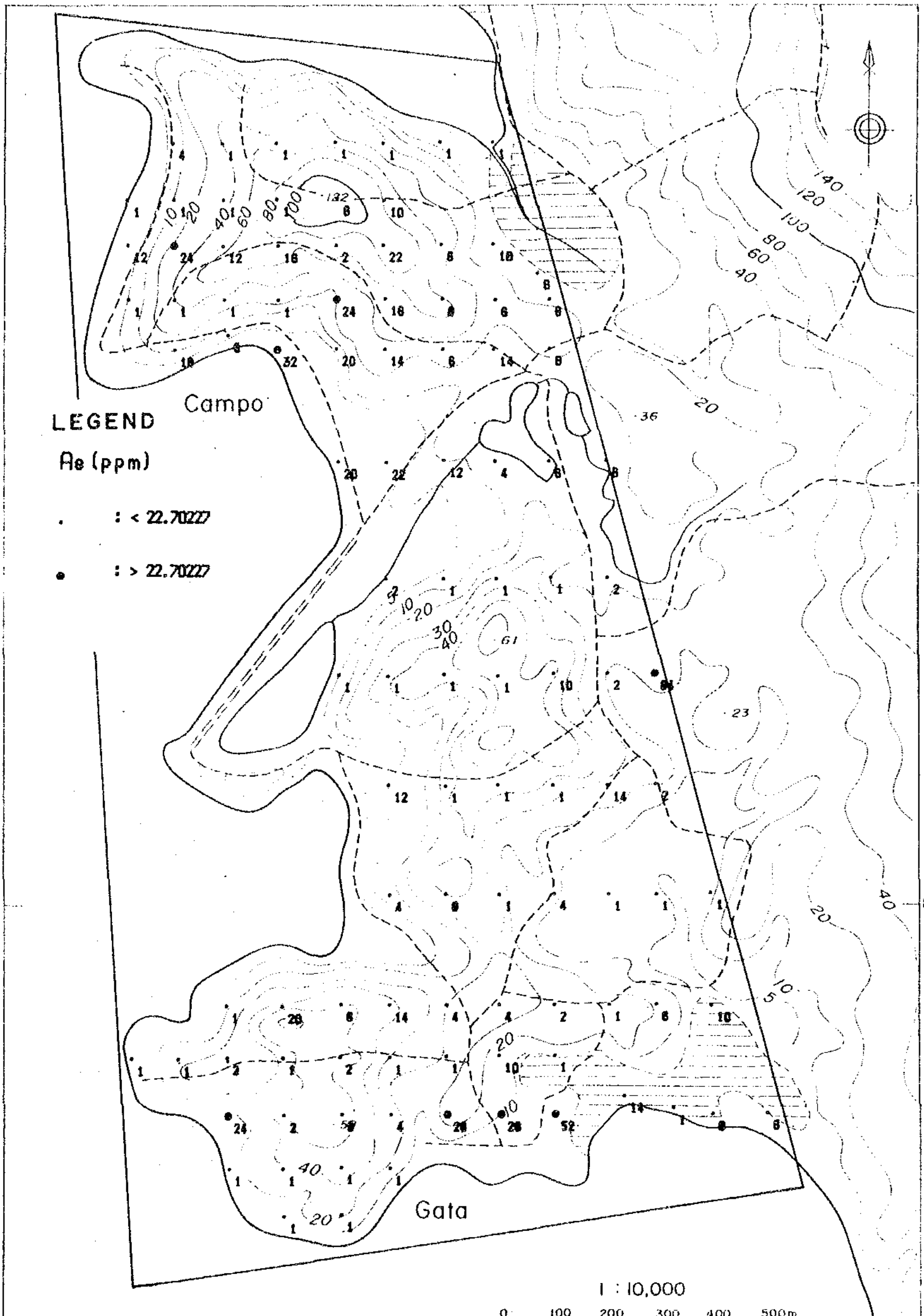


Fig.41 Distribution of Geochemical Anomalies (soil, Detailed Survey Area)(3)

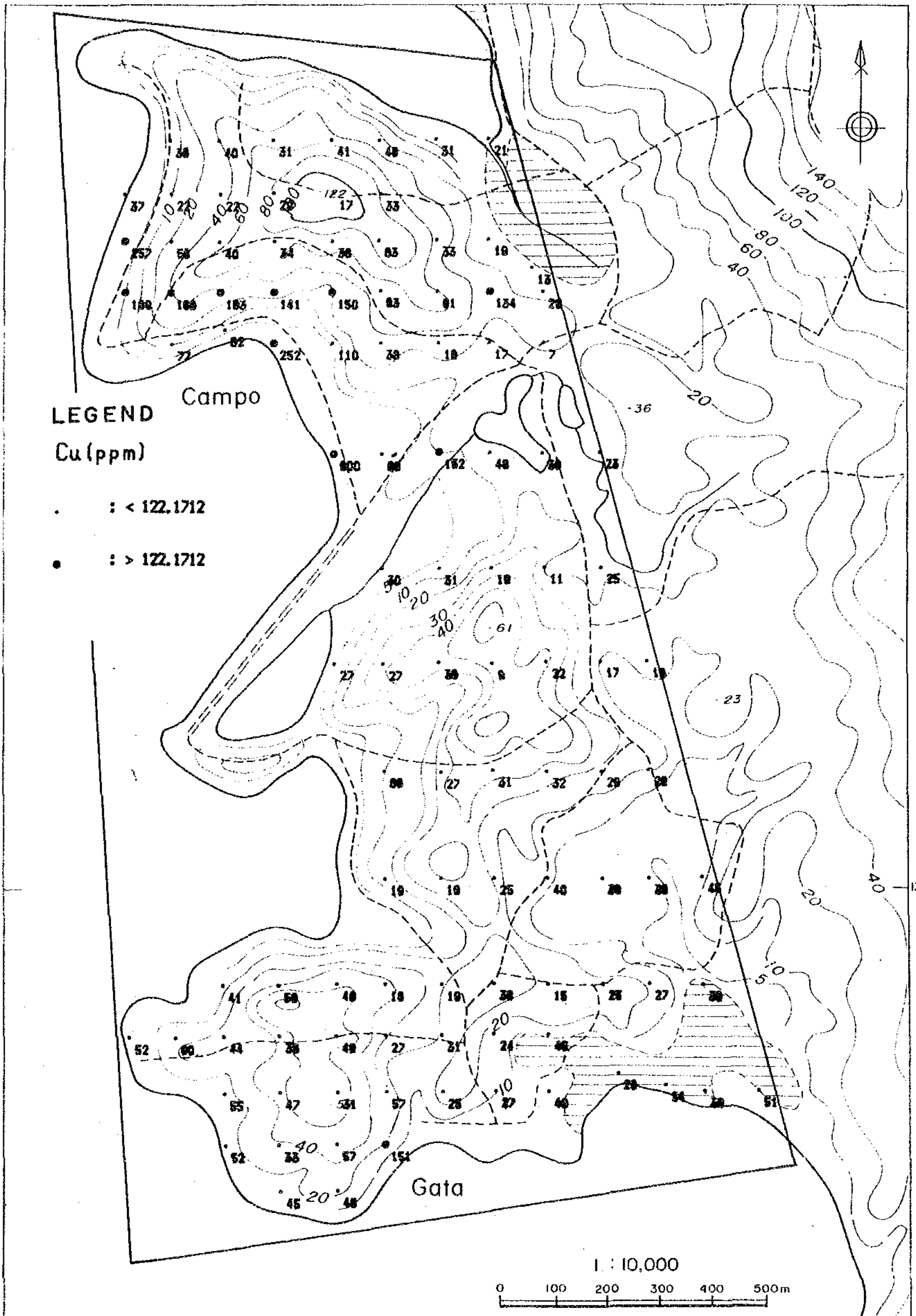


Fig.41 Distribution of Geochemical Anomalies (soil, Detailed Survey Area)(4)

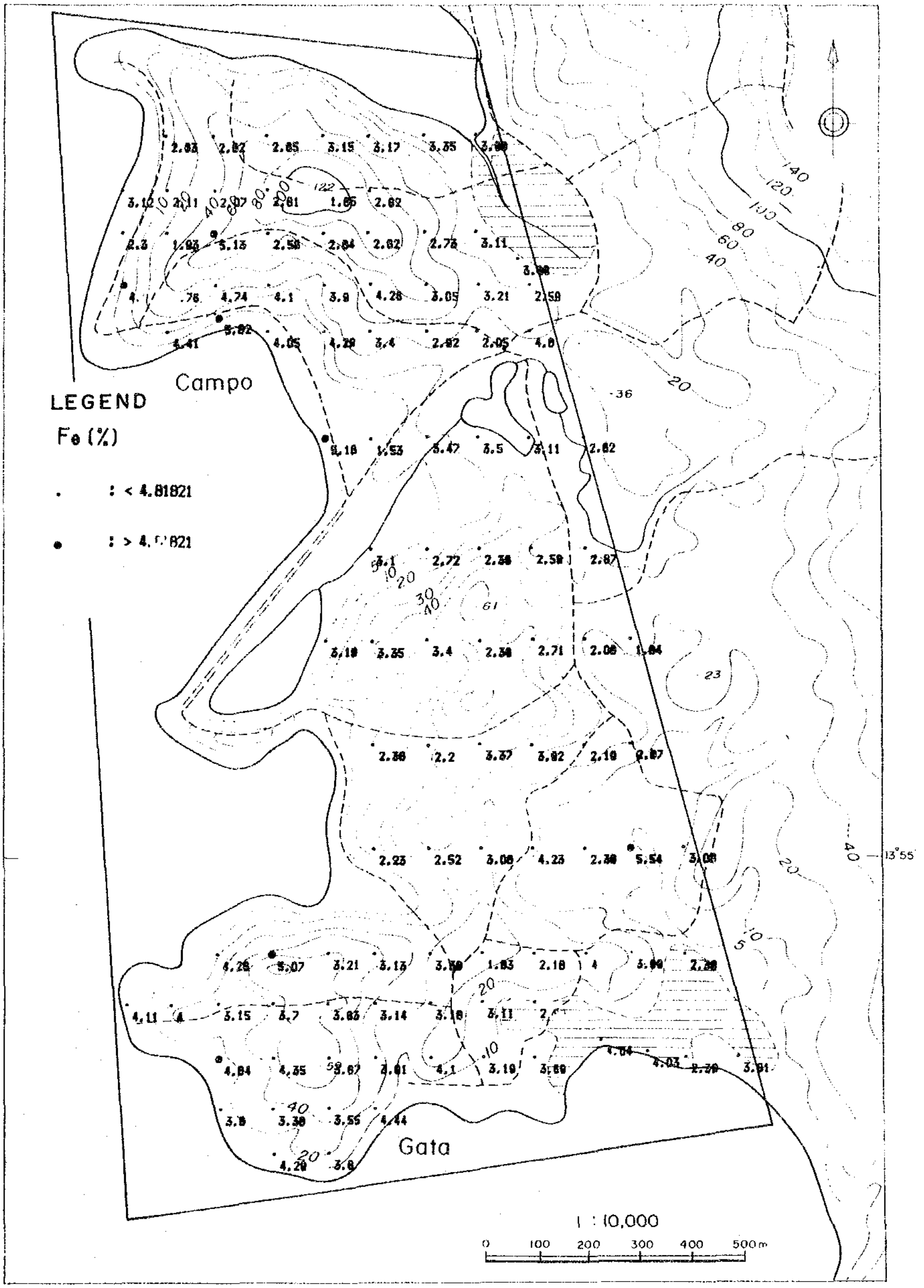


Fig.41 Distribution of Geochemical Anomalies (soil, Detailed Survey Area)(5)

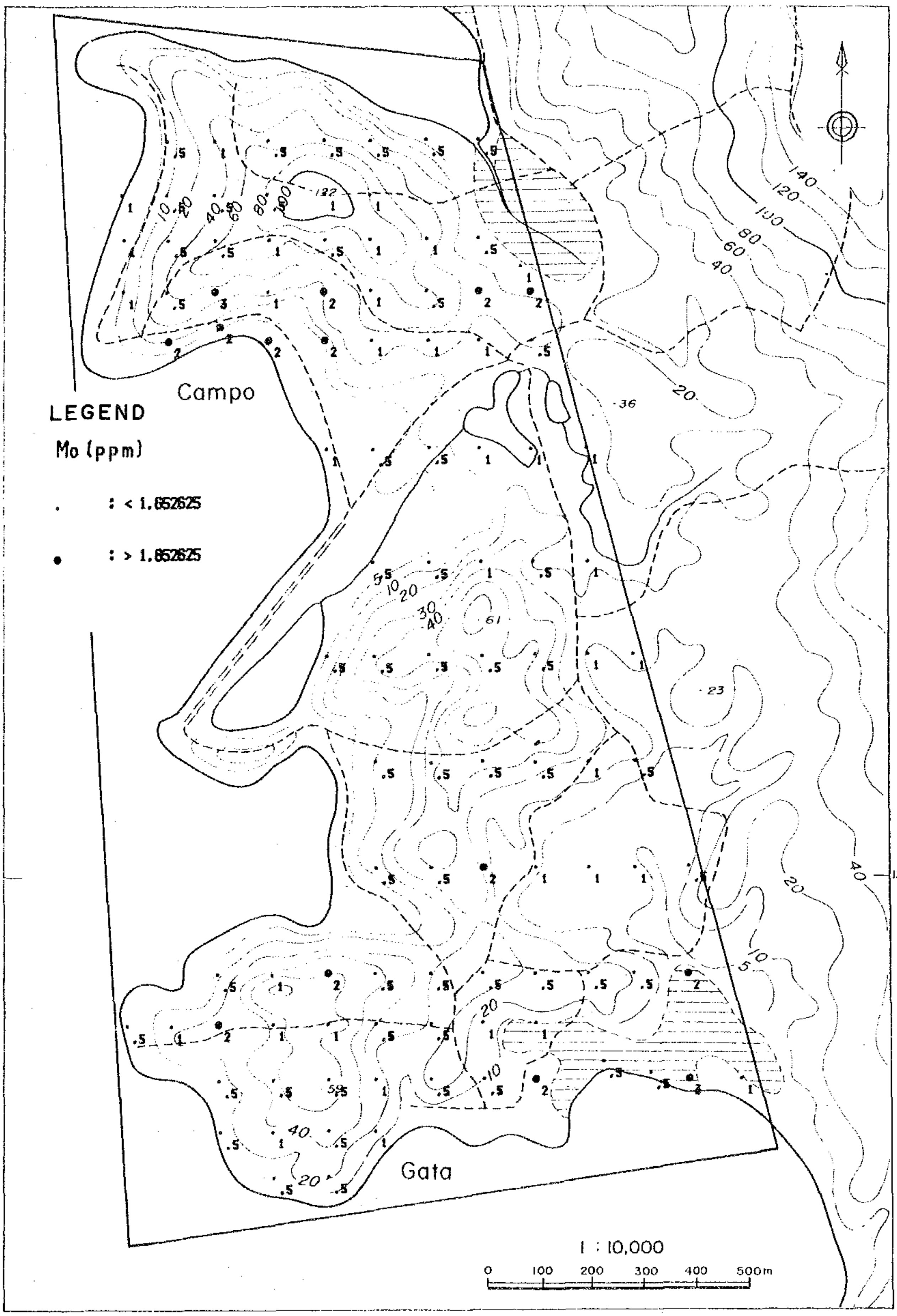


Fig.41 Distribution of Geochemical Anomalies (soil, Detailed Survey Area)(6)

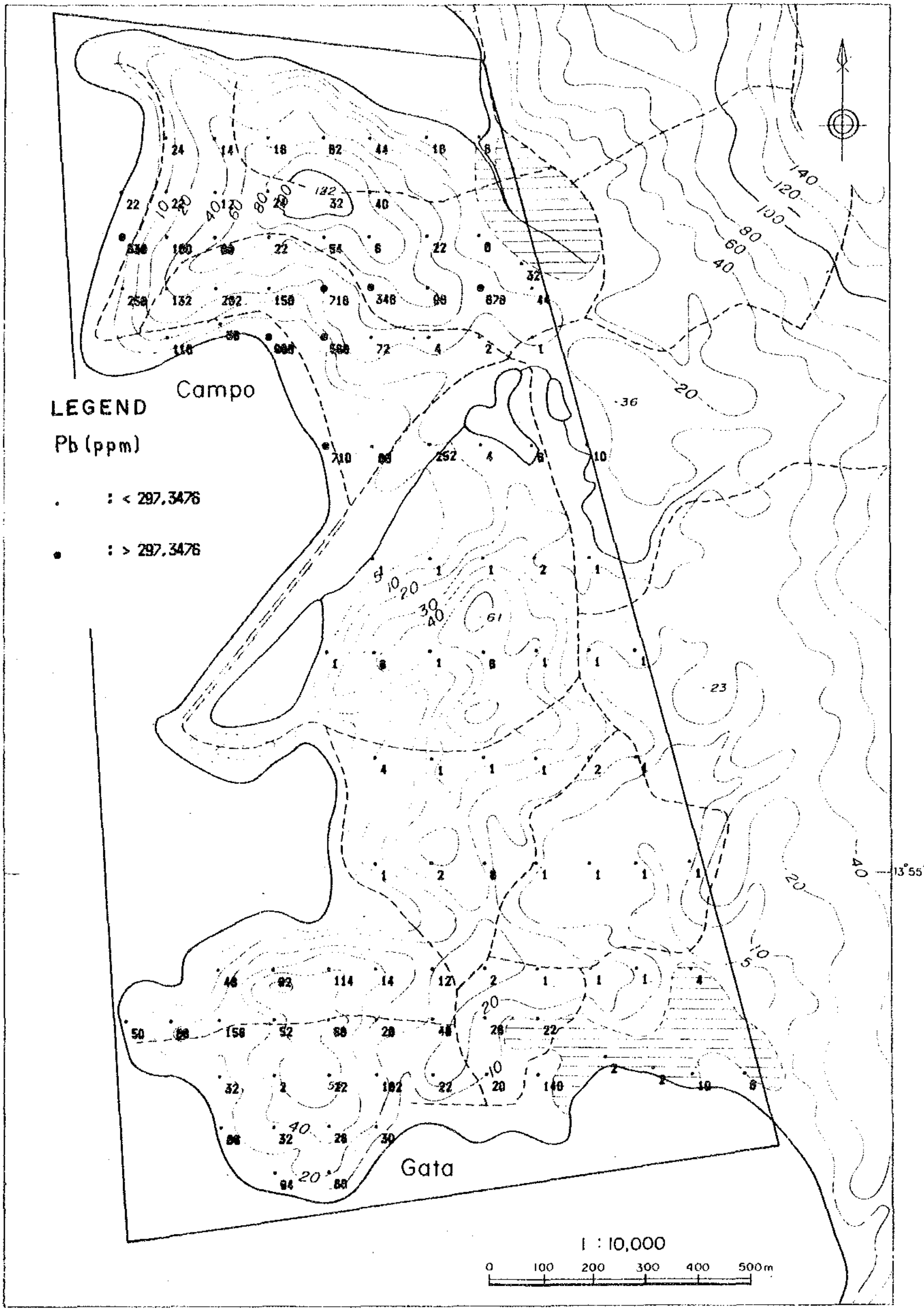


Fig.41 Distribution of Geochemical Anomalies (soil, Detailed Survey Area)(7)

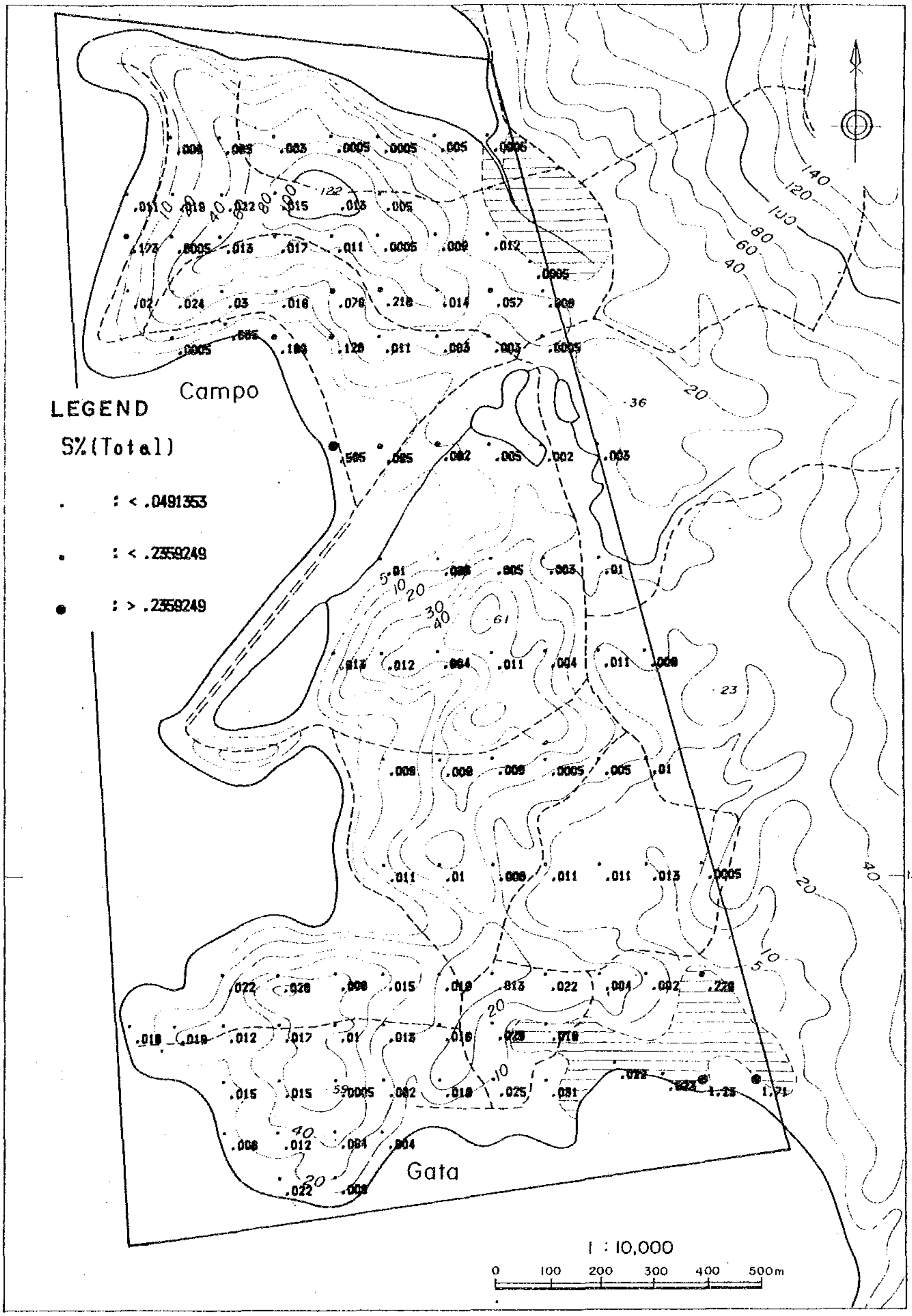


Fig.41 Distribution of Geochemical Anomalies (soil, Detailed Survey Area)(8)

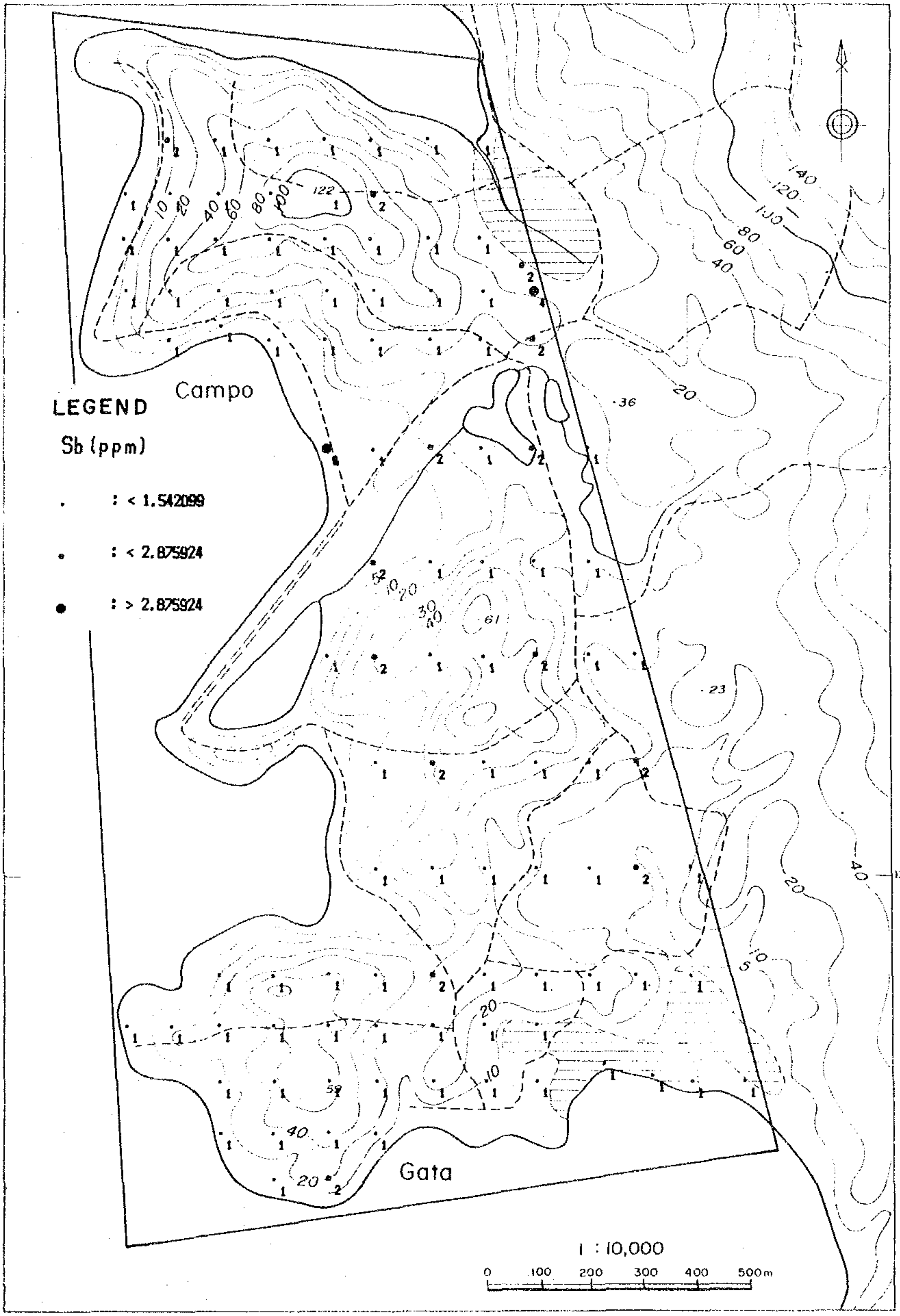


Fig.41 Distribution of Geochemical Anomalies (soil, Detailed Survey Area)(9)

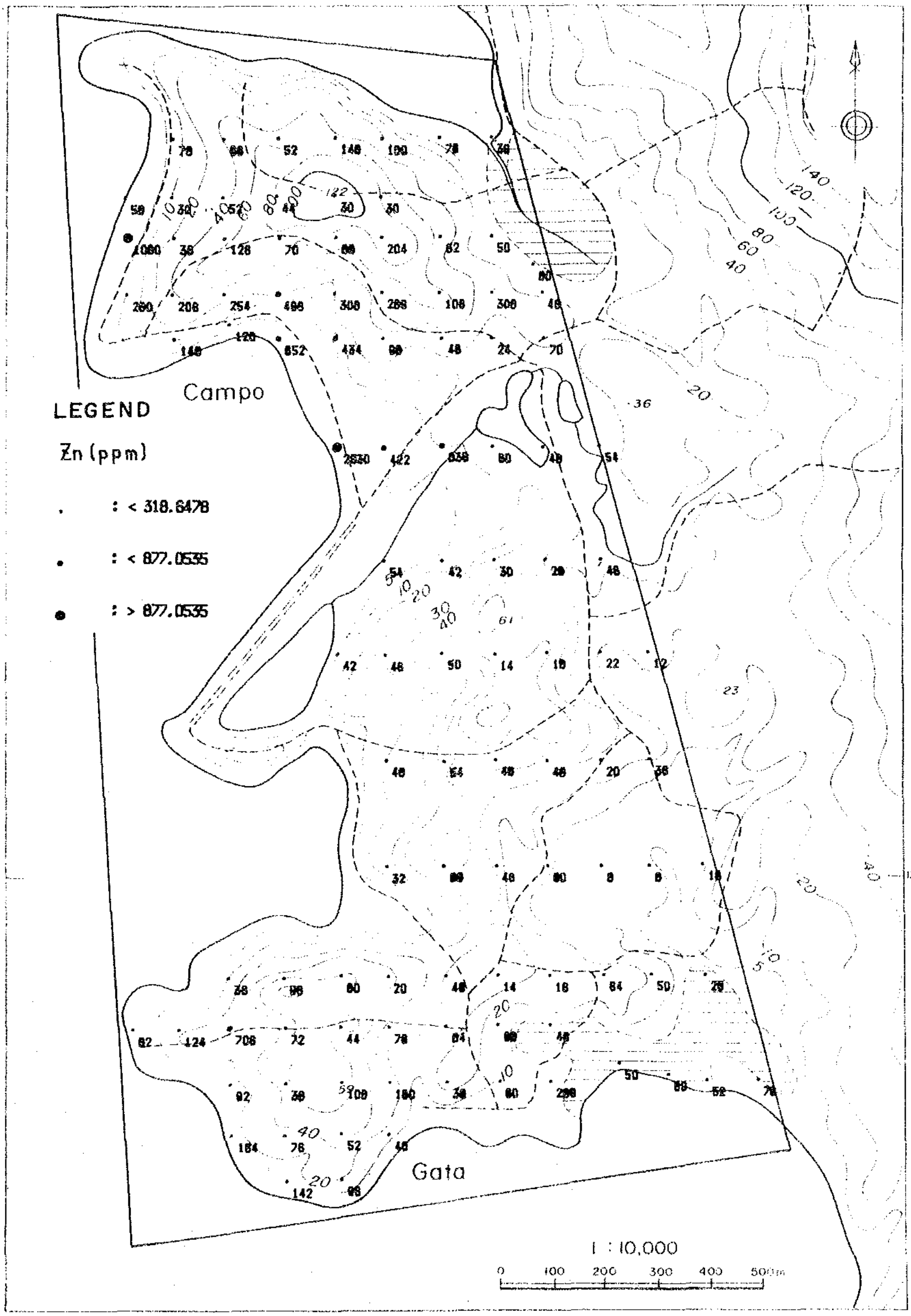


Fig.41 Distribution of Geochemical Anomalies (soil, Detailed Survey Area)(10)

(Pb) Anomalies of Pb are located in the southern and western parts of the Campo Mineral Occurrence. Spot anomalies are located on the beach and at the western part of the resevoir.
(Sb) Strong spot Anomalies of Sb are distributed in the easten end of the Campo Mineral Occurrence and on the coast.
(Zn) Strong Anomalies of Zn are spotted in the western part of the Campo Mineral Occurrence and on the coast.

Gold anomalies are distributed in both Occurrences and it implies high potential there. There is an anomaly in the western part of the reservoir including coast but it may originate from the contamination of the former mining operation.

(4) Principal Component Analysis

Correlation matrix , shown in Table 38, was used for the Principal Component Analysis. Hg was excluded from the analysis because most of the assay values are under the lower detection limits. Results of PCA and scores of PCA are shown in Table 40 and Fig. 42 respectively.

Table 40 **Results of the PCA (Soil, Detailed Survey Area)**

Eigen value				Factor Loading					
P.C.	E.V.	Con.	CumCon		Z-01	Z-02	Z-03	Z-04	Z-05
Z-01	4.061	40.610	40.610	Pb	0.880	0.189	-0.153	-0.218	0.001
Z-02	1.375	13.754	54.364	Zn	0.852	0.233	0.040	-0.098	-0.022
Z-03	1.055	10.554	64.918	Cu	0.819	0.226	0.015	0.132	-0.075
Z-04	0.822	8.222	73.139	Au	0.812	0.107	-0.126	-0.390	-0.079
Z-05	0.764	7.643	80.782	Ag	0.574	-0.469	0.183	0.153	-0.033
Z-06	0.593	5.925	86.707	Mo	0.522	-0.346	-0.178	0.508	0.386
Z-07	0.559	5.592	92.299	Fe	0.394	0.633	0.180	0.324	0.298
Z-08	0.426	4.260	96.559	As	0.406	-0.599	0.078	-0.360	0.412
Z-09	0.233	2.334	98.893	Sb	0.109	-0.033	0.953	-0.036	-0.052
Z-10	0.111	1.107	100.000	S	0.545	-0.351	-0.052	0.280	-0.584

Abbreviations are as same as Tabele 28.

As expected from the strong correlation among elements Au, Cu, Pb and Zn shown in Table 38, the obvious results were obtained from the principal component analysis. Eigenvalue and contribution ratio of the first principal component are as large as 4.06 and 40.6% respectively, and the component has about 40% of the explanatory component of the variance of the analyzed values. Eigenvalues up to the fifth principal component are more than 1.0. Each

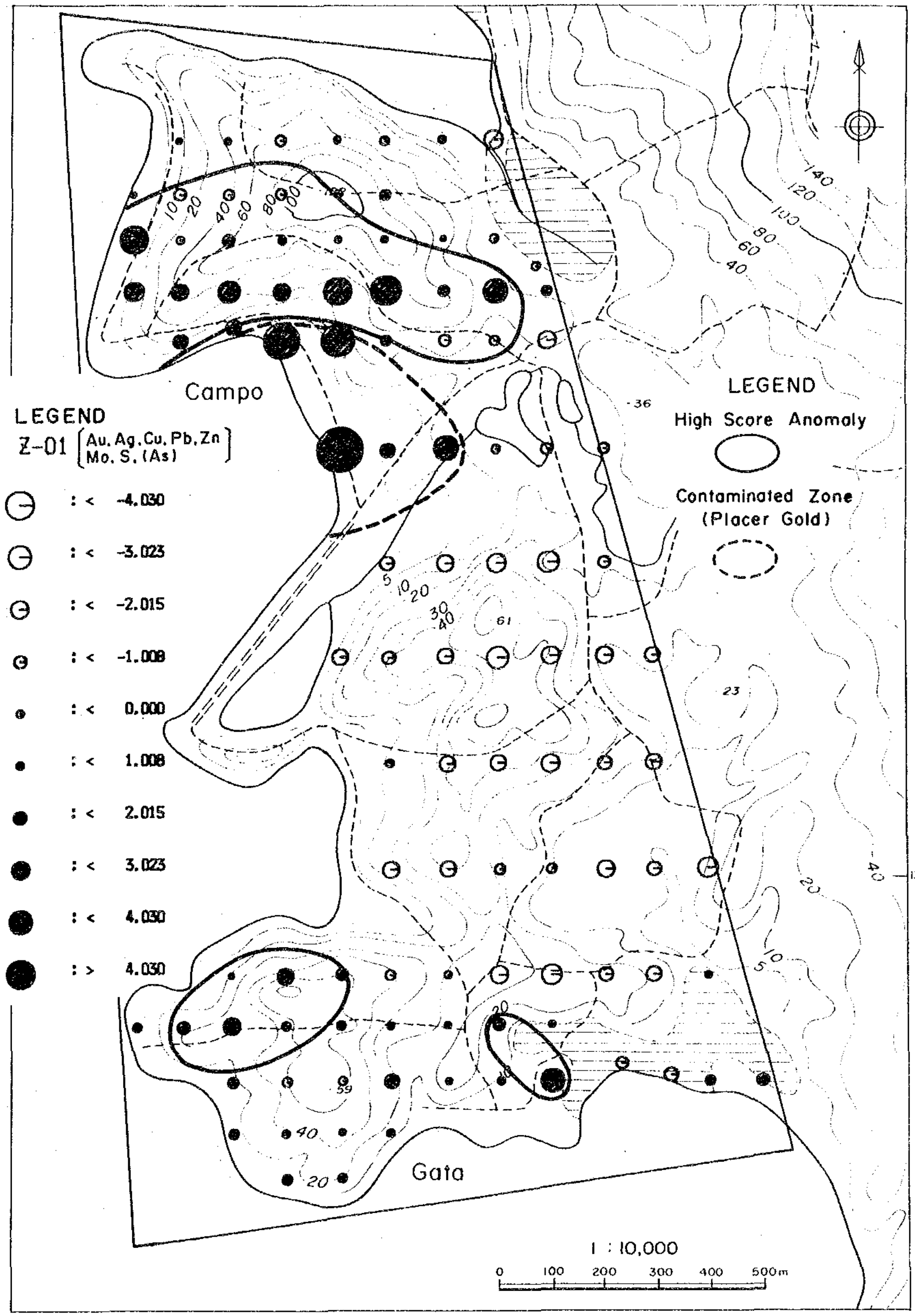


Fig.42 Distribution of PCA Scores (soil, Detailed Survey Area)(1)

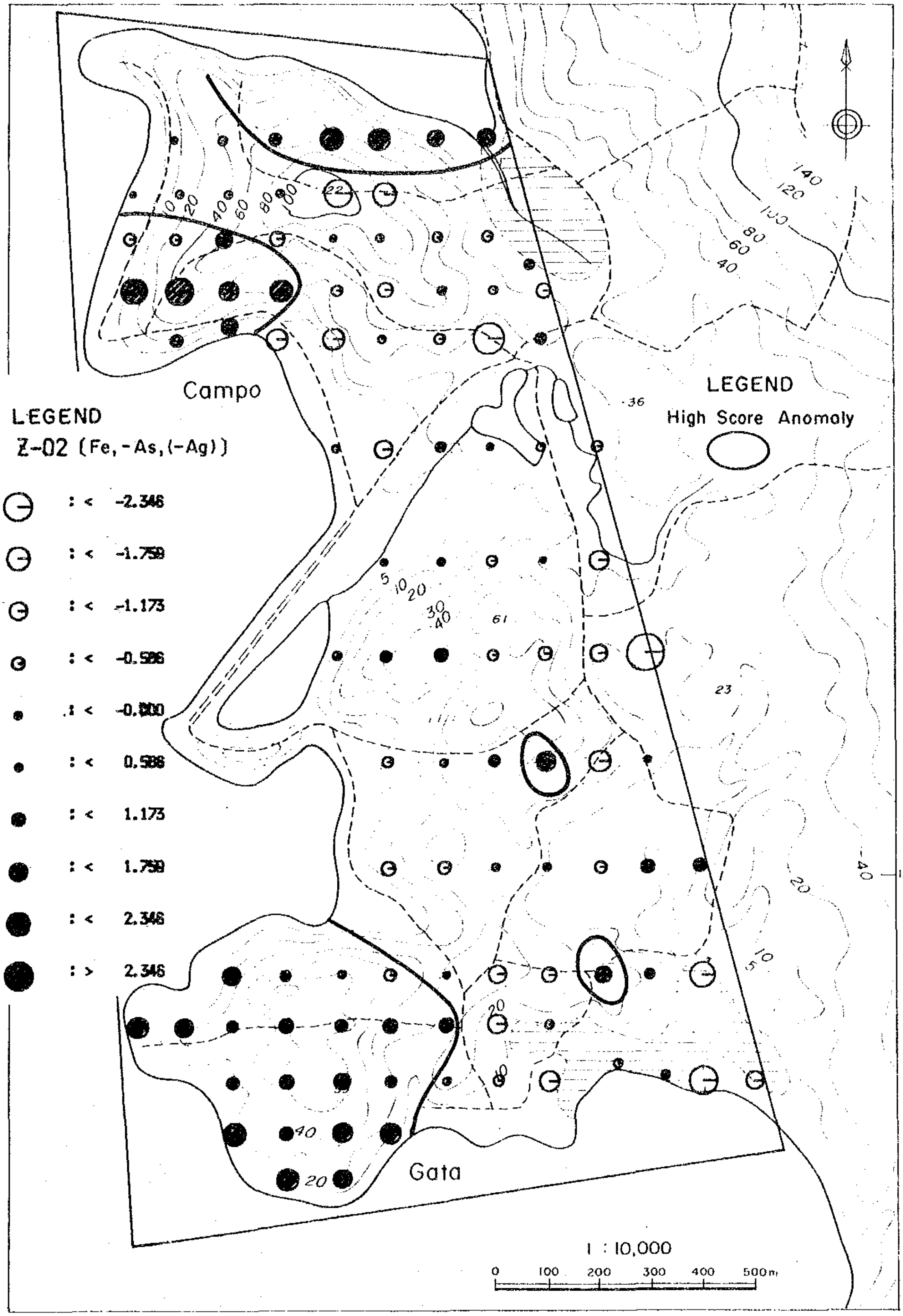


Fig.42 Distribution of PCA Scores (soil, Detailed Survey Area)(2)

principal component has following characteristic factors.

First principal component: This component has large factor loadings of Au, Ag, Cu, Pb, Zn, Mo, S and (As) and it explains the mineralization. The high score zones are picked up in the Campo Mineral Occurrence and Gata Mineral Occurrence. The results of the component is harmonious with the following fact : The mineral deposits of the two occurences are Au and Ag bearing quartz veins with chalcopyrite,galena and sphalerite.

High positive scores were also picked up on the coast and its eastern extension, but they are thought to be derived from the contamination.

Second principal component: This component is has large factor loadings of Fe, -As, and (-Ag). Positive strong scores are distributed on the sothern, western and northern slopes of the Campo Mineral Occurrence, and western part of the Gata Mineral Occurrence. Besides, there are two spotted points between the two Occurrences. This factor may imply the relation with limonitization by the weathering.

Third principal component: Third principal component : This component is thought not to have geological meaning.

As aforementioned, the most important indication of the mineralization is presented in the first principal component and it implies the mineralization of the two Occurrences. The distributions of scores of the first principal component is concordant with the areas of the two Occurrences. So, it may give important clues for the exploration in Lahuy Island to analyze the high factor loading elements of the first principal component.

3-4-4 Soil Geochemical Survey in Reconnaissance Area

(1) Data processing

Common logarithm of assay values was used in the statistic processing. For the samples under the lower detection limits, the half values of the lower detection limits were used for calculation.

(1-1) Statistic Processing

Basic statistic values are shown in Table 41. Compared with data of the Detailed Survey Area, the content of Au, Pb, Zn in the Reconnaissance Survey Area are lower but that of Cu is almost the same. The content of Ag, As, Mo and Sb in the Reconnaissance Surnvey Area are slightly lower and that of Fe is a little bit higher.

Scatter diagram and correlation coefficients of the Reconnaissance Survey Area are shown in Table 42 and in Fig.43 respectively.

Table 41 **Basic Statistic Values of Elements**
(Soil, Reconnaissance Survey Area)

Element	Unit	Maximun	Minimum	Average	Av.-log	Stand.Dev.
Au	ppb	154	<1	5.244	0.324	0.021
Ag	ppm	0.6	<0.2	0.112	-0.966	0.004
As	ppm	30	<2	3.606	0.294	0.016
Cu	ppm	226	8	58.732	1.726	0.008
Fe	%	12.7	1.66	4.602	0.650	0.004
Hg	ppm	2	<1	0.544	-0.278	0.003
Mo	ppm	2	<1	0.569	-0.264	0.004
Pb	ppm	214	<2	5.769	0.465	0.018
S	%	0.65	<0.001	0.015	-2.341	0.028
Sb	ppm	6	<2	1.167	0.042	0.005
Zn	ppm	172	16	50.402	1.686	0.005

Au has moderate positive correlation with Fe and weak positive correlation with Zn. There are no correlation between Au and Cu, Pb, Zn, which was observed in the Detailed Survey Area. But it is advisable to pay attension to the behavior of elements Cu, Pb, Zn because they are importanyt elements for the mineralization.

Table 42 **Correlation Coefficients between Elements**
(Soil, Reconnaissance Survey Area)

	Au	Ag	As	Cu	Fe	Hg	Mo	Pb	S	Sb	Zn
Au	1.000										
Ag	-0.071	1.000									
As	-0.035	-0.060	1.000								
Cu	0.198	0.139	-0.011	1.000							
Fe	0.112	0.028	-0.012	0.590	1.000						
Hg	-0.128	0.098	0.101	0.029	0.061	1.000					
Mo	0.144	-0.116	0.042	0.015	0.075	-0.056	1.000				
Pb	0.108	-0.137	0.018	0.084	0.167	-0.120	0.203	1.000			
S	-0.159	0.106	0.199	-0.140	-0.110	-0.049	-0.133	-0.039	1.000		
Sb	0.038	-0.085	0.104	-0.023	0.012	-0.059	0.156	0.055	-0.040	1.000	
Zn	-0.070	0.135	-0.005	0.411	0.386	0.117	-0.156	0.023	0.064	-0.110	1.000

(1-2) Classification of Anomaly Values

The threshold values were set in the same manner as in the Detailed Survey Area in Lahuy Island. For elements Au, As, Cu, Pb, Mo, S and Zn, two steps of classifications are set to distinguish the high anomalies.

Frequency distribution and cumulative frequency distribution of soil samples are shown in Fig.44. Classification is based on the half value of the standard deviation. The classification is

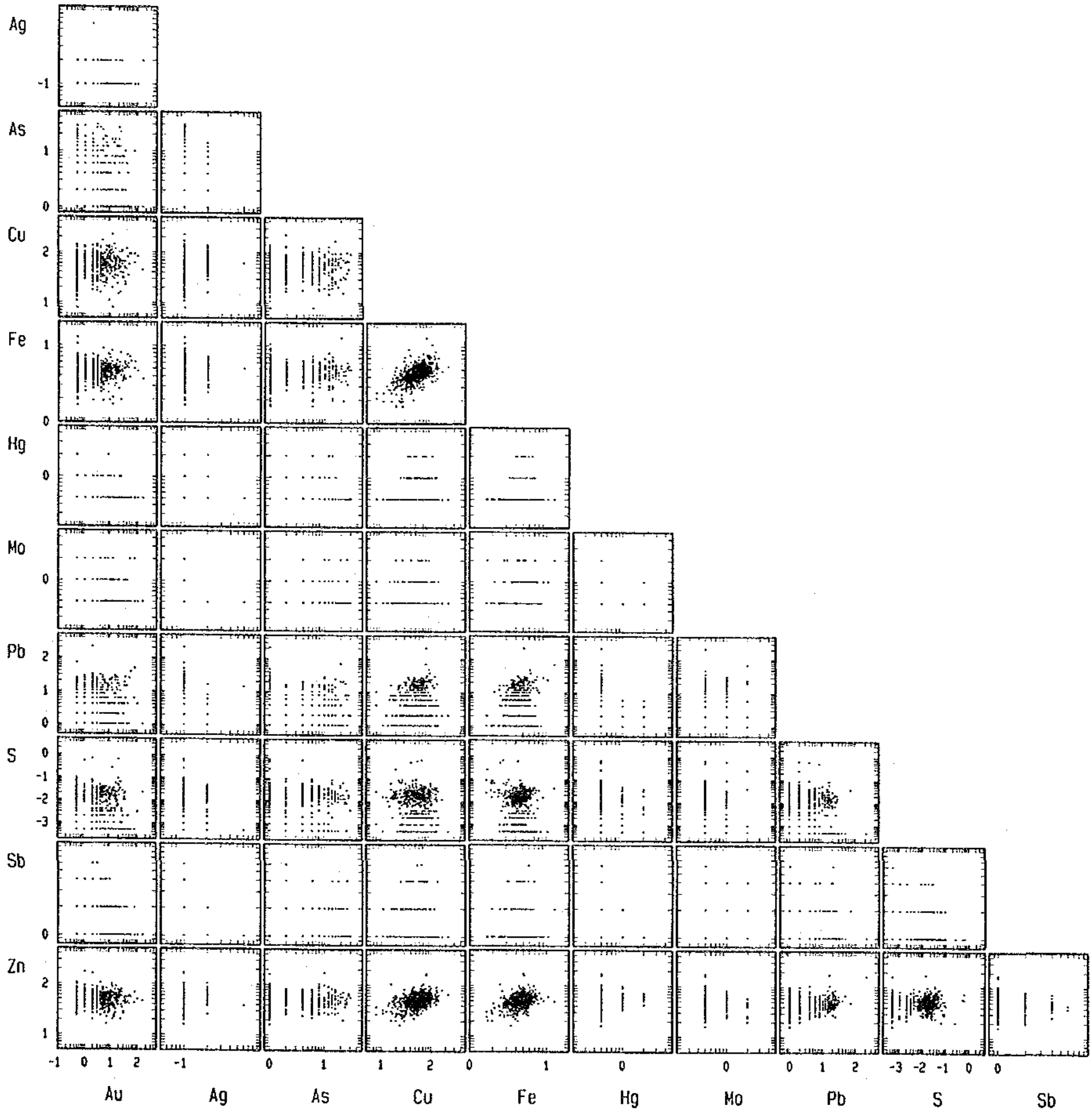


Fig.43 Scatter Diagram (soil, Reconnaissance Survey Area)

shown in Table 43.

Table 43 **Classification of Geochemical Anomalies (Reconnaissance Survey Area)**

Au	M+ σ (7.643ppb)	M+2 σ (27.718ppb)
Ag	M+ σ (0.136ppm)	
As	M+ σ (5.259ppm)	M+2 σ (14.043ppm)
Cu	M+ σ (84.484ppm)	M+1.5 σ (106.433ppm)
Fe	M+1.5 σ (6.442%)	
Hg	M+2 σ (0.807ppm)	
Mo	M+1.5 σ (0.800ppm)	M+3 σ (1.174ppm)
Pb	M+ σ (8.698ppm)	M+2 σ (25.925ppm)
S	M+ σ (0.026%)	M+1.5 σ (0.061%)
Sb	M+1.5 σ (1.699ppm)	M+3 σ (2.620ppm)
Zn	M+ σ (63.968ppm)	M+1.5 σ (73.462ppm)

(2) Distribution of Anomaly Areas

Distribution of anomaly values is shown in Fig.45.

(Au) Au anomalies are distributed widely in the surveyed area. The main anomaly zones are in the east area of Campo and Gata, southwest of Gogon, southern end and northern part of the island.

(Ag) The contrast(Difference) of Ag values is feeble. The anomaly zones are in the areas northeast of Campo, west of Gogon, northern end of the island and east of Gata.

(As) Anomaly zones are in the areas southwest and northeast of Gogon, east of Campo and east of Gata.

(Cu) Anomaly zones are in the areas west of Gogon, north of Campo, east of Campo and Gata, and southwestern end of the island. The anomalies along western coast in the southern half of the island overlap with those of Au, As, and Fe.

(Fe) Many small spotted anomalies are scattered all over the island. There are anomalies along the western coast in the southern half of the island. There is northwest trending alignment(?) of spotted anomalies in the area west of Gogon.

(Hg) The contrast of Hg values is feeble. The anomaly zones are in the areas northeast of Campo and northwestern part of the island.

(Mo) The contrast of Mo values is feeble. The anomaly zones are in the areas east of Campo, southwest of Gogon and at the southern end of the island.

(Pb) There are anomalies in the area southwest of Gogon and at the southern end of the island.

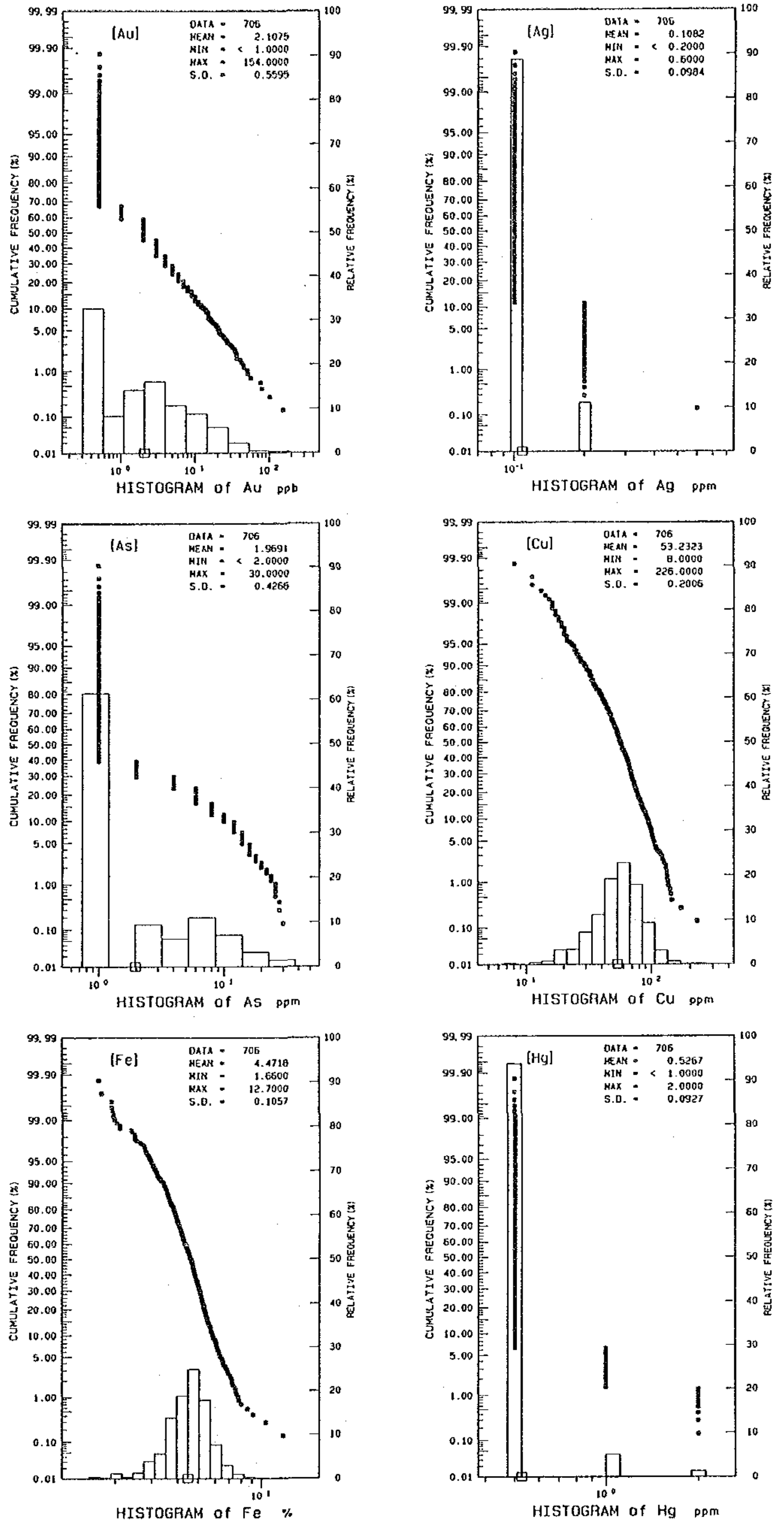
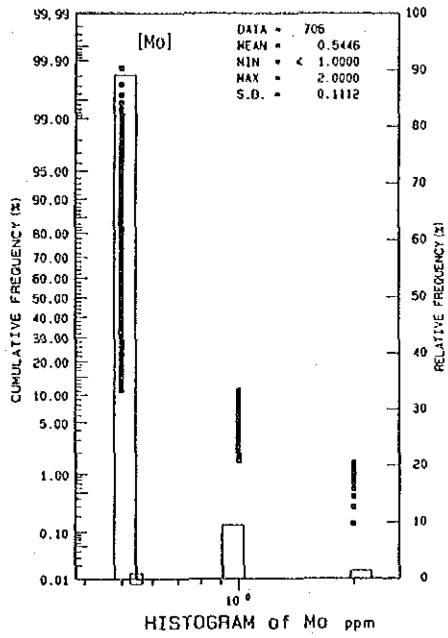
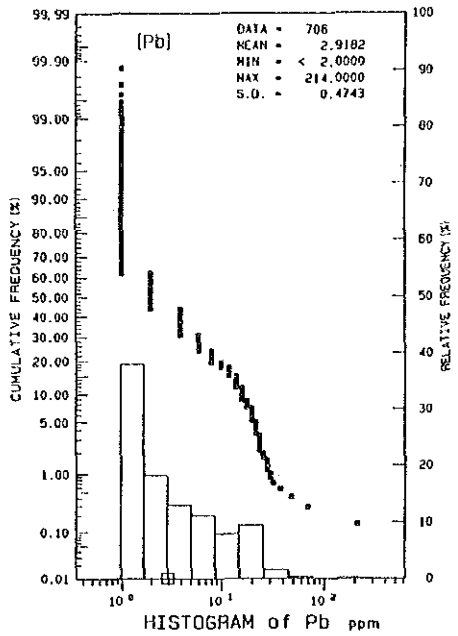
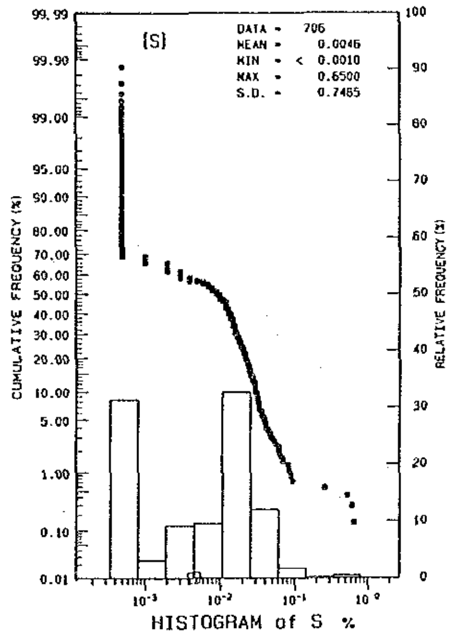
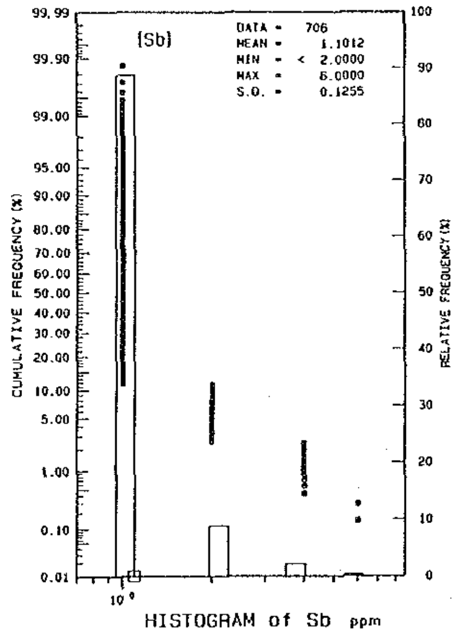


Fig.44 Frequency Distribution and Cumulative Frequency Distribution (soil, Reconnaissance Survey Area)(1)









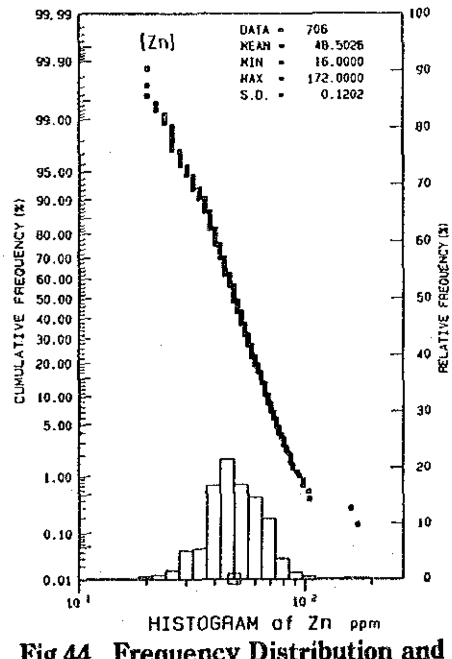


Fig.44 Frequency Distribution and Cumulative Frequency Distribution (soil, Reconnaissance Survey Area)(2)

Fig.45 Distribution of Geochemical Anomalies (soil, Reconnaissance Survey Area)(1)

Fig.45 Distribution of Geochemical Anomalies (soil, Reconnaissance Survey Area)(2)

Fig.45 Distribution of Geochemical Anomalies (soil, Reconnaissance Survey Area)(3)

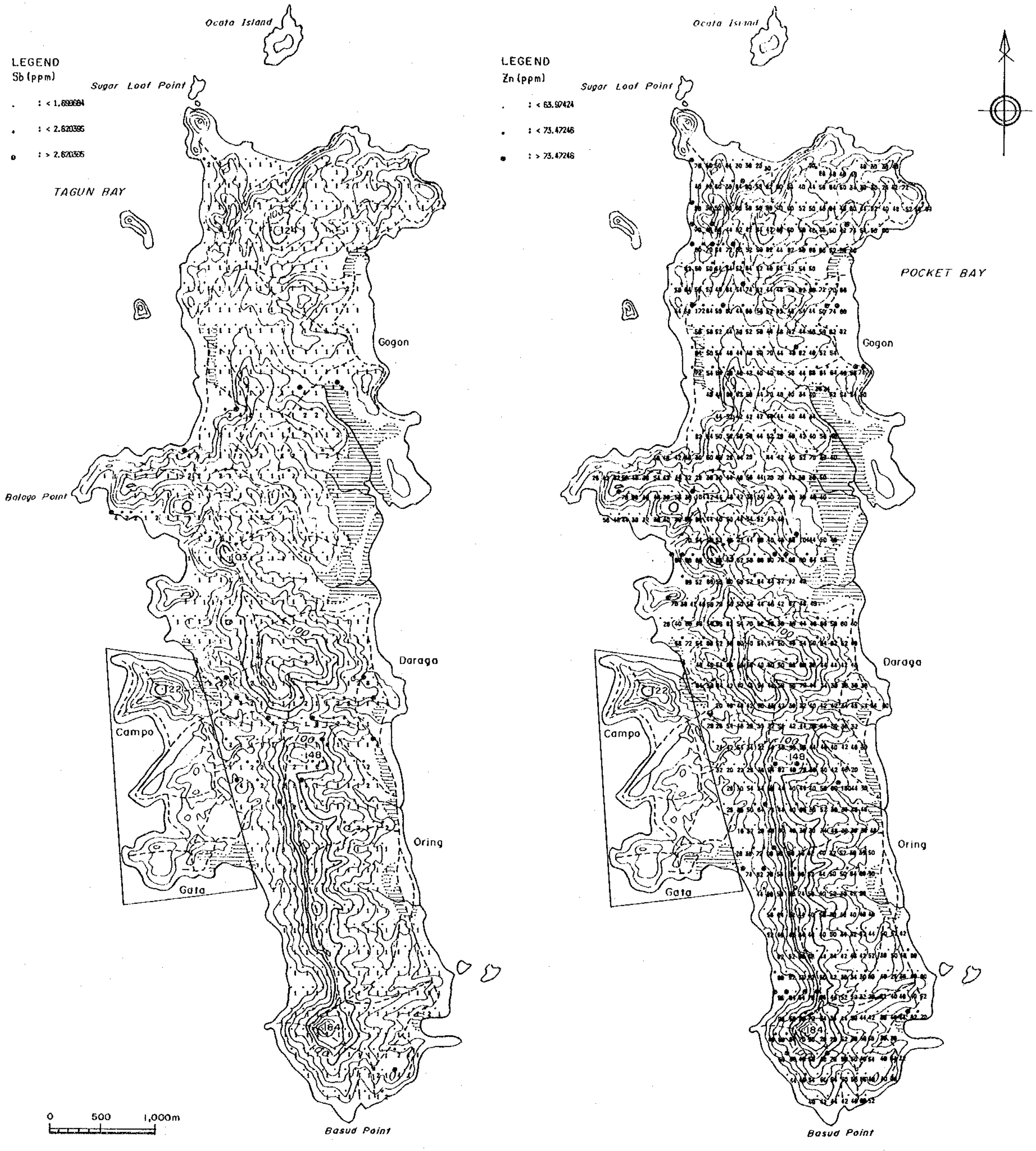


Fig.45 Distribution of Geochemical Anomalies (soil, Reconnaissance Survey Area)(4)

(S) There are anomalies in the northeast part of Campo and northcr end of the island.

(Sb) There are anomalies in the eastern part of Campo, southwestern part of Gogon, northern and southern end of the island.

(Zn) There are anomalies in the eastern part of Gata, northeastern part of Campo, northen and southern end of the island.

(3) Principal Component Analysis

Correlation coefficients(Table 42) are used for the calculation of the principal component analysis. Results of the analysis and scores distribution are shown in Table 44 and Fig.46. There is no correlation between elements except one positive weak correlation of Fe·Cu·Ze in Table 42. There is no obvious principal component that explains the behaviors of elements. Eigenvalues of the firstp and second principal components are as small as 2.04 and 1.68 respectively. Those of the first and second components can explain only about 30% of the variation of the analyzed elements. Eigenvalues up to the fifth principal components are more than 1.0. Each component has the following characteristics.

Table 44 **Results of PCA (Soil, Reconnaissance Survey Area)**

Eigen value				Factor Loading					
P.C.	E.V.	Cont.	CumCon		Z-01	Z-02	Z-03	Z-04	Z-05
Z-01	2.038	18.524	18.524	Cu	0.850	0.009	0.009	-0.009	0.151
Z-02	1.683	15.297	33.821	Fe	0.825	0.078	0.120	0.015	-0.051
Z-03	1.226	11.144	44.965	Zn	0.658	-0.382	0.126	-0.122	-0.145
Z-04	1.062	9.655	54.620	Mo	0.036	0.618	0.174	0.209	0.036
Z-05	0.950	8.634	63.254	As	-0.071	-0.043	0.792	0.129	0.066
Z-06	0.888	8.075	71.329	S	-0.209	-0.397	0.516	-0.505	0.123
Z-07	0.871	7.920	79.249	Hg	0.113	-0.367	0.131	0.746	-0.234
Z-08	0.713	6.480	85.729	Ag	0.173	-0.482	-0.127	-0.014	0.564
Z-09	0.647	5.880	91.609	Sb	-0.073	0.379	0.375	0.252	0.463
Z-10	0.546	4.965	96.574	Au	0.240	0.496	-0.203	-0.091	0.367
Z-11	0.377	3.426	100.000	Pb	0.216	0.483	0.238	-0.323	-0.401

First principal component : This component has large factor loadings of FeÑCu, Zn. These elements are contained more in basic rocks than in acidic rocks. Considering the fact, this component is thought to reflect the surrounding geology. This is harmonious with the fact that the high scores area is in the area of basaltic tuff breccia.

Second principal component : This component has large factor loadings of Mo, (Au), (Pb). These elements are related to the gold mineralization in the Detailed Survey Area. This

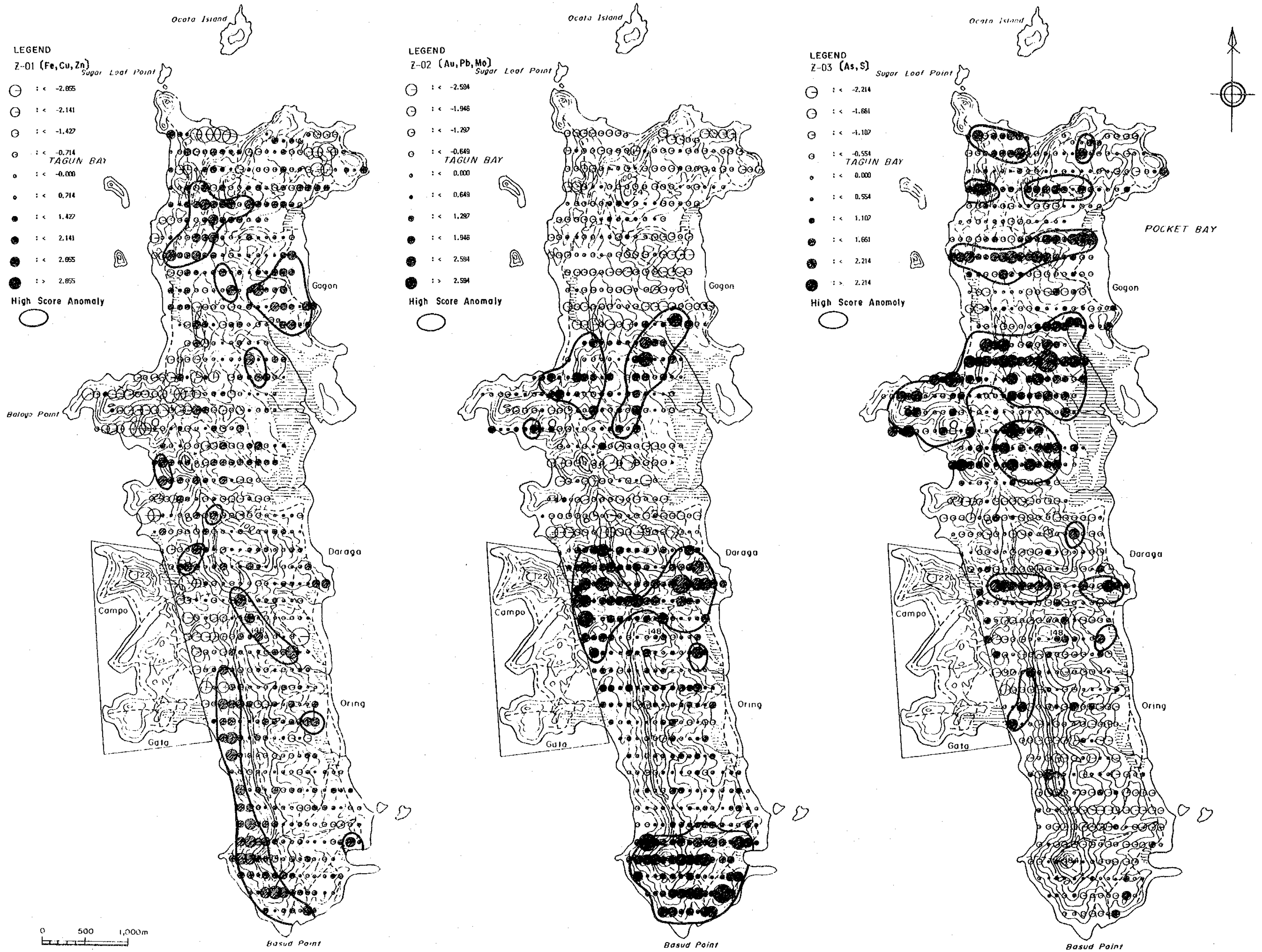


Fig.46 Distribution of PCA Scores (soil, Reconnaissance Survey Area)(1)

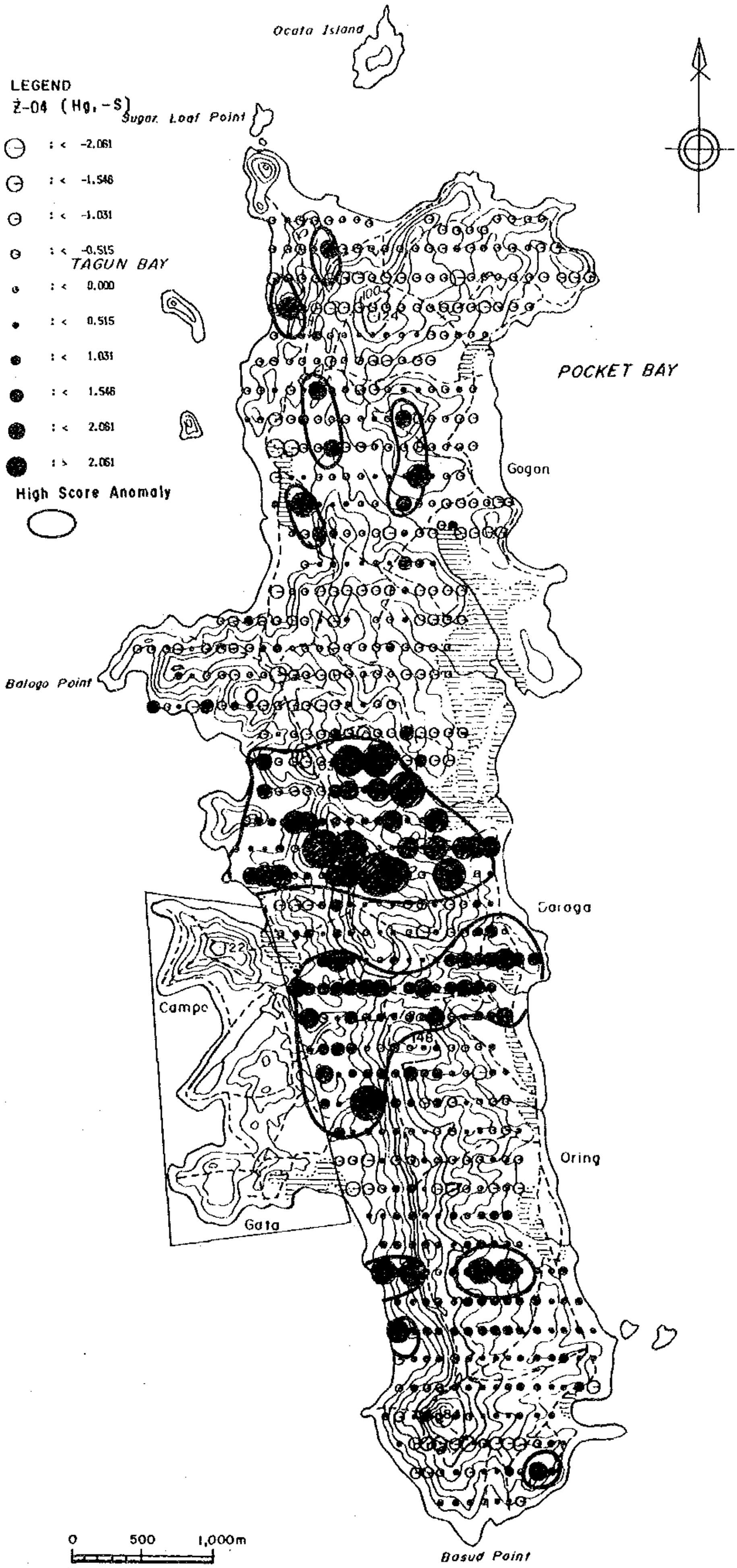


Fig.46 Distribution of PCA Scores (soil, Reconnaissance Survey Area)(2)

component may suggest one of the indications of the mineralization. High score areas are located in the east of Campo, Southwest of Gogon and at the southern end of the island.

Third principal component : This component has large factor loadings of As and S, and it will imply something related with sulfide minerals. High score areas are located in the southwest of Gogon, east of Campo and Gata, and at the northern part of the island.

Fourth principal component :This component has large factor loadings of Hg and -S. It means Hg and S run counter each other but Hg plays the bigger role. There are high scores to the northeast and east of Campo. Besides, there are small spotted high scores in the northern and southern part of island.

Fifth principal component : This component has large factor loadings of Ag and -Sb. Most of analyzed values of both elements are under detection limits and this component seems not to have significant meaning in view of geology.

As mentioned above, the second, third and fourth components are useful indicators of the mineralization. Among them, the second component is the most important indicator because it is similar to the component of the Au and Ag related minelarization in the Campo Mineral Occurrence.

The eastern extension of Campo is judged to have the highest potentiality in the Reconnaissance Survey Area because three components overlap one another in the area.

The areas to the southwest of Gogon is also the promising area. Because there are the high scores of the second and third components, and there distribute the floats of chalcedonic quartz vein and Mn coated rocks which may imply the top of the mineralization.

Besides, there is the high scores in the southern part of the island.

These areas can be expected to have the possibility of the occurrence of the gold mineralization under the ground. But as the assay values of the elements are generally low and the differences of the analyzed values are small, these geochemical anomalies may not denote the anomalies indicating the existence of viable deposit at the workable shollow depth.

3-5 Discussion

The very clear results were obtained through the geochemical survey in the Detailed Survey Area: In the rock geochemical survey , Au shows strong positive correlation with Pb, and Ag, As, Cu and (Zn) have positive correlations with each other. Eigenvalues and contribution ratio of the first component are as large as 3.45 and 34.5% respectively. The component indcates the mineralization of Au, Ag, Cu, Pb and Zn. The high scores of the first

principal component are exclusively located in the Campo Mineral Occurrence and the Gata Mineral Occurrence (Fig.48).

In the soil geochemical survey, Au shows strong positive correlation with Pb, and Ag, Cu, Pb and Zn have the positive correlation with each other. Eigenvalues and contribution ratio of the first principal component are as large as 4.06 and 40.6% respectively. The component indcates the mineralization of Au, Ag, Cu, Pb, Zn and Mo. The high scores of the the first principal component are exclusively located in the Campo Mineral Occurrence and the Gata Mineral Occurrence(Fig.48).

Geochemical survey revealed that Au, Ag, Cu, Pb, Zn and Mo behaved in the same manner in the mineralization of Lahuy Island.

Homogenization temperature of quartz inclusions ranges from 230°C to over 300°C. The temperature is high enough to explain the the fact that Hg contents of most of samples are under the detection limits.

The high scores of the fourth principal component, having the large factor loading of Hg, are detected at the eastern extension of Campo Mineral Occurrence in the Reconnaissance Survey Area. This is harmonious with the geological model : The Detailed Survey Area are uplifted by the fault and the deeper portions are exposed on the surface in comparison with the Reconnaissance Survey Area.

The said eastern extension has the higest potentiality in the Reconnaissance Area. Because the second principal component (Mo, Au, Pb) and the third principal component (As and S) overlap each other (Fig.49).

However, the analyzed values are generally low in content and the anomalies are not so strong as to indicate the existence of the deposit at the workable shallow depth. Homogenization temperature of quartz in the Occurrence ranges from 230°C to over 300°C averaging 271°C, and depth of erosion is estimated more than 600m in the Detiled Survey Area. It leads to the assumption that the depth of the possible deposit in the Reconnaissance Survey Area is deeper than that.

Accodingly, the exploration and development of the mine in the Reconnaissance Area will be accompanied with difficulties.

PART III CONCLUSIONS AND RECOMMENDATIONS

PART III CONCLUSIONS AND RECOMMENDATIONS

Chapter 1 Conclusions

1-1 Catanduanes Island

Based on the results of the geological and stream sediment geochemical surveys, the Carorongan area, area to the east of Bato City, Dugui Too area, and mountainous area to the east of the Bato River have been extracted as high potential areas.

Even no Batalay Intrusive body is seen in the Carorongan area, a large number of quartz floats are scattered there, and many geochemical anomaly zones for various components are distributed there. It suggests that the mineralization in the area is strong and of large scale. Around the Tinagan River, to the east of the Carorongan area, geochemical anomaly zones of Au and others are distributed. It is evaluated that the area including the Tinagan area is good target for further detailed geological survey to find new ores.

The largest intrusive body of the Batalay Intrusive Rocks is situated to the east of Bato City. The rock is mainly composed of granodiorite, and accompanied by small intrusive bodies around there. Many mineral occurrences are also known around there, however, no detail information is available. It is evaluated that the area is worth to conduct an integrated survey to reveal scale and grade of ores, and properly evaluate its potential. It has high potential for new ores, and the known mineral occurrences could be re-evaluated.

The strongest Au anomaly in the island appears in the Dugui Too area. Placer gold deposits are known in the area, and many small-scale intrusive bodies of the Batalay Intrusive, accompanied by hydrothermal alteration zones, are distributed. It is thought that the mineralization in the Hikming and Danicop areas, near by the Dugui Too area, is in the same series of that of Dugui Too. It is evaluated that the area including the Dugui Too, Hikming, and Danicop is worth for further detailed geological survey.

Geochemical anomaly zones of Au and others are scattered in the mountainous area to the east of the Bato River. No sufficient survey has been performed in the area until now, therefore it is worth to perform further geological survey to find new occurrences.

1-2 Lahuy Island

A significant indication appears in the Mineral Occurrences of Gata Village in the

detailedSurvey Area in the island. The results of the principal component analysis for the geochemical survey suggest that gold bearing sulphide copper, lead and zinc mineralization occurred there. No strong geochemical anomaly has been found in the geochemical survey for the whole island, however, a similar type of anomaly has been found in an area to the east of Gata Village, and other anomalies in an area to the west of the Gogon Village and in the southern end of the island. It is supposed, based on the geological survey results, that the area of the Gata Occurrence has been uplifted, and deeper parts of the formation are exposed there. It is evaluated that these three areas have potential for same type of ores as that of the Gata Village Occurrence. The potential for the area to the east of Gata Village is specially high.

Chapter 2 Recommendations

2-1 Catanduanes Island

Carorongan Area: Many geochemical anomaly zones for various elements are overlapped in the area from the upper stream of the Manuria River to the Carorongan River, a tributary of the Manuria. A large number of quartz vein floats are in the area from the Carorongan River to Taganopol River. These phenomena suggest that high potential for quartz veins exists in the area. Geochemical anomalies for Au and other elements are recognized in the Tinagan River area, to the east of the above mentioned areas. It is , therefore, recommended to conduct further detailed geological survey program to reveal details of vein control, scale of ores, and its economical values. It is also recommended to perform a soil geochemical survey to find potential areas for ores in the area from the Taganopol River to Carorongan River, in where many quartz veins exist.

East of Bato City Area: The largest granodiorite body of the Batalay Intrusive Rocks and many mineral occurrences such as San Pedro, Libjo, Aroyao, and Tilod are distributed in the area. It is recommended to conduct a detailed geological survey program to reveal relations between each mineral occurrence, control factors for mineralization. This should lead to accurate evaluation for potential in the area, and eventually to discovery of new ores. The Agban area, in where the most prominent outcrop of quartz veins was found, is situated to the northeast of this area. Many intrusive bodies are presumably distributed in the area from the Agban area to this area, and it is evaluated that the area is of high potential for ores. It is also recommended to perform geological detailed surveys in the area around the Agban area.

Dugui Too Area: The most significant geochemical anomaly in the island has been

recognized in the area. Furthermore, gold placer deposits are known in the area, and a large number of small-scale intrusive bodies of the Batalay Intrusive, accompanied with hydrothermal alteration zones, are distributed there. It is recommended to conduct detailed geological survey programs in the area including Hikming and Danicop to reveal details of ores.

East of the Bato River Area: The survey this time has revealed new bodies of the Batalay Intrusive in the eastern part of Pagsagnahan Village, in the central island, and also scattered geochemical anomaly zones of Au and others in a mountainous area to the northeast of Pagsagnahan Village. The area is almost virgin for exploration activity, therefore it is recommended to conduct a concentrated, detailed geological survey program to find new mineral occurrences.

2-2 Lahuy Island

In the Detailed Survey Area, promising indications for ores have been found on the known mineral occurrences in the geological and soil geochemical detailed surveys this time. In the Reconaissance Survwy Area, geochemical anomaly zones have been found to the east of the Gata Village, to the southwest of Gogon Village in the northern island, and in the southern end of the island. The assay values of those anomalies, however, are generally low. Conditions for new mine developing are tough in the island, Furthermore, it is supposed that ores, if exist, would be sit in fairly deep underground, and invasion of the sea water in mining site would be occurred due to the close location to the sea.

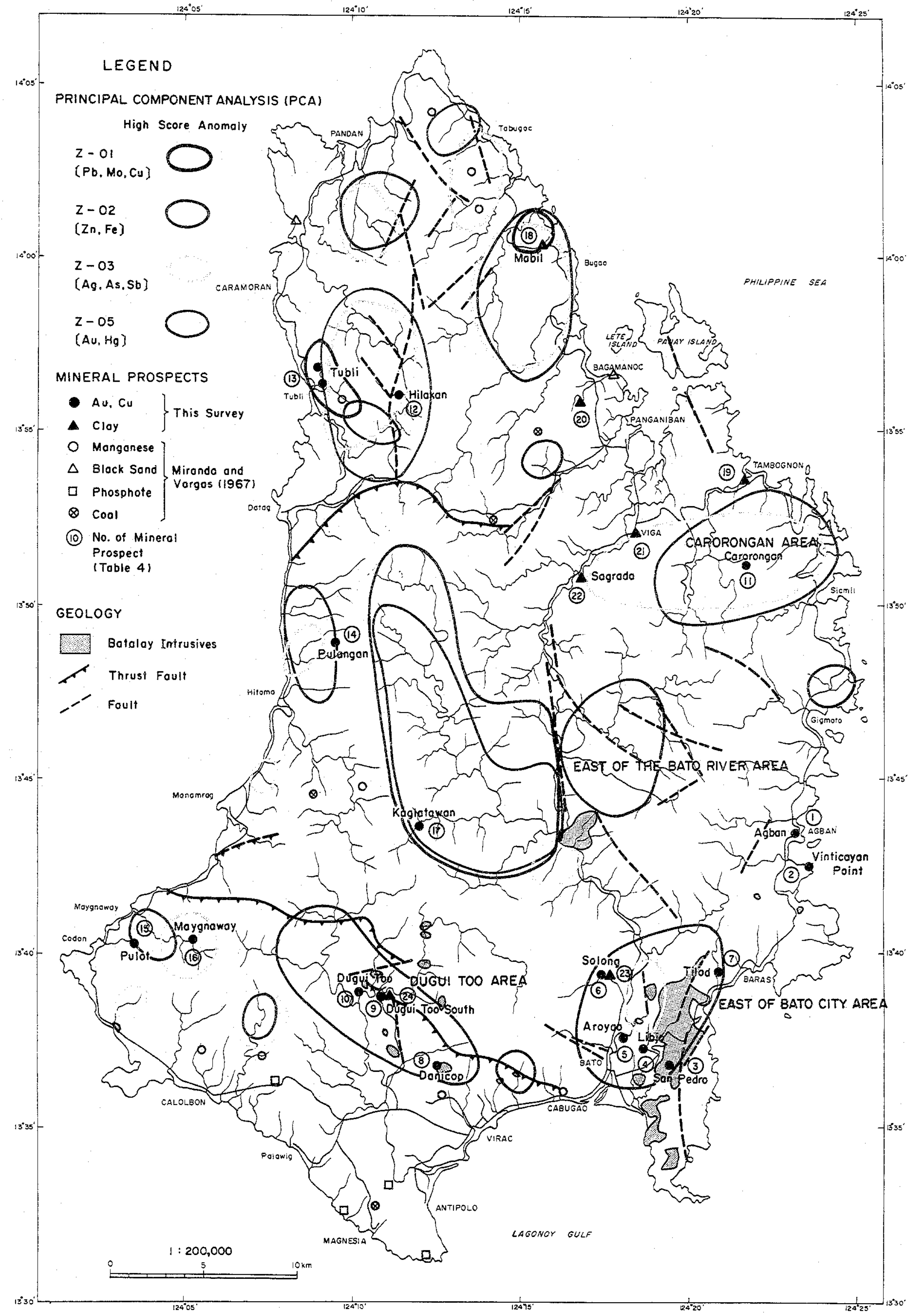


Fig.47 Comprehensive Map of Catanduanes Island

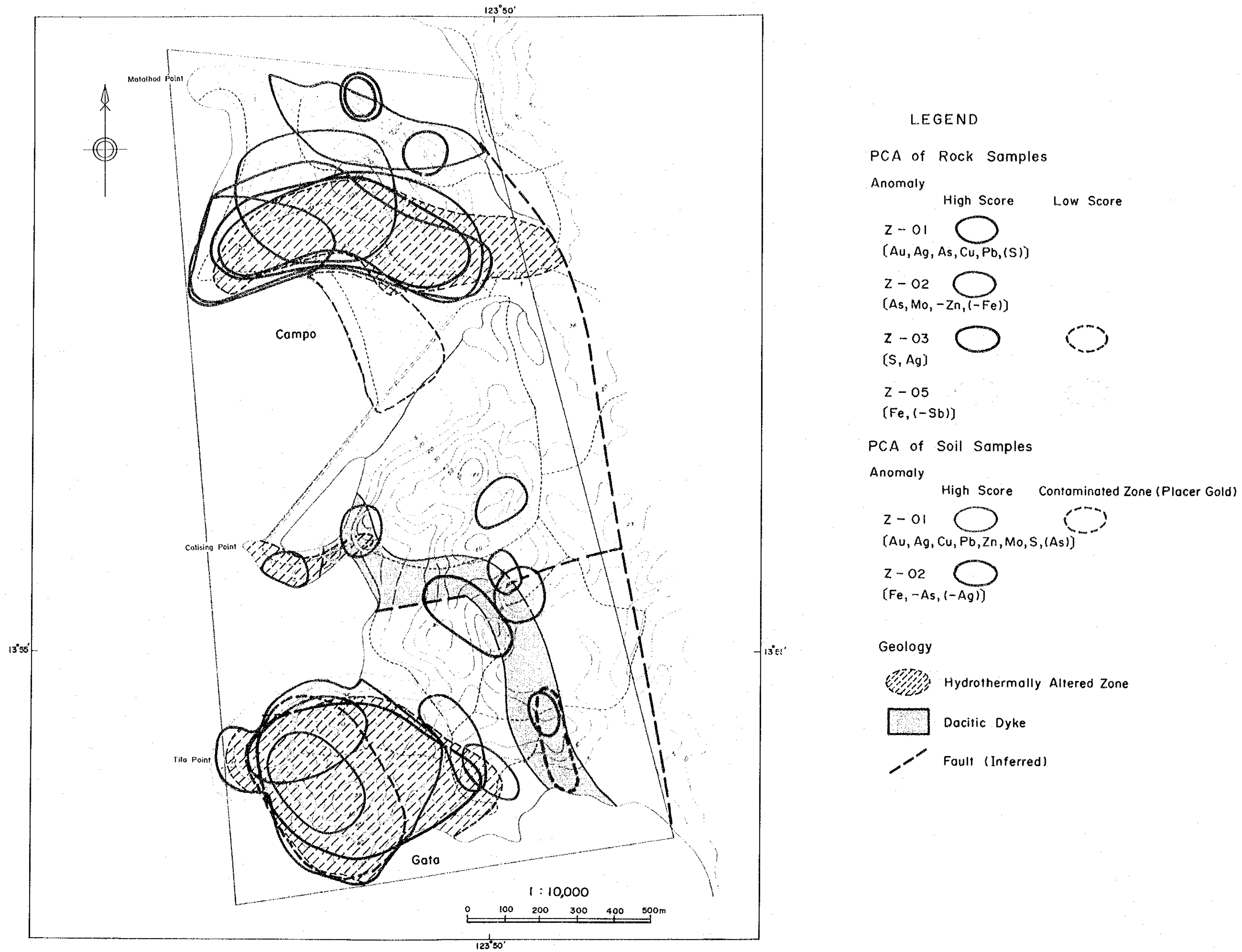


Fig.48 Comprehensive Map of Lahuy Island (Detailed Survey Area)

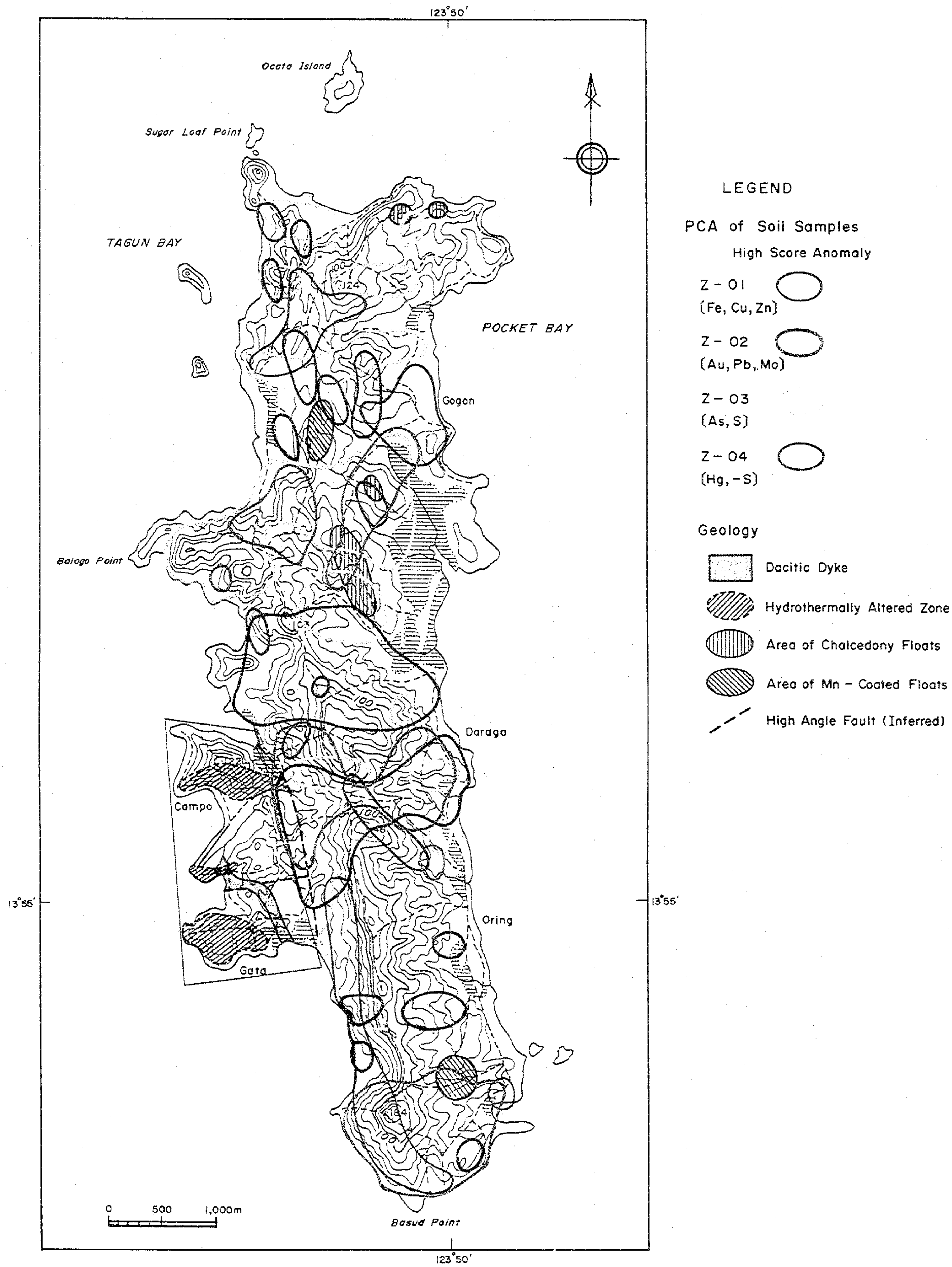


Fig.49 Comprehensive Map of Lahuy Island (Reconnaissance Survey Area)

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APPENDICES

Appendix-1 Microscopic Observation of Rock Thin Sections (Catanduanes Island)

No.	試料			火山砕屑岩																火成岩																				変質鉱物										組織構造	備考
				礫・岩片										基質						斑晶									石基																						
	試料番号	岩石名	採取位置	形状	大きさ(mm)	岩片(岩石名)	Qz	Pl	Bi	Ho	Au	Hy	Op	Qz	Pl	C	Op	Lt	Am	Qz	Si	Pl	Bi	Ho	Au	Hy	Ol	Op	Qz	Si	Or	Pl	Bi	Ho	Au	Cpx	Op	Ac	G	Qz	Ca	M	Ch	Se	Ep	C	Py	Ze	Gt		
1	ACR-010	砂岩	Solong 鉱徴地南西 1.5Km 上流												○	∘	∘		∘																						∘									砕屑状	
2	ACR-026	角閃石斑岩	Solong 鉱徴地																	∘		◎		○				∘		◎				◎			∘						○				?			斑状	ジルコンを少量含む
3	ACR-037	花崗閃緑岩	Caloibon 市北西 6.2Km 道路脇																		○	◎	○	○	∘			∘																			?			完晶質等粒状	
4	ACR-053	斜長石斑岩	Manamrag 村南方 1.0Km																			◎			∘			∘				◎					○				∘			∘						填間状	褐鉄鉱を少量含む
5	ACR-082	火山礫凝灰岩	Dugui Too 南方 0.8Km 道路脇	亜角礫	±4	Ba		◎							○		○	◎																							∘			∘							褐鉄鉱を少量含む
6	ACR-099	黒雲母花崗岩	Agban 鉱徴地																			○	∘							∘														∘							珪化
7	ACR-117	スカルン	Virac 市北西 3.5Km	破片状		Tf?		∘		○	∘		∘							○																					∘		∘		○				○		残存鉱物は破片状
8	ACR-135	黒雲母閃緑岩	Agban 鉱徴地																		◎	○	○					∘															○								黒雲母が緑泥石化
9	ACR-151-2	スカルン	Bato 市北方 2Km Aroyao 鉱徴地								∘																	∘													◎		○						◎		赤鉄鉱を少量含む
10	ACR-151-1	スカルン	Bato 市北方 2Km Aroyao 鉱徴地																	∘					∘			∘													∘		∘						◎		水酸化鉄を少量含む
11	BCR-001	安山岩	Hitoma 村南東 4.2Km Hitoma 川																			○			∘			∘				◎				∘	◎				∘		○				?			斑状・填間状	輝石は緑泥石化
12	BCR-002	砂岩	Guiamlong 村北東 2.7Km					◎			○						○																															∘		杏仁状	岩片は見られない
13	BCR-013	玄武岩	Maygnavay 村南東 3.4Km																													◎					◎				◎		○							填間状・杏仁状	斑晶は見られない
14	BCR-021	花崗閃緑岩	Dugui Too 南東 3.0Km Pajo 川支流																	∘	◎	○	○					∘													∘		∘	○							ジルコンを微量含む
15	BCR-022	粗粒砂岩	Dugui Too 南東 1.9Km Pajo 川支流								∘						∘																										○	◎			?				ルチルを微量含む
16	BCR-028	砂岩	Bato 市北東 3.7Km 道路脇																			◎		∘	○			∘																○			?				珪化
17	BCR-030	花崗閃緑岩	Bato市北東 3.7Km 道路脇																			◎	◎		∘			○															∘								ジルコンを微量含む
18	BCR-031	凝灰岩	Siai 村南東 1.6Km Bato 川支流	円礫	±4	And		∘			∘						∘																							∘			◎	∘	∘					砕屑状	
19	BCR-032	角閃石斑岩	Siai 村南東 1.6Km Bato 川支流																		◎	◎			○			○													∘		∘	∘						流状	珪化
20	BCR-036	安山岩	Virac 市北方 2.0Km																			◎						○				◎					◎				○		∘				?			斑状・填間状	
21	BCR-043	片岩	Carorongan 鉱徴地				∘	∘						∘		◎	∘																								◎		○	◎							岩片は見られない
22	CCR-007	粗粒安山岩	Tubli 村東方 1.6Km																			○			○			∘				◎				◎	∘				◎									填間状	水酸化鉄を少量含む
23	CCR-011	閃緑岩	Caloibon 町北方 1.6Km																			◎			◎			∘															◎							完晶質等粒状	
24	CCR-012	閃緑岩	Caloibon 町北方 1.6Km																			◎			○			○													·		○							完晶質等粒状	
25	DCR-008	玄武岩	Tabugoc 村北西 2.4Km Marambong 川																			◎			∘			∘				◎				○	∘				∘		·				∘			斑状・填間状	
26	DCR-026	閃緑岩	Soboc 村西方 0.8Km Soboc 川																			◎			○			○								◎					○		○				∘			破砕	弱変質
27	ECOR-002	安山岩	Dugui Too 南方 0.9Km 道路脇																			○										◎					∘				○									斑状・填間状	輝石類は見られない
28	FCR-001	安山岩	Bato 川支流 KAglatawan 川																			○			?	?		∘				○									∘	○	○		∘					斑状・填間状	強変質
29	FCR-002	玄武岩	Bato 川支流 KAglatawan 川																	∘		◎			○			∘				◎				○	◎						∘		·					斑状・間粒状	
30	GCR-004	斜長石斑岩	Guiamlong 村北東 7.5Km Bato 川支流																			◎			∘			∘				◎				∘	○		◎		∘		∘		?					斑状・填間状	斜長石は最大6mm
31	GCR-006	閃緑岩	Bato 川支流 Lower Sumigin 川																	·		◎		○	○			∘															○				∘				弱変質

[鉱物名]
Qz：石英　Si：シリカ鉱物　Or：カリ長石　Pl：斜長石　Bi：黒雲母
Ho：角閃石　Au：普通輝石　Hy：紫蘇輝石　CPX：単斜輝石　Op：不透明鉱物
Ac：随伴鉱物　G：ガラス　C：炭酸塩鉱物　Lt：岩片　Ol：かんらん石
Ca：方解石　M：モンモリロナイト　Ch：緑泥石　Se：セリサイト　Ep：緑れん石
Ze：沸石　Py：黄鉄鉱　Gt：針鉄石

[組織]
砕屑状
斑状
填間状
間粒状
完晶質等粒状

[構造]
流状
杏仁状
破砕

[岩片]
Tf：凝灰岩
Ba：玄武岩
And：安山岩

[量の表現]
50% 以上 ◎→多
25～50% ○→中
10～25% ∘→少
10% 以下 ·→微
?→不確実

Appendix–2 Microscopic Observation of Polished Thin Sections (Catanduanes Island)

No	Sample No.	Rock Type	Location	Grain	Metamorphic mineral and Secondary mineral														Opaque mineral								Remarks
					K-f	Chl	St	Ep	Pr	Pp	Ac	Ap	Spn	Qz	Ms	Ze	Cb	Cl	Mt	Ht	Po	Py	Cp	Sp	Goe	Il	
1	ACR-030	Native Cu bearing Epidote rock	Tubli Prospect	Fine				◎ ?						○													Native Cu:○ Cuprite:△ Sc Cu mineral:△ ?
2	ACR-058	Cp bearing Qz vein	San Pedro Prospect	Fine										◎						·		△	○		△ ?		Cp is altered into Cv+Cc at its periphery. Cv:△ , Cc:△
3	ACR-064	Cp bearing Qz vein	San Pedro Prospect	Fine										◎						△		·	○		○		Cv: · , Cc: · Cp is altered into Cv+Co, then into Goe at it is periphery.
4	ACR-075	Pyrite+Fe Oxide Limonite Goethite	Libjo Prospect	Medium															△	○		◎			◎		Coarser grained Py is altered into Fe oxide.
5	ACR-104	Mo?+Cp bearing Qz	Agban Prospect	Fine										◎										△~○	△~○		Mo:△ ? Cv: · , Cc: ·
6	ACR-132	Cp bearing Qz	Agban Prospect	Fine										◎										◎			Cv: · , Cc: · Mo: · ?
7	BCR-026	Mo? bearing Qz	San Pedro Prospect	Fine										◎													Mo:△
8	BCOR-006	Py rich Sandstone	Hilacan Prospect	Fine																		◎	·	· ?	△		Py Grains. Fe oxide:△ Cp and Sp are hosted by Py crystals.
9	BCOR-007	Py rich Sandstone	Hilacan Prospect	Fine																		◎			△		Compared with BCOR-006, Py is coarser grained. Fe oxide:△(Goe) Leu:△
10	HCOR-003	Qz vein	Dugui Village 1.5Km east of Dugui Too	Fine										◎	△ ?						○	△	△	·	△	·	Leu: · ? Ser: ? (by naked eyes) Fe oxide:△(Goe) Mn ?

<Symbols>
◎:abundant, ○:common, △:small amount, ·:rare, ?:uncertain
Sc:secondarily formed , Al:strongly altered, Ve:vein

<Abbreviations>
Sp:Sphalerite, Gn:Galena, Mt:Magnetite, Ht:Hematite, Cp:Chalcopyrite, Cv:Covelline.
Cv:Chalcocite, Mo:Molybdenite, Py:Pyrite, Th:Tetrahedrite, El:Electrum, Po:Pyrrhotite.
Ti:Leucoxene or Titaniferous mineral, Chl:Chlorite, Qz:Quartz, Goe:Goethite, Il:Ilmenite.
Ser:Sericite, K-f:Potassium feldspar, St:Serpentinite, Ep:Epidote, Pr:Prehnite, Pp:Pumpellyite.
Ap:Apatite, Ac:Actinolite, Spn:Sphene, Ms:Muscovite, Ze:Zeolite, Cb:Carbonate mineral, Cl:Clay mineral.

Appendix-3 Chemical Analysis of Ores (Catanduanes Island)

No	Sample No.	Location	Element	Au	Au	Ag	Cu	Fe	Mo	Pb	S%	Zn
			Unit	g/t	Oz/t	ppm	%	%	%	%	Total	%
1	ACR-011	Solong Prospect.		<0.03	<0.001	<2	0.022	2.59	<0.001	<0.001	0.006	0.002
2	ACR-015	Solong Prospect.		<0.03	<0.001	<2	0.033	4.59	<0.001	<0.001	0.244	0.006
3	ACR-020-2	Solong Prospect.		0.09	0.003	<2	0.030	0.96	0.004	0.001	0.047	<0.001
4	ACR-030	Tubli Prospect.		<0.03	<0.001	2	1.495	5.36	<0.001	<0.001	0.004	0.007
5	ACR-058	San Pedro Prospect.		<0.03	<0.001	<2	0.171	0.70	0.137	<0.001	0.180	<0.001
6	ACR-064	San Pedro Prospect.		<0.03	<0.001	<2	0.474	1.51	0.022	0.001	0.344	0.001
7	ACR-066	San Pedro Prospect.		0.25	0.008	2	0.055	0.51	0.097	0.001	0.082	<0.001
8	ACR-067	San Pedro Prospect.		<0.03	<0.001	2	0.054	0.83	0.052	<0.001	0.054	<0.001
9	ACR-075	Libjo Prospect.		<0.03	<0.001	14	0.513	34.40	0.003	<0.001	8.970	0.006
10	ACR-081	Dogui Too Prospect.		<0.03	<0.001	<2	0.003	1.18	<0.001	<0.001	0.134	0.003
11	ACR-097	Agban Prospect.		<0.03	<0.001	2	0.440	1.27	0.059	0.001	0.278	0.002
12	ACR-100	Agban Prospect.		<0.03	<0.001	<2	0.029	0.90	0.008	<0.001	0.129	0.001
13	ACR-104	Agban Prospect.		<0.03	<0.001	<2	0.124	0.93	0.033	<0.001	0.102	<0.001
14	ACR-106	Agban Prospect.		<0.03	<0.001	2	0.748	1.70	0.024	0.001	0.014	0.002
15	ACR-109	Agban Prospect.		<0.03	<0.001	<2	0.006	0.90	0.001	<0.001	0.003	<0.001
16	ACR-112	Agban Prospect.		<0.03	<0.001	<2	0.014	0.77	0.001	<0.001	0.005	<0.001
17	ACR-132	Agban Prospect.		<0.03	<0.001	2	1.445	1.71	0.025	<0.001	1.350	0.007
18	ACR-150	Aroyao Prospect.		0.96	0.031	22	1.350	16.30	<0.001	<0.001	11.400	21.600
19	BCR-017	Pulot Prospect.		<0.03	<0.001	2	0.023	5.60	<0.001	0.001	0.015	0.074
20	BCR-026	San Pedro Prospect.		<0.03	<0.001	<2	0.004	3.58	<0.001	<0.001	0.016	0.015
21	BCR-044	Carorongan Prospect.		<0.03	<0.001	2	0.010	0.81	0.074	<0.001	0.053	0.016
22	BCOR-004	Dulangan Prospect.		22.71	0.730	<2	0.003	1.67	<0.001	<0.001	0.500	0.014
23	BCOR-005	Dulangan Prospect.		28.02	0.901	4	0.002	1.09	<0.001	<0.001	0.275	0.012
24	BCOR-006	Hilacan Prospect.		0.16	0.005	<2	0.008	5.05	0.001	<0.001	2.470	0.014
25	BCOR-007	Hilacan Prospect.		0.06	0.002	<2	0.006	4.81	0.003	<0.001	3.750	0.022
26	BCOR-008	Maygnaway Prospect.		0.25	0.008	<2	0.007	2.01	<0.001	<0.001	0.224	0.008
27	BCOR-009	Maygnaway Prospect.		<0.03	<0.001	<2	0.026	6.89	<0.001	0.001	3.710	0.095
28	BCOR-014	Carorongan Prospect.		1.71	0.055	<2	0.009	6.75	<0.001	<0.001	2.940	0.035
29	BCOR-014-1	Carorongan Prospect.		0.68	0.022	<2	0.008	5.09	<0.001	<0.001	1.910	0.074
30	BCOR-017	Carorongan Prospect.		<0.03	<0.001	<2	0.002	0.55	<0.001	<0.001	0.020	0.017
31	CCR-022	0.5Km South of Minaile River		<0.03	<0.001	2	0.005	5.04	0.006	<0.001	0.572	0.007
32	FCOR-001	The Kaglatawan River.		<0.03	<0.001	<2	0.010	4.49	<0.001	<0.001	1.020	0.027
33	FCOR-002	Carorongan Prospect.		<0.03	<0.001	<2	0.002	0.74	<0.001	<0.001	0.013	0.017
34	HCOR-003	1.5Km East of Dugui Too.		<0.03	<0.001	<2	0.016	5.76	<0.001	<0.001	1.230	0.015

Appendix-4 Microscopic Observation of Rock Thin Sections (Lahuy Island)

No.	Sample: Sample No.	Sample: Rock Type	Sample: Locality	Sedimentary and Pyroclastic Rock / Mineral and Rock Fragments: Shape	Size (mm)	Rock Fragments (Rock Type)	Qz	Pl	Bi	Ho	Au	Hy	Op	Matrix: Qz	Pl	C	Op	Lt	Au	Igneous Rock / Phenocryst: Qz	Or	Pl	Bi	Ho	Au	Hy	Ol	Op	Groundmass: Qz	Si	Or	Pl	Bi	Ho	Au	Cpx	Op	G	Alteration Mineral: Qz	Ca	M	Ch	Se	Ep	C	Py	Ze	Gt	Texture	Remarks
1	ALR-008	Dacite	350m Northeast of Tila Point.																			◎			○			∘				◎				∘	∘			∘	∘	∘				∘			Porphyritic.	Intensely Argillized.
2	ALR-058	Ultrabasic	1.0Km East of Calising Point.																						◎		◎																						Cataclastic.	Olivine is Serpentinized.
3	ALR-071	Andesite	420m Southeast of Balogo Point.																			◎		∘	?	?		○				○					○			○	∘								Porphyritic,Amygdaloidal.	Li: ·
4	ALR-075	Dacite	500m North of Gogon.																		∘	◎	∘		◎				∘				∘		∘			∘												Porphyritic.	Fresh.
5	ALR-086	Andesite	170m Northwest of Basud Point.																			◎		∘	◎			∘				○				○	○			◎		∘							Intergranular.	Fresh.
6	ALR-091	Andesite	120m Southeast of Calising Point																		·		○		∘	?	?		∘		○							∘				∘								Porphyritic.	Weakly Weathered.
7	BLR-001	Dacite	Southern Coast of Gata Prospect.																			·	◎		○				○				◎		∘			○	○										Porphyritic,Intergranular.	Fresh.
8	BLR-028	Andesite	170m East of Matalhod Point.																				○		○				○		◎		○		○			○	◎			∘	◎	◎						Porphyritic.	Weakly Silicified and Argillized.
9	BLR-061	Lapilli Tuff	Mountain Top of Campo Prospect.	Sa	32~4	D1		○		○	○	○	∘																												◎								Clastic?	Strongly Silicified and Argillized
10	BLR-064	Andesite	Northern Coast of Campo Prospect																			◎		∘	?	?		∘		○		○					∘			∘			◎			∘			Porphyritic.	Weakly Silicified and Argillized.
11	BLR-079	Dacite	250m East of Calising Point.																		∘	◎		∘	∘			∘		◎				∘			○			∘			∘						Porphyritic.	Weakly Opacitized.
12	BLR-119	Andesite	600m Northeast of Calising Point					◎												∘		○		∘				∘		○		○					○			○						∘			Porphyritic.	Weakly Altered.
13	LA-43-1R	Basalt	Soil Sample Point LA-43-10																			◎		○								◎					∘			∘	?								Porphyritic,Amygdaloidal.	Weakly Weathered.

[Mineral names]
Qz : Quartz
Si : Silica mineral
Or : Potassium feldspar
Pl : Plagioclase
Bi : Biotite
Ho : Amphibole
Au : Augite
Hy : Hypersthene
CPX : Clinopyroxene
Op : Opaque mineral
G : Glass
C : Carbonate mineral
Lt : Rock flagments
Ol : Olivine
Ca : Calcite
M : Montmorillonite
Ch : Chlorite
Se : Sericite
Ep : Epidotee
Ze : Zeolite
Py : Pyrite
Gt : Garnet
Li : Limonite

[Shape]
Sa : Subangular

[Texture]
Clastic
Porphyritic
Intergranular

[Structure]
Cataclastic
Amygdaloidal

[Rock Fragments]
D1 : Dolerite

[Symbols]
◎→abundant
○→common
∘→small amount
·→rare
?→uncertain

Appendix–5 Microscopic Observation of Polished Thin Sections (Lahuy Island)

No	Sample No.	Rock Type	Location	Grain	Metamorphic mineral and Secondary mineral														Opaque mineral								Remarks
					K-f	Chl	St	Ep	Pr	Pp	Ac	Ap	Spn	Qz	MS	Ze	Cb	Cl	Mt	Ht	Po	Py	Cp	Sp	Goe	Il	
1	LA-01 -17R	Py bearing Siliceous Vein	Soil Sample Point LA-01-17	Fine										◎		?		·				○			△		Fe oxide:△
2	ALR- 41-1	Sp-Cp-Gn Ore	Old tunnel of Gata Prospect	Fine										◎	△		○	○				◎	○	○			Sp:Clear crystals abundant(Fe poor) Th:too small grained to distinguish. Gn:△~○ , Th: · ? , Ti: · , Cv: · , Cc: · Py is mainly idiomorphic (,partly altered into Fe oxide?) Sp>Cp>Gn
3	ALR- 41-2	Sp-Cp-Gn Ore	Old tunnel of Gata Prospect	Medium	△ Sc									◎	△		○	△				◎	◎	◎			Gn:◎ Sp>Cp>Gn Sp:Clear (Fe poor) Cv: · , Cc: ·
4	BLR- 010-8	Cp Vein	No.6 Tunnel, Campo Prospect	Medium		△ ?								◎	△		○	△				○	◎	△			El ; · →It might be Cp,i'ts difficult to identify beacause it lays in Qz independently. Sp:Clear with no color or yellow tint (Fe poor).
5	BLR- 010- 10-2	El bearing Cp Ore	No.6 Tunnel, Campo Prospect	Fine	○ Sc									◎	·		○					◎	△				Gn:△~○ many Cp and Gn are included in Py crystals. El: · El is at Py crystals'periphery or in Py crystals. ⇒El is present where Qz-Ad-(Cc) are abundant ?
6	BLR- 010-11	Sp-Cp-(Gn) Ore	No.6 Tunnel, Campo Prospect	Fine	△ Sc			·						◎	·			·				◎	○	◎			Gn:△ Sp:Clear with no color or yellow tint (Fe poor).
7	BLR- 024-1	Sp-Gn Ore	No.5 Tunnel, Campo Prospect	Medium										◎				· ?				△	○	◎			Gn:○ Gn>Cp Qz is rather coarse grained. One El (Cp?) grain is in Sp.
8	BLR- 024-8	Sp-Cp-Gn Ore	No.5 Tunnel, Campo Prospect	Medium	? Sc	△ ?								◎				△				○	○	◎			Sp:Clear, with no color or Yellow tint Gn:○
9	BLR- 034	Py bearing Siliceous Vein	Panique Tunnel, Campo Prospect	Fine										◎	?			○				◎			△		Fe oxide:△ Sericite or clay minerals:○

<Symbols> ◎:abundant, ○:common, △:small amount, · :rare, ?:uncertain
Sc:secondarily formed, Al:strongly altered, Ve:vein

<Abbreviations> Sp:Sphalerite, Gn:Galena, Mt:Magnetite, Ht:Hematite, Cp:Chalcopyrite, Cv:Covelline.
Cv:Chalcocite, Mo:Molybdenite, Py:Pyrite, Th:Tetrahedrite, El:Electrum, Po:Pyrrhotite.
Ti:Leucoxene or Titaniferous mineral, Chl:Chlorite, Qz:Quartz, Goe:Goethite, Il:Ilmenite.
Ser:Sericite, K-f:Potassium feldspar, St:Serpentinite, Ep:Epidote, Pr:Prehnite, Pp:Pumpellyite.
Ap:Apatite, Ac:Actinolite, Spn:Sphene, Ms:Muscovite, Ze:Zeolite, Cb:Carbonate mineral, Cl:Clay mineral.

Appendix-6 Powder X-ray Diffraction Analysis (Lahuy Island)(1)

Sample No.		Alteration Mineral / Locality	Clay Mineral						The Others Mineral							
			Mo	Chl/Mo	Mi/Mo	Chl	Se	Ka	Qz	K-f	Pl	Ja	Al	Ca	Gy	Py
1	ALR-012	Eastnortheast of Tila Point.(Gata)				△			◎	○	○					
2	ALR-014	East of Tila Point. (Gata)				·?			◎	○	◎					
3	ALR-016	East of Tila Point. (Gata)						△	○	○						
4	ALR-017	East of Tila Point. (Gata)				·?			◎	○						
5	ALR-018	East of Tila Point. (Gata)					△	△	◎	△						
6	ALR-019	Eastsoutheast of Tila Point.(Gata)				·	·		◎		○			△		
7	ALR-026	Southeast of Tila Point.(Gata)							◎	△	○					
8	ALR-028	Southeast of Tila Point.(Gata)				△			◎	△	○					
9	ALR-030	Southeast of Tila Point.(Gata)			·?				◎	○	△					
10	ALR-031	Eastsoutheast of Tila Point.(Gata)			·?				◎	○						
11	ALR-032	Southeast of Tila Point.(Gata)				△			○	○	△					·
12	ALR-034	Eastnortheast of Tila Point.(Gata)	·				·		◎	△	△					
13	ALR-036	Eastnortheast of Tila Point.(Gata)			·?		·		◎	△						
14	ALR-038	Old tunnel of Gata Prospect.				·	△		◎	·	○			△	·	·
15	ALR-039	Old tunnel of Gata Prospect.				△	△		◎		○			○		
16	ALR-043	East of Tila Point.(Gata)				△			○	△	○					△
17	ALR-045	Eastnortheast of Tila Point.(Gata)					△		◎							
18	ALR-048	Eastnortheast of Tila Point.(Gata)		·?			·		◎	△	△					
19	ALR-049	Eastnortheast of Tila Point.(Gata)				△			○	△	○					
20	ALR-051	Eastnortheast of Tila Point.(Gata)					·		◎							
21	ALR-052	Eastnortheast of Tila Point.(Gata)					·		◎	△						
22	ALR-056	Eastsoutheast of Calising Point.					·		◎	△						
23	ALR-060	East of Gata Area					·	△	◎							
24	ALR-062	East of Gata Area							◎							
25	ALR-063	East of Gata Area	·						○		◎					
26	ALR-064	East of Gata Area	△						○		○					
27	BLR-006	Southeast of Tila Point.(Gata)						·	◎	○	△					

[Symbols] ◎ : abundant ○ : common △ : small amount · : rare ? : uncertain

[Abbreviations] Mo:Montmorillonite Chl:Chlorite Mi:Mica Se:Sericite Ka:Kaolinite Qz:Quartz
K-f:Potassium feldspar Pl:Plagioclase Ja:Jarosite Al:Alunite Ca:Calcite Gy:Gypsum Py:Pyrite

Appendix–6 Powder X–ray Diffraction Analysis (Lahuy Island)(2)

Sample No.		Alteration Mineral / Locality	Clay Mineral						The Others Mineral							
			Mo	Chl / Mo	Mi / Mo	Chl	Se	Ka	Qz	K-f	Pl	Ja	Al	Ca	Gy	Py
28	BLR-007	Southeast of Tila Point. (Gata)						·	○	○						
29	BLR-010-8	Old tunnel of Campo Prospect.					△		◎			·		·	·	△
30	BLR-016	The Center of Campo Area.					△		◎	○						·
31	BLR-017	The Center of Campo Area.					·		◎	△	·	·				
32	BLR-018	The Center of Campo Area.					·		◎	△		·				
33	BLR-020	The Center of Campo Area.					△		◎	△	·	·				
34	BLR-029	East of Campo Area.							◎				·?			
35	BLR-030	East of Campo Area.					·		◎	△						
36	BLR-031	East of Campo Area.					△		◎							
37	BLR-036	Old tunnel of Campo Prospect. (East)					△		◎						·	·
38	BLR-038	Northeast of Campo Area.				·	·		◎	○	△					
39	BLR-048	The Center of Campo Area.				·	·		◎	△	·					
40	BLR-070	West of Campo Area.					·		◎	△						
41	BLR-075	East of Calising Point. (Campo)					△		◎		◎					
42	BLR-080	East of Calising Point. (Campo)				·			○	○	△					
43	BLR-083	Southeast of Calising Point. (Campo)					·		◎	·	△					
44	BLR-089	Northeast of Tila Point. (Gata)				△	·		○	·	△					
45	BLR-090	Northeast of Tila Point. (Gata)				·	·		○	·	△					
46	BLR-093	East of Calising Point. (Campo)					△		◎	·						
47	BLR-112	Northeast of Gata Area.							◎	○						
48	BLR-115	East of Calising Point. (Campo)					·		◎	○						
49	BLR-116	East of Calising Point. (Campo)							◎	○						
50	LAGR-04	East of Tila Point. (Gata)						·	◎	△						
51	LAGR-05	East of Tila Point. (Gata)				·			○	·	△					
52	LAGR-19	Southeast of Gata Area.					·		◎	·						
53	LA-01-17R	The North Lahuy Island.							◎							·

[Symbols] ◎ : abundant ○ : common △ : small amount · : rare ? : uncertain

[Abbreviations] Mo:Montmorillonite Chl:Chlorite Mi:Mica Se:Sericite Ka:Kaolinite Qz:Quartz K-f:Potassium feldspar Pl:Plagioclase Ja:Jarosite Al:Alunite Ca:Calcite Gy:Gypsum Py:Pyrite Py:Pyrite

Appendix−7 Chemical Analysis of Ores (Lahuy Island)

No	Sample No.	Location	Element	Au	Au	Ag	Cu	Fe	Mo	Pb	S%	Zn
			Unit	g/t	OZ/t	ppm	%	%	%	%	Total	%
1	ALR-013	Gata Prospect.		9.33	0.300	8	0.044	5.99	0.003	0.144	0.098	0.026
2	ALR-040	Old Tunnel of Gata Prospect.		1.52	0.049	6	0.967	4.30	0.002	1.665	5.760	3.700
3	ALR-044	Gata Prospect.		0.53	0.017	<2	0.014	5.53	<0.001	0.063	0.026	0.013
4	ALR-047	Gata Prospect.		2.43	0.078	2	0.007	7.16	<0.001	0.045	0.015	0.021
5	BLR-005	Gata Prospect.		2.52	0.081	<2	0.024	3.35	<0.001	0.142	0.203	0.037
6	BLR-010	No.6 Tunnel, Campo Prospect.		46.84	1.506	28	1.745	5.60	<0.001	0.308	6.270	1.825
7	BLR-013	No.6 Tunnel, Campo Prospect.		3.14	0.101	<2	0.064	4.09	<0.001	0.079	1.710	0.293
8	BLR-016	Campo Prospect.		0.16	0.005	<2	0.007	3.15	<0.001	0.006	0.822	0.013
9	BLR-024-1	No.5 Tunnel, Campo Prospect.		21.65	0.696	18	1.055	7.12	<0.001	4.520	4.700	2.400
10	BLR-024-2	No.5 Tunnel, Campo Prospect.		11.82	0.380	16	0.749	5.99	<0.001	3.590	2.200	1.100
11	BLR-026	No.4 Tunnel, Campo Prospect.		9.08	0.292	4	0.102	3.29	<0.001	0.334	3.420	2.920
12	BLR-034	Panique Tunnel, Campo Prospect		2.12	0.068	20	0.031	6.24	<0.001	0.006	6.070	0.021
13	BLR-035	Panique Tunnel, Campo Prospect		6.00	0.193	16	0.036	5.99	<0.001	0.006	5.930	0.011
14	BLR-045	Campo Prospect.		2.95	0.095	60	3.380	1.60	<0.001	50.700	19.400	6.500
15	BLR-046	Campo Prospect.		<0.03	<0.001	<2	0.007	3.25	<0.001	0.035	0.192	0.080
16	BLR-051	Campo Prospect.		0.81	0.026	<2	0.005	3.23	<0.001	0.022	2.090	0.040
17	BLR-053	Campo Prospect.		1.46	0.047	2	0.041	3.56	<0.001	0.353	0.654	0.100
18	BLR-055	Campo Prospect.		3.05	0.098	6	0.018	5.11	<0.001	0.109	0.079	0.028
19	BLR-059	Campo Prospect.		<0.03	<0.001	<2	0.004	2.45	<0.001	0.008	2.200	0.016
20	LAE-17R	Old Tunnel of Gata Prospect.		0.12	0.004	<2	0.003	4.15	<0.001	0.008	1.490	0.021
21	LAE-18R	Old Tunnel of Gata Prospect.		0.72	0.023	<2	0.038	3.92	0.001	0.035	1.970	0.064

Appendix-8 Trace Element Analysis of Rocks (Lahuy Island)

No	Sample No.	Au ppb	Ag ppm	As ppm	Cu ppm	Fe %	Hg ppm	Mo ppm	Pb ppm	S% Total	Sb ppm	Zn ppm
1	ALR-008	6	0.2	10	74	3.65	<1	<1	30	0.005	2	154
2	ALR-011	11	<0.2	10	40	1.92	<1	<1	72	0.002	<2	52
3	ALR-012	7	<0.2	8	31	2.86	<1	<1	150	0.937	<2	288
4	ALR-014	123	<0.2	28	60	3.39	<1	1	58	<0.001	<2	98
5	ALR-016	14	<0.2	18	49	2.77	<1	<1	80	0.016	<2	52
6	ALR-017	451	<0.2	24	140	3.35	<1	<1	436	0.006	<2	102
7	ALR-018	385	<0.2	16	73	1.10	<1	1	36	0.008	2	40
8	ALR-019	<1	<0.2	6	10	2.61	<1	<1	2	0.023	<2	82
9	ALR-021	10	0.2	<2	49	2.92	<1	<1	<2	<0.001	<2	54
10	ALR-023	8	0.2	2	105	3.03	<1	<1	24	0.241	<2	278
11	ALR-025	8	0.2	18	4	3.26	<1	<1	<2	<0.001	2	100
12	ALR-026	75	<0.2	12	83	3.49	<1	<1	8	0.004	<2	124
13	ALR-027	23	0.2	6	18	3.11	<1	<1	6	0.589	<2	104
14	ALR-028	59	<0.2	16	26	2.58	<1	<1	<2	0.145	<2	84
15	ALR-030	379	<0.2	30	115	6.30	<1	<1	458	0.002	2	140
16	ALR-031	2190	<0.2	36	110	3.09	<1	1	396	0.005	<2	166
17	ALR-032	285	0.4	42	96	3.54	<1	1	220	1.710	2	216
18	ALR-033	29	<0.2	22	75	3.63	<1	<1	2	0.004	<2	170
19	ALR-034	34	<0.2	24	40	3.58	1	<1	8	0.004	2	170
20	ALR-039	2	<0.2	2	58	2.58	<1	<1	<2	0.500	<2	58
21	ALR-042	184	<0.2	2	63	2.88	<1	<1	170	0.006	<2	236
22	ALR-043	213	<0.2	20	78	4.05	<1	7	444	1.390	<2	502
23	ALR-048	91	<0.2	12	40	3.36	1	<1	188	0.002	<2	776
24	ALR-049	21	0.2	2	94	2.58	<1	<1	274	0.199	<2	378
25	ALR-051	37	<0.2	40	13	1.15	<1	<1	48	0.010	<2	10
26	ALR-052	74	<0.2	64	29	2.68	<1	2	40	0.016	<2	22
27	ALR-053	<1	<0.2	6	31	4.04	<1	<1	<2	0.003	<2	58
28	ALR-056	<1	<0.2	16	20	1.90	<1	25	6	<0.001	<2	4
29	ALR-057	<1	<0.2	6	22	3.21	<1	<1	<2	0.001	<2	96
30	ALR-058	<1	<0.2	28	25	4.36	<1	<1	<2	0.025	<2	28
31	ALR-060	<1	<0.2	8	30	4.05	<1	<1	2	0.010	<2	90
32	ALR-063	<1	<0.2	6	38	3.48	<1	<1	<2	<0.001	<2	116
33	ALR-064	<1	<0.2	2	66	3.17	<1	<1	<2	0.004	<2	86
34	ALR-088	<1	<0.2	2	6	0.15	<1	<1	20	0.002	<2	14
35	BLR-001	<1	<0.2	4	39	3.84	<1	<1	<2	<0.001	<2	74
36	BLR-003	<1	<0.2	2	19	3.19	<1	<1	4	0.108	<2	40
37	BLR-004	3	<0.2	2	48	2.87	<1	<1	<2	0.005	2	124
38	BLR-006	24	<0.2	14	108	3.04	<1	<1	76	<0.001	<2	106
39	BLR-007	16600	0.2	18	30	4.46	<1	<1	16	0.010	<2	176
40	BLR-008	72	<0.2	<2	23	2.53	<1	<1	40	0.018	<2	602
41	BLR-009	<1	<0.2	6	52	3.61	<1	<1	<2	0.212	<2	112
42	BLR-016	102	0.8	50	42	2.93	<1	<1	14	0.447	<2	36
43	BLR-017	56	<0.2	6	10	1.92	<1	<1	24	0.281	<2	26
44	BLR-018	462	0.6	16	201	3.22	<1	2	162	1.270	<2	176
45	BLR-019	86	0.2	24	27	2.84	<1	<1	32	1.370	<2	424
46	BLR-026	30400	7.8	16	2600	4.94	<1	2	8740	6.050	<2	>10000
47	BLR-028	108	<0.2	<2	17	2.91	<1	<1	8	0.005	<2	70
48	BLR-030	35	<0.2	8	33	1.90	<1	<1	228	0.007	<2	60
49	BLR-033	2	<0.2	<2	32	2.61	<1	<1	<2	0.027	<2	90
50	BLR-038	620	1.2	74	218	2.92	<1	<1	222	0.166	<2	268
51	BLR-040	2	<0.2	4	9	2.75	1	<1	<2	<0.001	2	80
52	BLR-041	1290	5.8	4	2610	2.86	<1	<1	774	0.069	<2	558
53	BLR-042	4	<0.2	6	9	2.37	<1	<1	<2	<0.001	<2	72
54	BLR-044	60	0.2	22	43	5.05	<1	2	456	0.033	<2	386
55	BLR-048	7	<0.2	12	26	2.44	<1	<1	32	0.646	<2	230
56	BLR-050	245	<0.2	18	87	2.71	<1	<1	150	<0.001	<2	150
57	BLR-060	5	<0.2	26	17	1.81	<1	<1	16	0.007	<2	34
58	BLR-061	57	2.8	54	8	1.88	<1	<1	4	0.109	<2	8
59	BLR-063	4	<0.2	10	47	2.57	<1	<1	144	<0.001	2	236
60	BLR-064	42	<0.2	6	30	2.60	<1	<1	2	0.180	<2	110
61	BLR-065	5	0.6	22	14	2.80	<1	<1	4	0.159	2	52
62	BLR-066	<1	<0.2	4	31	2.22	<1	<1	2	<0.001	<2	52
63	BLR-068	35	<0.2	42	29	2.30	<1	<1	12	0.008	<2	22
64	BLR-070	753	0.6	32	433	3.67	<1	1	4680	0.099	<2	268
65	BLR-071	2	<0.2	8	5	2.74	<1	<1	12	0.013	2	72
66	BLR-075	6	<0.2	<2	12	1.31	<1	<1	18	0.030	<2	18
67	BLR-076	<1	<0.2	2	19	3.04	<1	<1	2	0.022	<2	76
68	BLR-078	<1	<0.2	2	29	2.91	<1	<1	4	0.005	<2	46
69	BLR-079	52	<0.2	<2	83	1.45	<1	<1	16	0.004	<2	234
70	BLR-080	<1	<0.2	<2	23	2.96	<1	<1	<2	0.006	<2	48
71	BLR-082	96	<0.2	8	26	2.40	<1	1	6	0.005	<2	104
72	BLR-083	32	<0.2	22	10	1.49	<1	4	<2	0.009	<2	4
73	BLR-089	1	<0.2	20	27	3.52	<1	<1	222	<0.001	<2	652
74	BLR-090	67	<0.2	2	11	4.62	<1	<1	<2	0.331	<2	132
75	BLR-093	16	<0.2	10	18	4.64	<1	7	6	0.016	<2	12
76	BLR-095	<1	<0.2	14	30	2.97	<1	<1	<2	<0.001	2	58
77	BLR-096	6	<0.2	14	147	3.45	<1	<1	<2	0.011	<2	88
78	BLR-098	<1	<0.2	6	27	2.63	<1	<1	2	<0.001	<2	72
79	BLR-099	1	<0.2	30	25	3.06	<1	1	22	0.005	<2	26
80	BLR-103	<1	<0.2	2	16	3.51	<1	<1	<2	0.015	<2	86
81	BLR-104	<1	<0.2	<2	26	2.65	<1	<1	4	0.022	<2	48
82	BLR-106	4	0.2	<2	42	2.58	<1	<1	<2	0.462	<2	134
83	BLR-107	<1	<0.2	<2	31	2.93	<1	<1	<2	0.010	<2	80
84	BLR-108	<1	<0.2	<2	11	2.04	<1	<1	<2	0.010	2	34
85	BLR-109	<1	<0.2	<2	33	3.31	<1	<1	<2	0.009	<2	76
86	BLR-110	<1	0.2	<2	33	3.36	<1	<1	<2	0.028	<2	60
87	BLR-111	<1	0.2	<2	24	2.87	<1	<1	<2	0.014	2	80
88	BLR-112	<1	0.2	2	24	1.53	<1	<1	6	0.053	2	16
89	BLR-116	4	0.2	8	21	2.69	<1	6	2	0.017	<2	52
90	BLR-119	2	0.2	<2	48	3.46	<1	<1	<2	0.026	2	58
91	BLR-120	<1	0.2	<2	45	3.36	<1	<1	<2	0.011	2	54
92	BLR-121	<1	0.2	<2	13	2.52	<1	<1	<2	0.020	2	74
93	BLR-122	9	0.2	<2	16	2.31	<1	<1	14	0.038	2	70
94	BLR-124	<1	<0.2	<2	26	2.47	<1	<1	<2	0.009	<2	50
95	BLR-125	<1	0.2	<2	27	3.60	<1	<1	<2	0.054	<2	78
96	FLOR-001	2	<0.2	<2	15	1.87	<1	<1	<2	0.011	<2	48
97	FLR-003	1	<0.2	16	11	1.30	<1	<1	<2	0.036	2	20
98	LAGR-015	2	<0.2	<2	44	4.44	<1	<1	14	0.019	2	138
99	LAGR-016	<1	<0.2	<2	36	4.67	<1	<1	48	0.040	4	164
100	LAGR-018	607	1.6	110	43	3.65	<1	18	242	0.021	2	28
101	LAGR-019	5	0.2	8	11	2.56	<1	<1	4	0.007	<2	58
102	LA-01-17R	10	0.8	44	226	2.97	2	1	16	1.980	<2	10
103	LA-11-12	<1	<0.2	14	126	12.80	7	<1	60	0.017	<2	226
104	LA-43-10R	4	<0.2	4	2	6.89	<1	2	<2	0.009	<2	16

Appendix–9 K–Ar Dating of Igneous Rocks

Sample No.	Rock Type	Sample Locality (latitude , longitude)	POTASSIUM (K wt%)	Rad. ^{40}Ar (10^{-8} cc/g)	K-Ar AGE (Ma)	AIR CONT. (%)	Average of K-Ar Age (Ma)
ACR026	Amphibole Porphyry	Solong Prospect. (N 13° 39′ 31″ ,E 124° 17′ 32″)	1.14±0.03	135±2.0 136±2.0	30.3±1.0 30.6±1.0	13.0 12.0	30.5±1.0
ACR135	Biotite Diorite	Agban Prospect. (N 13° 43′ 32″ ,E 124° 23′ 35″)	1.51±0.05	177±2.0 180±2.0	30.0±1.0 30.4±1.0	16.0 15.4	30.2±1.0
CCR011	Gabbro	1.6km north of Calolbon (N 13° 37′ 12″ ,E 124° 06′ 15″)	1.42±0.04	382±5.0 378±5.0	68.0±2.2 67.4±2.1	8.3 9.0	67.7±2.1
DCR008	Basalt	2.4km northwest of Tabugoc. (N 14° 04′ 07″ ,E 124° 13′ 30″)	2.72±0.05	513±6.0 509±5.8	48.0±1.1 47.6±1.1	7.2 5.6	47.8±1.1
GCR004	Plagioclase Porphyry	7.5km northeast of Guiamlong. (N 13° 42′ 31″ ,E 124° 14′ 20″)	2.17±0.04	327±4.0 330±5.0	38.5±0.9 38.9±0.9	19.3 19.9	38.7±0.9
GCR006	Diorite	Lower Stream of the Sumigin River. (N 13° 50′ 45″ ,E 124° 12′ 02″)	3.75±0.08	578±7.0 584±7.0	39.3±0.9 39.7±0.9	11.2 11.3	39.5±0.9
BLR001	Dacite	Southern coast of Gata Prospect. (N 13° 55′ 20″ ,E 123° 50′ 38″)	0.75±0.05	197±3.0 199±3.0	66.4±4.1 67.2±4.1	30.1 34.5	66.8±4.1
BLR028	Andesite	170m east of Matalhod Point. (N 13° 56′ 28″ ,E 123° 49′ 51″)	1.74±0.05	602±7.0 615±7.0	87.2±2.8 89.2±2.8	9.8 9.4	88.2±2.8
ALR071	Andesite	420m southeast of Balogo Point. (N 13° 56′ 53″ ,E 123° 49′ 04″)	1.55±0.05	571±7.0 577±7.0	92.5±2.9 93.4±3.0	12.6 13.0	93.0±3.0
ALR075	Dacite	500m north of Gogon. (N 13° 58′ 04″ ,E 123° 50′ 30″)	2.38±0.05	380±5.0 384±5.0	40.7±1.0 41.2±1.0	14.5 13.9	41.0±1.0

* Dating was done on bulk samples by Mitsubishi Material Co.,Ltd. Central Laboratory.
* Decay Constant(after Steiger and Jaeger,1977):

  $\lambda e = 0.581 \times 10^{-10}/yr$

  $\lambda \beta = 4.962 \times 10^{-10}/yr$
* ^{40}K content in K : $^{40}K/K = 0.01167$ atom %
* Error estimation was done after Nagao et al.(1984)

Appendix-10 Chemical Analysis of Stream Sediments (Catanduanes Island)(1)

No.	Element	Au	Ag	As	Cu	Fe	Hg	Mo	Pb	S %	Sb	Zn
	Unit	ppb	ppm	ppm	ppm	%	ppm	ppm	ppm	Total	ppm	ppm
	Detection Limit	1	0.2	2	1	0.01	1	1	2	0.010	2	2
1	ACS-001	1780	<0.2	<2	97	>15.00	<1	<1	2	0.018	<2	98
2	ACS-002	422	<0.2	6	102	11.00	<1	<1	<2	0.012	<2	86
3	ACS-003	28	<0.2	<2	100	14.15	<1	<1	<2	0.010	<2	90
4	ACS-004	83	0.2	10	128	11.55	<1	<1	<2	0.008	<2	108
5	ACS-005	495	0.2	<2	162	13.45	<1	<1	<2	0.236	<2	72
6	ACS-007	3	<0.2	<2	66	>15.00	<1	<1	<2	0.006	<2	114
7	ACS-008	6	0.2	<2	105	11.45	<1	<1	<2	0.007	<2	88
8	ACS-009	<1	<0.2	<2	55	>15.00	<1	<1	<2	0.008	<2	124
9	ACS-010	178	0.2	<2	142	12.30	<1	<1	<2	0.011	<2	116
10	ACS-011	583	0.2	<2	174	14.30	<1	<1	<2	0.043	<2	102
11	ACS-013	253	0.2	<2	131	9.17	<1	<1	<2	0.069	<2	96
12	ACS-014	250	<0.2	<2	425	13.55	<1	<1	<2	0.030	<2	38
13	ACS-015	257	<0.2	22	114	>15.00	<1	<1	6	0.086	<2	106
14	ACS-016	119	<0.2	34	94	>15.00	<1	<1	8	0.111	<2	114
15	ACS-017	453	<0.2	86	128	>15.00	<1	<1	8	0.183	<2	112
16	ACS-018	3	<0.2	36	110	>15.00	<1	<1	22	0.004	<2	132
17	ACS-019	3	<0.2	42	106	>15.00	<1	<1	14	0.004	<2	163
18	ACS-020	331	<0.2	<2	86	>15.00	<1	<1	10	0.005	<2	176
19	BCS-001	2	0.2	<2	112	6.68	<1	<1	<2	0.007	<2	96
20	BCS-003	7	0.2	<2	98	5.82	<1	<1	<2	0.006	<2	86
21	BCS-004	45	<0.2	<2	147	11.10	<1	<1	<2	0.006	<2	140
22	BCS-005	1	<0.2	<2	101	9.91	<1	<1	<2	0.017	<2	130
23	BCS-006	<1	<0.2	<2	79	>15.00	<1	<1	<2	0.012	<2	164
24	BCS-007	1	<0.2	<2	135	6.44	<1	<1	<2	0.008	<2	112
25	BCS-008	<1	<0.2	<2	87	14.25	<1	<1	<2	0.028	<2	152
26	BCS-009	<1	<0.2	4	111	11.40	<1	<1	2	0.013	<2	200
27	BCS-010	575	<0.2	<2	143	6.49	<1	<1	<2	0.018	<2	90
28	BCS-011	2	<0.2	<2	59	8.51	<1	<1	<2	0.009	<2	120
29	BCS-012	<1	<0.2	<2	70	6.36	<1	<1	<2	0.015	<2	94
30	BCS-013	<1	<0.2	<2	70	5.80	<1	<1	<2	0.010	<2	80
31	BCS-014	<1	<0.2	<2	71	5.28	<1	<1	<2	0.002	<2	78
32	BCS-015	<1	<0.2	2	74	6.55	<1	<1	<2	0.002	<2	106
33	BCS-016	<1	<0.2	<2	69	7.84	<1	<1	<2	0.028	<2	128
34	BCS-017	9	<0.2	8	219	8.17	<1	<1	<2	0.294	<2	210
35	BCS-018	1	<0.2	<2	137	10.45	<1	<1	<2	0.011	<2	184
36	BCS-019	1	<0.2	<2	123	11.85	<1	<1	<2	0.002	<2	216
37	BCS-020	<1	<0.2	<2	111	11.85	<1	<1	<2	0.009	<2	226
38	BCS-021	<1	<0.2	<2	119	8.94	<1	<1	2	0.006	<2	228
39	BCS-022	<1	<0.2	<2	107	11.35	<1	<1	2	<0.001	<2	230
40	BCS-023	1	<0.2	<2	161	10.35	<1	<1	<2	<0.001	<2	138
41	BCS-024	2	<0.2	<2	179	7.62	<1	<1	<2	0.002	<2	106
42	BCS-025	2	<0.2	<2	138	13.95	<1	<1	<2	<0.001	<2	178
43	BCS-026	170	<0.2	2	65	3.49	<1	<1	2	0.004	<2	68
44	BCS-027	13	<0.2	<2	88	6.34	<1	<1	<2	0.007	<2	92
45	BCS-029	<1	<0.2	<2	96	10.40	<1	<1	<2	0.003	<2	160
46	BCS-030	<1	<0.2	<2	82	7.65	<1	<1	<2	0.025	<2	136
47	BCS-031	<1	<0.2	<2	83	11.65	<1	<1	<2	0.012	<2	238
48	BCS-032	1	<0.2	<2	96	7.15	<1	<1	<2	0.002	<2	118
49	BCS-033	<1	<0.2	<2	95	6.04	<1	<1	<2	<0.001	<2	84
50	BCS-034	<1	<0.2	<2	96	8.18	<1	<1	<2	<0.001	<2	148
51	BCS-035	<1	<0.2	<2	117	8.62	<1	<1	<2	<0.001	<2	148
52	BCS-036	<1	<0.2	<2	96	9.99	<1	<1	<2	<0.001	<2	202
53	BCS-037	<1	<0.2	<2	92	12.45	<1	<1	<2	0.007	<2	224
54	BCS-038	<1	<0.2	<2	93	11.00	<1	<1	<2	0.009	<2	216
55	BCS-039	186	<0.2	<2	63	6.32	<1	<1	<2	0.013	<2	62
56	BCS-040	155	<0.2	<2	57	4.93	<1	<1	<2	0.001	<2	62
57	BCS-041	103	<0.2	<2	38	6.23	<1	<1	<2	0.056	<2	52
58	BCS-042	2070	<0.2	<2	63	5.31	<1	<1	<2	0.012	<2	60
59	BCS-043	1030	<0.2	<2	50	14.90	<1	<1	<2	0.016	<2	56
60	BCS-044	<1	<0.2	<2	64	5.16	<1	<1	<2	0.033	<2	46
61	BCS-045	33	<0.2	<2	51	4.66	<1	<1	<2	0.021	<2	54
62	BCS-046	10	<0.2	<2	52	2.78	<1	<1	<2	0.013	<2	48
63	BCS-047	33	<0.2	<2	46	3.85	<1	<1	<2	0.021	<2	42
64	BCS-048	<1	<0.2	<2	56	4.51	<1	<1	<2	0.032	<2	42
65	BCS-050	<1	<0.2	<2	48	3.86	<1	<1	<2	0.223	<2	60
66	BCS-051	47	<0.2	<2	51	5.17	<1	<1	<2	0.007	<2	58
67	BCS-052	70	<0.2	<2	40	4.89	<1	<1	<2	0.009	<2	52
68	BCS-053	<1	<0.2	<2	66	6.92	<1	<1	<2	0.023	<2	66
69	BCS-055	<1	<0.2	<2	63	7.14	<1	<1	2	0.012	<2	60
70	BCS-056	1	<0.2	<2	142	8.42	<1	<1	<2	0.010	<2	116
71	BCS-057	7	<0.2	<2	123	8.74	<1	<1	<2	0.013	<2	106
72	BCS-058	1	<0.2	<2	140	8.37	<1	<1	2	0.011	<2	114
73	BCS-059	12	<0.2	<2	200	10.85	<1	<1	<2	0.003	<2	128
74	BCS-060	2	<0.2	4	141	8.88	<1	<1	<2	0.005	<2	108
75	BCS-061	6	<0.2	<2	135	9.11	<1	<1	<2	0.009	<2	112
76	BCS-062	1	<0.2	<2	137	6.70	<1	<1	<2	<0.001	<2	104
77	BCS-063	76	<0.2	<2	97	10.45	<1	<1	<2	0.011	<2	76
78	BCS-064	393	<0.2	<2	76	9.87	<1	<1	<2	0.008	<2	112
79	BCS-065	208	<0.2	<2	90	10.05	<1	<1	<2	0.004	<2	68
80	BCS-067	<1	<0.2	<2	46	4.30	<1	<1	<2	0.013	<2	34
81	BCS-068	777	<0.2	<2	71	7.46	<1	<1	<2	<0.001	<2	64
82	BCS-069	25	<0.2	<2	84	8.30	<1	<1	<2	0.008	<2	68
83	BCS-071	<1	<0.2	<2	56	>15.00	<1	<1	<2	0.005	<2	252
84	BCS-072	<1	<0.2	<2	55	>15.00	<1	<1	<2	0.003	<2	278
85	BCS-074	75	<0.2	<2	47	>15.00	<1	<1	<2	0.007	<2	252
86	BCS-075	<1	<0.2	<2	43	7.57	<1	<1	<2	<0.001	<2	102
87	BCS-077	<1	<0.2	<2	46	>15.00	<1	<1	<2	0.006	<2	270
88	BCS-078	<1	<0.2	<2	60	14.75	<1	<1	<2	0.002	<2	254
89	BCS-079	<1	<0.2	<2	74	13.30	<1	<1	2	0.021	<2	224
90	BCS-080	2	<0.2	<2	97	14.00	<1	<1	2	<0.001	<2	264
91	BCS-081	<1	<0.2	<2	84	>15.00	<1	<1	<2	<0.001	<2	302
92	BCS-082	<1	<0.2	<2	79	>15.00	<1	<1	2	0.003	<2	320
93	BCS-083	2	<0.2	<2	66	>15.00	<1	<1	<2	0.017	<2	356
94	BCS-084	64	<0.2	<2	111	9.00	<1	<1	<2	0.024	<2	108
95	BCS-085	287	<0.2	<2	111	8.07	<1	<1	<2	0.012	<2	104
96	BCS-086	190	<0.2	<2	114	8.52	<1	<1	<2	<0.001	<2	100
97	BCS-087	126	<0.2	<2	114	7.31	<1	<1	<2	0.001	<2	98
98	BCS-088	286	<0.2	<2	133	6.90	<1	<1	<2	0.004	<2	108
99	BCS-089	26	<0.2	<2	66	5.50	<1	<1	<2	0.002	<2	74
100	BCS-090	1800	<0.2	<2	138	8.20	<1	<1	<2	0.003	<2	98

Appendix−10 Chemical Analysis of Stream Sediments (Catanduanes Island)(2)

No.	Element Unit	Au ppb	Ag ppm	As ppm	Cu ppm	Fe %	Hg ppm	Mo ppm	Pb ppm	S % Total	Sb ppm	Zn ppm
101	CCS-001	8	<0.2	<2	121	6.61	<1	<1	<2	<0.001	<2	100
102	CCS-002	2	<0.2	<2	97	8.14	<1	<1	<2	0.003	<2	96
103	CCS-003	19	<0.2	<2	77	4.57	<1	<1	<2	0.004	<2	72
104	CCS-004	<1	<0.2	14	139	5.64	<1	<1	<2	<0.001	<2	112
105	CCS-005	2	<0.2	<2	158	5.82	<1	<1	4	0.037	<2	104
106	CCS-006	76	<0.2	<2	184	6.60	<1	<1	4	0.009	<2	110
107	CCS-007	<1	<0.2	16	172	8.34	<1	<1	4	0.033	<2	120
108	CCS-008	5	<0.2	<2	145	11.15	<1	<1	4	0.003	<2	126
109	CCS-009	<1	<0.2	<2	110	10.90	<1	<1	4	0.003	<2	104
110	CCS-010	<1	<0.2	<2	105	12.35	<1	<1	<2	<0.001	<2	230
111	CCS-011	<1	<0.2	<2	75	11.50	<1	<1	<2	<0.001	<2	194
112	CCS-012	<1	<0.2	<2	120	11.70	<1	<1	4	<0.001	<2	202
113	CCS-013	3	<0.2	<2	84	12.10	<1	<1	2	0.071	<2	200
114	CCS-014	1	<0.2	<2	137	7.54	<1	<1	10	0.014	<2	106
115	CCS-015	62	<0.2	<2	131	7.50	<1	<1	2	0.045	<2	108
116	CCS-016	1	<0.2	<2	94	8.92	<1	<1	<2	0.006	<2	138
117	CCS-017	<1	<0.2	<2	117	14.10	<1	<1	2	0.004	<2	216
118	CCS-018	42	<0.2	<2	139	9.43	<1	<1	<2	0.171	<2	136
119	CCS-019	2	<0.2	<2	102	>15.00	<1	<1	<2	0.025	<2	154
120	CCS-020	<1	<0.2	<2	96	13.70	<1	<1	<2	0.022	<2	152
121	CCS-021	<1	<0.2	<2	135	12.50	<1	1	<2	0.005	<2	114
122	CCS-022	<1	<0.2	10	64	11.45	<1	<1	<2	0.005	2	138
123	CCS-023	<1	<0.2	6	70	7.87	<1	1	<2	0.007	2	90
124	CCS-024	1	<0.2	8	73	>15.00	<1	<1	<2	0.004	4	178
125	CCS-025	<1	<0.2	<2	77	10.65	<1	<1	2	0.003	4	146
126	CCS-026	1	<0.2	<2	92	12.25	<1	<1	<2	0.004	2	172
127	CCS-027	1	<0.2	<2	91	>15.00	<1	<1	2	0.023	4	232
128	CCS-028	2	<0.2	<2	83	>15.00	<1	1	<2	0.014	4	274
129	CCS-029	17	<0.2	<2	95	13.60	<1	<1	<2	0.030	2	202
130	CCS-030	<1	<0.2	2	108	>15.00	<1	1	<2	0.003	6	260
131	CCS-031	<1	<0.2	<2	74	>15.00	<1	1	2	0.008	2	284
132	CCS-032	<1	<0.2	6	54	10.50	<1	1	<2	0.003	<2	150
133	CCS-033	<1	<0.2	2	56	8.44	<1	<1	4	0.006	<2	118
134	CCS-034	<1	<0.2	<2	54	9.77	<1	1	<2	0.004	4	140
135	CCS-035	<1	<0.2	<2	51	5.84	<1	<1	<2	0.004	2	76
136	CCS-036	<1	<0.2	6	49	7.86	<1	1	<2	0.003	4	108
137	CCS-037	<1	<0.2	<2	48	6.80	<1	1	2	0.004	2	92
138	CCS-038	95	<0.2	14	56	9.78	<1	1	<2	0.002	2	138
139	CCS-039	3	<0.2	<2	141	14.05	<1	<1	<2	0.007	<2	152
140	CCS-040	2	<0.2	<2	158	13.60	<1	<1	8	0.012	6	146
141	CCS-041	<1	<0.2	<2	62	>15.00	<1	1	6	0.003	2	120
142	CCS-042	1	<0.2	20	106	>15.00	<1	<1	2	0.006	6	124
143	CCS-043	<1	<0.2	<2	101	14.25	<1	<1	<2	0.006	2	210
144	CCS-044	<1	<0.2	<2	121	>15.00	<1	1	<2	0.009	<2	270
145	CCS-045	26	<0.2	20	97	7.73	<1	<1	2	0.052	4	102
146	CCS-046	<1	<0.2	<2	96	10.85	<1	<1	2	0.008	4	148
147	CCS-047	1	<0.2	<2	97	8.86	<1	<1	6	0.018	6	116
148	CCS-048	24	<0.2	<2	96	9.23	<1	<1	4	0.016	2	116
149	CCS-049	<1	<0.2	12	91	8.68	<1	<1	2	0.007	6	138
150	CCS-051	4	<0.2	12	103	7.93	<1	2	2	0.906	4	126
151	CCS-052	<1	<0.2	14	105	9.25	<1	1	2	0.005	2	122
152	CCS-053	<1	<0.2	4	90	9.87	<1	<1	<2	0.010	4	166
153	CCS-055	176	<0.2	2	77	10.20	<1	<1	<2	0.006	<2	118
154	CCS-056	89	<0.2	12	82	9.00	<1	1	<2	0.006	4	108
155	CCS-057	2	<0.2	<2	78	6.33	<1	<1	<2	0.004	<2	80
156	CCS-058	1	<0.2	<2	76	5.70	<1	1	2	0.008	<2	74
157	CCS-059	2	<0.2	<2	99	5.83	<1	<1	<2	0.008	2	66
158	CCS-060	2	<0.2	12	83	7.20	<1	<1	2	0.009	<2	84
159	CCS-062	8	<0.2	2	81	5.40	<1	<1	<2	0.008	4	68
160	CCS-063	1	<0.2	<2	94	5.72	<1	<1	<2	<0.001	<2	60
161	CCS-065	2	<0.2	<2	89	5.34	<1	<1	10	0.006	2	58
162	CCS-066	1	<0.2	<2	98	4.89	<1	<1	<2	0.009	4	60
163	CCS-067	2	<0.2	<2	85	6.51	<1	1	<2	0.028	<2	64
164	CCS-068	<1	<0.2	<2	102	5.34	<1	<1	6	0.003	2	64
165	CCS-069	<1	<0.2	<2	64	3.75	<1	<1	<2	0.006	2	48
166	CCS-070	39	<0.2	8	40	6.28	<1	<1	<2	0.009	<2	36
167	CCS-071	<1	<0.2	<2	114	2.86	<1	8	4	0.006	<2	36
168	CCS-072	<1	<0.2	6	67	4.45	<1	2	6	0.051	4	42
169	CCS-073	<1	<0.2	<2	61	5.85	<1	1	6	0.017	4	54
170	CCS-074	7	<0.2	<2	59	5.82	<1	1	2	0.686	4	72
171	CCS-075	9	<0.2	<2	59	6.22	<1	<1	<2	0.032	4	68
172	CCS-076	2	<0.2	6	66	9.32	<1	<1	4	0.046	2	60
173	CCS-077	4	<0.2	<2	46	7.03	<1	2	<2	1.250	6	66
174	CCS-078	3	<0.2	4	47	6.44	<1	1	2	0.512	2	68
175	CCS-079	754	<0.2	2	77	5.50	<1	2	<2	0.041	<2	48
176	CCS-080	6	<0.2	<2	128	12.00	<1	<1	4	0.009	<2	80
177	CCS-082	1	<0.2	10	171	7.70	<1	<1	8	0.012	4	100
178	CCS-083	3	<0.2	<2	132	12.40	<1	1	<2	0.012	<2	76
179	CCS-084	<1	<0.2	8	191	6.11	<1	1	<2	0.045	4	134
180	CCS-085	2	<0.2	<2	184	7.89	<1	2	4	0.022	2	108
181	CCS-086	4	<0.2	24	203	9.35	<1	1	<2	0.016	6	114
182	CCS-088	3	<0.2	<2	60	7.16	<1	<1	4	0.007	2	54
183	CCS-090	4	<0.2	<2	58	7.32	<1	<1	2	0.006	2	48
184	CCS-091	197	<0.2	<2	58	8.20	<1	1	<2	0.010	4	56
185	CCS-092	441	<0.2	<2	61	7.91	<1	1	<2	0.006	2	52
186	CCS-093	3	<0.2	<2	99	>15.00	<1	<1	<2	0.003	6	238
187	CCS-095	<1	<0.2	<2	92	>15.00	<1	<1	10	0.003	12	310
188	CCS-097	<1	<0.2	<2	89	>15.00	<1	1	6	0.004	2	212
189	CCS-098	<1	<0.2	2	95	7.38	<1	<1	8	0.125	2	124
190	CCS-099	<1	<0.2	<2	82	4.88	<1	<1	4	0.240	6	80
191	CCS-100	<1	<0.2	<2	83	6.22	<1	<1	6	0.174	4	114
192	CCS-101	1	<0.2	<2	83	10.80	<1	<1	10	0.181	2	216
193	CCS-102	<1	<0.2	<2	80	9.99	<1	<1	10	0.161	4	174
194	CCS-103	<1	<0.2	<2	83	10.80	<1	<1	8	0.192	6	188
195	CCS-104	<1	<0.2	<2	82	7.90	<1	<1	14	0.007	2	66
196	CCS-105	<1	<0.2	<2	60	7.27	<1	<1	<2	0.005	<2	74
197	CCS-106	5	<0.2	<2	68	7.66	<1	1	<2	0.007	6	74
198	CCS-107	136	<0.2	<2	65	7.14	<1	<1	2	0.008	<2	70
199	CCS-108	1	<0.2	<2	63	6.40	<1	<1	8	0.004	2	72
200	CCS-109	6	<0.2	<2	69	6.37	<1	1	<2	0.007	<2	74

Appendix−10 Chemical Analysis of Stream Sediments (Catanduanes Island)(3)

No.	Element Unit	Au ppb	Ag ppm	As ppm	Cu ppm	Fe %	Hg ppm	Mo ppm	Pb ppm	S % Total	Sb ppm	Zn ppm
201	CCS-110	2	0.2	6	112	8.15	<1	<1	<2	0.005	4	112
202	CCS-111	1	<0.2	4	104	6.49	<1	<1	<2	0.007	<2	90
203	CCS-113	<1	<0.2	6	96	7.32	<1	<1	<2	0.019	<2	160
204	DCS-001	3	0.2	8	131	7.83	<1	<1	<2	0.015	2	96
205	DCS-002	3	0.2	16	141	7.86	<1	<1	<2	0.008	2	96
206	DCS-003	410	0.4	16	149	8.69	<1	<1	<2	0.013	2	108
207	DCS-004	6	<0.2	6	150	9.05	<1	<1	<2	0.025	2	112
208	DCS-005	3	0.2	8	151	8.85	<1	<1	<2	0.044	<2	110
209	DCS-006	4	<0.2	12	150	9.65	<1	<1	<2	0.053	<2	116
210	DCS-007	<1	0.2	<2	71	10.95	<1	<1	<2	0.013	<2	178
211	DCS-008	<1	0.6	14	86	12.00	<1	<1	<2	0.020	<2	206
212	DCS-009	<1	0.4	2	72	12.00	<1	<1	<2	0.026	<2	180
213	DCS-010	<1	0.2	4	69	12.75	<1	<1	2	0.048	<2	194
214	DCS-011	<1	<0.2	4	67	>15.00	<1	<1	4	0.030	<2	246
215	DCS-012	<1	0.4	4	67	8.87	<1	<1	<2	0.010	<2	128
216	DCS-013	<1	<0.2	4	57	11.95	<1	<1	<2	0.008	<2	174
217	DCS-014	<1	0.4	12	68	9.15	<1	<1	<2	0.008	<2	130
218	DCS-015	<1	0.2	2	78	9.89	<1	<1	<2	0.011	<2	124
219	DCS-016	<1	<0.2	<2	66	>15.00	<1	<1	<2	0.007	<2	200
220	DCS-017	<1	0.2	2	72	13.60	<1	<1	<2	0.010	<2	202
221	DCS-018	53	<0.2	<2	61	>15.00	<1	<1	<2	0.017	<2	338
222	DCS-019	229	<0.2	<2	79	>15.00	<1	<1	<2	0.048	<2	308
223	DCS-020	1	0.4	<2	76	13.75	<1	<1	<2	0.003	<2	188
224	DCS-021	<1	0.2	<2	72	13.55	<1	<1	<2	0.006	<2	182
225	DCS-022	<1	0.4	<2	72	13.20	<1	<1	<2	0.006	<2	178
226	DCS-023	<1	0.4	<2	65	12.90	<1	<1	<2	0.004	<2	164
227	DCS-024	1	0.8	4	78	8.80	<1	<1	<2	0.005	<2	112
228	DCS-025	<1	<0.2	<2	85	>15.00	<1	<1	<2	0.003	<2	318
229	DCS-026	281	0.2	<2	93	>15.00	<1	<1	2	0.006	<2	312
230	DCS-027	<1	1.2	<2	89	>15.00	<1	<1	<2	0.002	<2	276
231	DCS-028	1	0.8	8	104	10.40	<1	<1	<2	0.010	<2	182
232	DCS-029	23	0.8	8	105	9.89	<1	<1	<2	0.006	<2	168
233	DCS-030	2	0.6	8	162	13.80	<1	<1	<2	0.008	2	188
234	DCS-031	1	0.2	<2	119	>15.00	<1	<1	<2	0.003	<2	238
235	DCS-032	<1	0.2	<2	133	>15.00	<1	<1	<2	0.003	<2	252
236	DCS-033	1	1.0	4	147	>15.00	<1	<1	4	0.002	<2	206
237	DCS-034	<1	0.4	<2	121	>15.00	<1	<1	4	0.003	<2	330
238	DCS-035	15	0.6	14	75	6.12	<1	<1	<2	0.071	4	90
239	DCS-036	1	0.6	12	78	6.87	<1	<1	<2	0.017	2	94
240	DCS-037	<1	0.6	18	93	8.65	<1	<1	<2	0.007	2	116
241	DCS-038	5	0.4	4	78	6.61	<1	<1	<2	0.004	2	76
242	DCS-039	2	0.4	20	93	6.36	<1	<1	<2	0.027	4	108
243	DCS-040	<1	0.6	10	76	8.29	<1	<1	<2	0.005	2	140
244	DCS-041	<1	0.6	2	81	14.20	<1	<1	<2	0.006	<2	234
245	DCS-042	<1	0.8	6	77	8.26	<1	<1	<2	0.004	2	138
246	DCS-043	<1	0.6	<2	40	14.45	<1	<1	<2	0.003	<2	198
247	DCS-044	2	0.4	2	75	7.39	<1	<1	<2	0.006	<2	114
248	DCS-045	<1	0.4	12	64	5.51	<1	<1	<2	0.004	2	78
249	DCS-046	1465	0.4	6	63	>15.00	<1	<1	<2	0.019	<2	108
250	DCS-047	610	0.4	<2	59	12.95	3	<1	<2	0.012	<2	164
251	DCS-048	1370	<0.2	<2	53	>15.00	<1	<1	<2	0.016	<2	192
252	DCS-049	<1	0.2	2	66	5.00	<1	<1	<2	0.033	<2	64
253	DCS-050	113	0.2	2	71	13.15	<1	<1	<2	0.014	<2	142
254	DCS-051	663	0.4	8	69	10.65	<1	<1	<2	0.016	2	118
255	DCS-052	8	0.4	<2	60	6.87	<1	<1	<2	0.023	<2	68
256	DCS-053	936	0.2	2	63	4.09	<1	<1	<2	0.056	2	76
257	DCS-054	296	0.2	<2	67	5.54	<1	<1	<2	0.016	<2	58
258	DCS-055	4510	<0.2	<2	59	>15.00	<1	<1	<2	0.031	<2	150
259	DCS-056	986	<0.2	<2	55	>15.00	<1	<1	<2	0.065	<2	162
260	DCS-057	367	0.2	<2	51	14.05	<1	<1	<2	0.038	<2	140
261	DCS-058	2830	1.4	6	79	11.05	<1	<1	4	0.061	<2	72
262	DCS-059	1205	<0.2	<2	58	13.35	<1	<1	<2	0.007	<2	108
263	DCS-060	8	0.2	<2	70	7.85	<1	<1	4	0.060	<2	60
264	DCS-061	5	0.2	<2	68	7.53	<1	<1	<2	0.142	<2	66
265	DCS-062	876	<0.2	<2	61	>15.00	2	<1	<2	0.013	<2	140
266	DCS-064	1580	<0.2	<2	93	>15.00	<1	<1	<2	0.011	<2	120
267	DCS-066	56	<0.2	<2	95	15.00	<1	<1	<2	0.008	<2	114
268	DCS-068	2	<0.2	<2	96	>15.00	<1	<1	<2	0.006	<2	114
269	DCS-069	2	<0.2	<2	96	11.90	<1	<1	<2	0.013	<2	98
270	DCS-070	7	<0.2	<2	90	>15.00	<1	<1	<2	0.005	<2	118
271	DCS-071	1	<0.2	<2	73	14.60	<1	<1	<2	0.006	2	96
272	DCS-072	5	<0.2	6	96	>15.00	<1	<1	<2	0.005	<2	116
273	DCS-073	<1	<0.2	<2	88	13.05	<1	<1	<2	0.003	<2	104
274	DCS-074	1	0.2	20	139	6.45	<1	<1	4	0.016	2	90
275	DCS-075	11	0.4	<2	53	10.05	<1	<1	<2	0.002	<2	82
276	DCS-076	17	0.6	<2	57	>15.00	<1	<1	<2	0.009	<2	92
277	DCS-077	75	0.4	<2	52	>15.00	<1	<1	<2	0.006	<2	100
278	DCS-078	284	<0.2	<2	60	>15.00	<1	<1	<2	0.012	<2	118
279	DCS-079	23	0.2	<2	62	>15.00	2	<1	<2	0.016	<2	118
280	DCS-080	83	0.4	94	82	5.09	<1	<1	12	0.873	2	64
281	DCS-081	13	<0.2	<2	61	>15.00	<1	<1	<2	0.009	<2	120
282	DCS-082	39	<0.2	<2	44	>15.00	<1	<1	<2	0.005	<2	338
283	DCS-083	17	<0.2	<2	37	>15.00	<1	<1	<2	0.006	<2	312
284	DCS-084	497	<0.2	<2	39	>15.00	<1	<1	<2	0.004	<2	284
285	DCS-085	76	0.4	<2	47	>15.00	<1	<1	<2	0.003	<2	248
286	DCS-086	<1	<0.2	<2	38	>15.00	<1	<1	<2	<0.001	<2	298
287	DCS-087	<1	0.6	<2	53	>15.00	<1	<1	<2	0.004	<2	292
288	DCS-088	164	0.6	2	47	>15.00	<1	<1	<2	0.013	<2	358
289	DCS-089	<1	1.0	4	50	11.05	<1	<1	<2	0.003	<2	144
290	DCS-090	1	<0.2	<2	45	>15.00	<1	<1	<2	0.019	<2	376
291	DCS-091	<1	0.6	<2	41	11.65	<1	<1	<2	0.006	<2	154
292	DCS-092	<1	0.6	6	40	6.56	<1	<1	<2	0.012	2	82
293	DCS-093	<1	0.8	<2	45	>15.00	<1	<1	<2	0.018	<2	262
294	DCS-094	67	<0.2	<2	49	>15.00	<1	<1	<2	0.011	<2	424
295	DCS-095	11	0.8	18	127	8.03	<1	<1	<2	<0.001	6	112
296	DCS-096	4	0.6	6	123	7.47	<1	<1	<2	0.004	2	112
297	DCS-097	63	0.6	10	109	9.79	<1	<1	<2	0.001	4	120
298	DCS-098	1085	0.8	2	96	12.40	<1	2	<2	0.003	2	140
299	DCS-099	76	0.6	28	111	5.87	<1	<1	<2	0.005	4	100
300	DCS-100	839	0.6	6	98	10.55	<1	<1	<2	0.003	4	124

Appendix-10 Chemical Analysis of Stream Sediments (Catanduanes Island)(4)

No.	Element Unit	Au ppb	Ag ppm	As ppm	Cu ppm	Fe %	Hg ppm	Mo ppm	Pb ppm	S % Total	Sb ppm	Zn ppm
301	DCS-101	801	0.6	8	108	9.96	<1	<1	<2	0.004	2	118
302	DCS-102	6	0.4	4	109	12.90	<1	<1	<2	<0.001	<2	112
303	DCS-103	1	0.4	<2	62	12.20	<1	<1	<2	<0.001	<2	156
304	DCS-104	20	0.6	4	93	8.45	<1	<1	<2	<0.001	2	100
305	DCS-105	225	0.4	6	91	11.05	<1	<1	<2	<0.001	<2	102
306	ECS-001	12	0.4	16	142	7.35	<1	<1	<2	<0.001	4	112
307	ECS-002	5	0.4	18	149	8.01	<1	<1	<2	<0.001	2	116
308	ECS-003	828	0.4	26	148	7.54	<1	<1	<2	0.002	4	112
309	ECS-004	<1	0.2	12	152	5.35	<1	<1	12	0.012	4	120
310	ECS-005	<1	0.4	6	119	6.44	<1	<1	<2	0.023	2	94
311	ECS-007	3	0.4	16	173	7.85	<1	<1	2	0.010	<2	106
312	ECS-008	<1	0.2	8	166	8.59	<1	<1	<2	0.013	2	118
313	ECS-009	<1	0.4	4	54	6.52	<1	<1	<2	0.006	<2	98
314	ECS-010	<1	0.4	6	48	6.79	<1	<1	<2	0.014	<2	102
315	ECS-012	<1	0.2	<2	51	6.84	<1	<1	<2	0.008	<2	98
316	ECS-013	<1	0.4	12	50	8.43	<1	<1	<2	0.016	2	132
317	ECS-014	2	<0.2	4	97	>15.00	<1	<1	<2	0.098	<2	272
318	ECS-015	2	1.4	8	95	14.60	<1	<1	<2	0.090	2	226
319	ECS-016	1	1.2	18	82	>15.00	<1	<1	2	0.032	4	260
320	ECS-017	5	0.4	16	74	>15.00	<1	<1	<2	0.002	<2	262
321	ECS-018	2	<0.2	<2	76	>15.00	<1	<1	<2	0.005	<2	254
322	ECS-019	<1	<0.2	16	99	9.14	<1	<1	2	0.003	2	160
323	ECS-020	<1	0.2	8	100	14.50	<1	<1	2	0.012	2	268
324	ECS-021	<1	0.2	14	114	11.30	<1	<1	<2	0.006	2	204
325	ECS-022	<1	<0.2	14	119	9.78	<1	<1	<2	0.003	<2	192
326	ECS-023	<1	<0.2	22	116	6.25	<1	<1	<2	0.023	2	114
327	ECS-024	18	<0.2	12	102	5.23	<1	<1	<2	0.187	2	94
328	ECS-025	<1	0.2	38	86	6.03	<1	<1	<2	0.006	6	80
329	ECS-026	1	<0.2	16	94	6.41	<1	<1	<2	<0.001	4	96
330	ECS-027	<1	<0.2	12	85	5.06	<1	<1	<2	0.003	4	68
331	ECS-028	<1	<0.2	12	65	8.75	<1	<1	4	0.014	2	156
332	ECS-029	<1	<0.2	12	88	9.04	<1	<1	<2	0.009	<2	144
333	ECS-031	<1	<0.2	14	80	7.35	<1	<1	<2	0.091	2	128
334	ECS-032	<1	<0.2	16	78	9.20	<1	<1	<2	0.004	<2	160
335	ECS-033	<1	<0.2	12	83	>15.00	<1	<1	<2	0.005	<2	264
336	ECS-034	<1	<0.2	<2	81	8.09	<1	<1	<2	0.048	2	138
337	ECS-035	<1	<0.2	14	83	8.15	<1	<1	<2	0.020	2	142
338	ECS-036	<1	<0.2	<2	58	14.15	<1	<1	<2	0.015	<2	228
339	ECS-037	<1	<0.2	4	98	9.28	<1	<1	<2	0.014	2	170
340	ECS-038	<1	<0.2	16	97	12.00	<1	<1	<2	0.017	2	224
341	ECS-039	<1	0.2	20	102	10.90	<1	<1	<2	0.032	4	196
342	ECS-040	630	<0.2	12	78	4.99	<1	<1	6	0.049	2	78
343	ECS-041	195	<0.2	18	82	5.46	<1	<1	2	0.022	2	74
344	ECS-042	1725	<0.2	2	49	>15.00	1	<1	<2	0.027	<2	148
345	ECS-043	2100	<0.2	16	77	9.73	<1	<1	<2	0.038	2	92
346	ECS-044	378	<0.2	<2	66	8.37	<1	<1	<2	0.039	<2	78
347	ECS-045	55	<0.2	<2	56	>15.00	<1	<1	<2	0.109	<2	198
348	ECS-046	<1	<0.2	12	70	3.18	<1	<1	<2	0.005	<2	54
349	ECS-047	1	0.2	12	204	9.18	<1	<1	<2	0.022	<2	88
350	ECS-048	1	0.2	20	109	12.35	<1	<1	<2	0.009	<2	108
351	ECS-049	76	0.4	16	132	6.88	<1	<1	<2	<0.001	2	98
352	ECS-050	3	0.4	18	107	7.06	<1	<1	<2	0.007	<2	92
353	ECS-051	84	0.2	26	138	6.40	<1	<1	<2	0.006	2	94
354	ECS-052	2	0.4	12	63	8.86	<1	<1	<2	<0.001	<2	68
355	ECS-053	25	0.4	8	58	10.15	<1	<1	<2	0.003	<2	68
356	ECS-054	3	0.4	8	102	13.05	<1	<1	<2	0.003	<2	138
357	ECS-055	<1	0.4	12	103	11.40	<1	<1	<2	0.005	2	118
358	ECS-056	37	0.2	8	97	14.65	<1	<1	<2	0.006	2	130
359	ECS-057	2	0.4	36	168	7.74	<1	<1	<2	0.001	4	124
360	ECS-058	28	0.4	24	112	8.88	<1	<1	<2	0.009	2	104
361	ECS-059	1	0.2	22	150	7.40	<1	<1	6	0.013	<2	168
362	ECS-060	2	0.4	12	75	11.55	<1	<1	<2	<0.001	<2	184
363	ECS-061	1	0.2	4	77	7.64	<1	<1	2	0.007	<2	118
364	ECS-062	42	0.4	6	65	9.08	<1	<1	<2	0.002	2	142
365	ECS-063	4	0.2	2	43	12.85	<1	<1	<2	0.003	<2	194
366	ECS-064	<1	<0.2	<2	52	14.60	<1	<1	<2	0.004	<2	240
367	ECS-065	<1	0.4	8	56	8.28	<1	<1	<2	0.004	<2	126
368	ECS-066	3	0.2	4	85	8.60	<1	<1	<2	0.002	2	106
369	ECS-067	6	0.2	6	131	6.76	<1	<1	<2	0.003	4	92
370	ECS-068	4	0.4	26	152	6.98	<1	<1	<2	<0.001	4	96
371	ECS-069	58	0.2	8	94	5.83	<1	<1	<2	0.007	2	96
372	ECS-070	2	0.2	2	109	6.48	<1	<1	<2	0.002	2	102
373	ECS-071	5	<0.2	12	89	5.49	<1	<1	<2	0.130	<2	86
374	ECS-072	5	0.2	22	114	6.87	<1	<1	<2	0.007	2	102
375	ECS-073	5	<0.2	10	108	6.61	<1	<1	<2	0.006	<2	108
376	ECS-074	16	0.2	12	82	6.23	<1	<1	<2	0.019	2	102
377	ECS-075	14	0.2	12	137	8.60	<1	<1	<2	0.005	2	118
378	ECS-076	6	<0.2	2	94	6.47	<1	<1	<2	0.008	<2	96
379	ECS-077	102	<0.2	12	93	6.06	<1	<1	<2	0.004	<2	86
380	ECS-078	438	0.2	16	146	7.34	<1	<1	<2	0.010	2	128
381	ECS-079	6	<0.2	8	162	7.98	<1	<1	<2	0.004	<2	100
382	ECS-080	45	0.2	2	138	7.92	<1	<1	<2	0.006	<2	96
383	ECS-081	354	<0.2	22	156	9.28	<1	<1	<2	0.003	<2	94
384	ECS-082	41	<0.2	18	157	8.61	<1	<1	<2	0.003	<2	96
385	ECS-083	327	<0.2	12	127	>15.00	<1	<1	<2	0.011	<2	82
386	ECS-084	295	<0.2	18	127	7.17	<1	<1	<2	0.008	2	94
387	ECS-085	80	<0.2	24	121	8.44	<1	<1	<2	0.003	2	100
388	ECS-086	3940	<0.2	18	118	6.79	<1	<1	<2	0.008	<2	100
389	ECS-087	13	<0.2	26	123	5.80	<1	<1	2	0.009	4	102
390	ECS-088	2	<0.2	24	110	5.49	<1	<1	<2	0.020	<2	88
391	ECS-089	71	<0.2	22	104	5.21	<1	<1	<2	0.016	2	96
392	ECS-090	1	<0.2	36	127	5.55	<1	<1	<2	0.010	6	104
393	ECS-091	3	<0.2	<2	109	7.85	<1	<1	2	0.011	<2	82
394	ECS-092	231	<0.2	4	132	6.82	<1	<1	8	0.007	<2	96
395	ECS-093	7	<0.2	<2	111	8.24	<1	<1	28	0.005	<2	86
396	ECS-094	5	<0.2	<2	131	7.12	<1	<1	8	0.010	2	92
397	ECS-095	2	<0.2	4	138	6.35	<1	1	2	0.007	<2	96
398	ECS-096	<1	<0.2	<2	127	7.18	<1	<1	6	0.017	<2	100
399	ECS-097	2	<0.2	<2	112	6.20	<1	<1	4	0.024	<2	86
400	ECS-098	5	<0.2	14	118	6.73	<1	<1	<2	0.021	<2	88

Appendix-10 Chemical Analysis of Stream Sediments (Catanduanes Island)(5)

No.	Element Unit	Au ppb	Ag ppm	As ppm	Cu ppm	Fe %	Hg ppm	Mo ppm	Pb ppm	S % Total	Sb ppm	Zn ppm
401	ECS-099	2	<0.2	14	103	6.48	<1	1	2	0.033	<2	80
402	FCS-001	1	<0.2	4	191	8.91	1	1	6	0.037	<2	112
403	FCS-002	3	<0.2	20	131	8.32	1	<1	<2	0.018	<2	100
404	FCS-003	7	<0.2	22	121	11.20	<1	<1	4	0.014	2	176
405	FCS-004	1	<0.2	6	159	11.60	<1	1	8	0.012	2	122
406	FCS-005	1	<0.2	20	128	7.91	<1	<1	10	0.013	2	92
407	FCS-006	1	<0.2	<2	158	>15.00	1	2	6	0.011	4	160
408	FCS-007	<1	<0.2	4	154	>15.00	<1	<1	16	0.004	2	168
409	FCS-008	1	<0.2	20	150	8.65	<1	1	6	0.008	<2	102
410	FCS-009	<1	<0.2	16	169	10.25	<1	<1	8	0.006	2	124
411	FCS-010	2	<0.2	14	170	12.05	<1	1	10	0.005	2	150
412	FCS-011	<1	<0.2	14	155	13.20	1	1	12	0.004	2	210
413	FCS-012	2	<0.2	6	192	>15.00	2	3	16	0.001	2	160
414	FCS-013	<1	<0.2	<2	157	>15.00	2	2	8	0.003	<2	206
415	FCS-014	2	<0.2	16	127	7.49	<1	<1	<2	0.008	<2	94
416	FCS-015	2	<0.2	6	118	10.95	<1	1	8	0.010	<2	116
417	FCS-016	1	<0.2	12	162	12.75	1	<1	14	0.004	<2	128
418	FCS-017	<1	<0.2	6	93	>15.00	2	2	2	0.008	2	204
419	FCS-018	<1	<0.2	18	126	9.55	<1	2	8	0.016	<2	138
420	FCS-019	1	<0.2	14	130	9.01	<1	1	6	0.018	<2	130
421	FCS-020	<1	<0.2	16	130	9.34	1	1	<2	0.023	<2	128
422	FCS-021	1	<0.2	14	122	12.60	<1	3	10	0.012	2	164
423	FCS-022	1	<0.2	4	94	>15.00	<1	1	2	0.010	2	160
424	FCS-023	<1	<0.2	10	81	9.89	1	1	12	0.013	<2	132
425	FCS-024	<1	<0.2	8	81	9.46	1	<1	2	0.007	<2	130
426	FCS-025	<1	<0.2	14	80	12.30	1	1	<2	0.005	<2	178
427	FCS-026	<1	<0.2	6	70	13.25	<1	1	14	0.007	2	182
428	FCS-027	<1	<0.2	4	102	9.18	<1	1	10	0.020	4	104
429	FCS-028	1	<0.2	16	133	8.52	<1	<1	10	0.027	2	108
430	FCS-029	<1	<0.2	28	94	9.80	<1	2	12	0.009	<2	114
531	FCS-030	1	<0.2	4	115	8.85	<1	<1	2	0.019	<2	114
432	FCS-031	2	<0.2	18	127	7.70	<1	<1	4	0.018	<2	112
433	FCS-032	1	<0.2	10	120	9.56	<1	<1	6	0.016	<2	124
434	FCS-033	<1	<0.2	8	125	8.11	<1	<1	4	0.011	<2	114
435	FCS-034	1	<0.2	8	124	8.74	<1	<1	4	0.015	<2	114
436	FCS-035	4	<0.2	6	114	7.01	<1	<1	<2	0.015	<2	104
437	FCS-036	2	<0.2	20	145	10.90	<1	<1	6	0.016	<2	136
438	FCS-037	1	<0.2	20	146	8.12	<1	<1	4	0.016	<2	122
439	FCS-038	3	<0.2	12	127	10.00	<1	<1	<2	0.017	<2	126
440	FCS-039	<1	<0.2	<2	138	7.25	<1	<1	4	0.017	<2	104
441	FCS-040	3	<0.2	14	156	10.45	<1	2	2	0.021	<2	116
442	FCS-041	3	<0.2	16	152	11.65	<1	<1	4	0.017	2	118
443	FCS-042	2	<0.2	14	153	9.67	2	2	8	0.016	<2	110
444	FCS-043	1	<0.2	<2	76	>15.00	3	<1	<2	0.003	4	160
445	FCS-044	<1	<0.2	<2	89	10.10	1	1	<2	0.012	4	102
446	FCS-045	<1	<0.2	2	70	14.85	<1	<1	2	0.011	2	120
447	FCS-046	<1	<0.2	18	112	11.10	1	2	<2	0.010	4	132
448	FCS-047	<1	<0.2	16	86	9.56	1	<1	8	0.010	2	110
449	FCS-048	<1	<0.2	8	82	13.80	<1	1	10	0.005	<2	120
450	FCS-049	<1	<0.2	18	91	13.55	1	1	4	0.016	<2	118
451	FCS-050	<1	<0.2	18	84	13.75	2	<1	4	0.010	<2	116
452	FCS-051	1	<0.2	40	149	7.75	2	<1	14	0.021	<2	102
453	FCS-052	2	<0.2	8	117	>15.00	2	<1	8	0.011	<2	154
454	FCS-053	2	<0.2	16	111	8.39	1	1	2	0.015	<2	86
455	FCS-054	<1	<0.2	24	107	6.63	1	<1	<2	0.021	2	88
456	FCS-055	3	<0.2	18	107	7.16	2	1	<2	0.007	<2	86
457	FCS-056	768	<0.2	18	103	7.43	<1	<1	<2	0.020	<2	88
458	FCS-057	38	<0.2	8	115	7.66	<1	2	<2	0.011	<2	98
459	FCS-058	3410	<0.2	24	125	8.01	<1	1	14	0.032	<2	98
460	FCS-059	<1	<0.2	38	124	6.66	<1	1	8	0.020	2	102
461	FCS-060	328	<0.2	24	128	7.63	<1	1	<2	0.009	<2	108
462	FCS-061	2	<0.2	8	125	6.69	<1	<1	2	0.027	<2	104
463	FCS-062	120	<0.2	16	124	5.53	<1	<1	2	0.019	2	98
464	FCS-063	1	<0.2	12	73	5.42	2	<1	6	0.001	<2	82
465	FCS-064	1625	<0.2	30	102	6.21	<1	1	10	0.011	4	84
466	FCS-065	7	<0.2	26	113	6.60	<1	<1	<2	0.022	<2	100
467	FCS-066	134	<0.2	20	121	6.89	<1	<1	<2	0.017	4	102
468	FCS-067	44	<0.2	16	101	5.67	<1	1	4	<0.001	4	82
469	FCS-068	3	<0.2	8	95	13.90	<1	<1	<2	0.022	4	160
470	FCS-069	1	<0.2	24	114	9.79	<1	<1	4	0.015	4	128
471	FCS-070	<1	<0.2	12	117	10.45	<1	<1	12	0.020	2	124
472	FCS-071	2	<0.2	22	132	10.85	<1	<1	2	<0.001	<2	134
473	FCS-072	<1	<0.2	22	121	10.60	<1	1	4	0.010	<2	150
474	FCS-073	<1	<0.2	26	118	>15.00	<1	4	4	0.016	2	214
475	FCS-074	<1	<0.2	22	130	9.97	<1	1	<2	0.018	4	130
476	FCS-075	<1	<0.2	16	110	>15.00	<1	1	<2	0.014	8	194
477	FCS-076	<1	<0.2	18	116	>15.00	1	2	<2	0.023	4	202
478	FCS-077	<1	<0.2	22	109	>15.00	<1	1	<2	0.016	2	224
479	FCS-078	11	<0.2	22	122	12.05	2	1	6	0.001	<2	180
480	FCS-079	<1	<0.2	<2	79	13.55	<1	1	<2	0.009	8	152
481	FCS-080	47	<0.2	10	97	7.92	<1	<1	<2	0.008	6	98
482	FCS-081	2	<0.2	16	91	9.34	<1	<1	2	0.004	4	112
483	FCS-082	<1	<0.2	6	65	12.30	<1	<1	<2	0.007	2	134
484	FCS-083	<1	<0.2	12	73	12.00	<1	1	<2	0.003	8	134
485	FCS-084	2	<0.2	6	68	10.10	<1	<1	<2	0.006	6	114
486	FCS-085	2	<0.2	8	121	8.41	<1	<1	14	0.003	<2	98
487	FCS-086	4	<0.2	4	128	9.39	<1	<1	4	0.007	<2	104
488	FCS-087	2	<0.2	22	115	8.57	<1	<1	<2	0.003	4	96
489	FCS-088	3	<0.2	2	112	11.25	<1	1	4	0.006	4	122
490	FCS-089	3	<0.2	2	131	8.58	<1	1	2	0.005	2	112
491	FCS-090	2	<0.2	6	127	9.20	<1	<1	<2	0.006	2	106
492	FCS-091	25	<0.2	16	159	7.41	<1	<1	2	0.002	4	100
493	FCS-092	26	<0.2	8	166	6.81	<1	1	<2	0.004	6	112
494	FCS-093	141	<0.2	4	148	7.77	1	1	<2	0.003	2	96
495	FCS-094	634	<0.2	8	142	6.59	<1	<1	<2	0.004	<2	98
496	FCS-095	107	<0.2	18	149	7.09	<1	1	<2	0.004	2	94
497	FCS-096	3	<0.2	8	155	7.29	<1	1	<2	0.006	<2	112
498	FCS-097	<1	<0.2	4	139	8.83	<1	1	2	0.006	2	138
499	FCS-098	3	<0.2	26	157	7.61	1	<1	2	0.007	<2	116
500	FCS-099	2	<0.2	16	152	7.42	1	<1	<2	0.001	2	106

Appendix-10 Chemical Analysis of Stream Sediments (Catanduanes Island)(6)

No.	Element	Au	Ag	As	Cu	Fe	Hg	Mo	Pb	S %	Sb	Zn
	Unit	ppb	ppm	ppm	ppm	%	ppm	ppm	ppm	Total	ppm	ppm
501	GCS-001	2	<0.2	4	94	11.30	1	<1	10	0.015	4	126
502	GCS-002	2	<0.2	6	101	7.55	<1	<1	<2	0.010	2	98
503	GCS-003	<1	<0.2	20	113	9.10	<1	<1	8	0.013	2	124
504	GCS-004	47	<0.2	<2	63	14.70	<1	<1	<2	0.003	2	188
505	GCS-005	1	<0.2	<2	88	>15.00	<1	1	12	0.004	2	174
506	GCS-006	2	<0.2	<2	111	14.20	<1	<1	6	0.012	<2	146
507	GCS-007	1	<0.2	8	93	>15.00	1	1	8	0.012	<2	182
508	GCS-008	3	<0.2	10	114	9.30	<1	<1	4	0.006	2	110
509	GCS-009	3	<0.2	4	107	10.65	1	<1	<2	0.005	2	128
510	GCS-010	<1	<0.2	14	114	11.10	<1	<1	<2	0.018	2	128
511	GCS-011	1	<0.2	<2	116	14.30	<1	<1	12	0.009	<2	158
512	GCS-012	2	<0.2	12	156	7.21	<1	<1	<2	0.002	<2	104
513	GCS-013	<1	<0.2	<2	96	>15.00	<1	<1	12	0.007	<2	180
514	GCS-014	2	<0.2	<2	117	>15.00	1	1	4	0.012	<2	166
515	GCS-015	2	<0.2	2	112	>15.00	<1	2	6	0.005	8	136
516	GCS-016	1	<0.2	<2	94	>15.00	2	<1	12	0.005	2	136
517	GCS-017	1	<0.2	<2	110	>15.00	1	1	6	0.006	<2	134
518	GCS-018	<1	<0.2	<2	83	12.80	<1	<1	6	0.005	<2	98
519	GCS-019	2	<0.2	<2	109	14.50	1	<1	6	0.003	2	130
520	GCS-020	5	<0.2	6	75	12.55	1	<1	4	0.002	2	98
521	GCS-021	2	<0.2	<2	135	13.30	<1	<1	8	0.004	<2	126
522	GCS-022	1	<0.2	2	112	>15.00	1	<1	6	0.004	<2	166
523	GCS-023	1	<0.2	<2	114	14.90	<1	<1	4	0.003	4	184
524	GCS-024	1	<0.2	4	130	>15.00	<1	1	<2	0.003	<2	160
225	GCS-025	2	<0.2	<2	95	>15.00	<1	<1	6	0.005	<2	188
526	GCS-026	2	<0.2	<2	133	>15.00	1	<1	8	0.003	2	114
527	GCS-027	2	<0.2	<2	106	>15.00	<1	1	6	0.001	2	162
528	GCS-028	12	<0.2	<2	80	>15.00	<1	1	6	0.003	<2	116
529	GCS-029	1	<0.2	2	124	7.37	<1	1	<2	0.015	2	110
530	GCS-030	1	<0.2	8	136	8.73	<1	<1	<2	0.014	<2	138
531	GCS-031	1	<0.2	10	129	8.82	<1	<1	10	0.015	<2	104
532	GCS-032	1	<0.2	2	133	9.10	<1	<1	12	0.004	<2	138
533	GCS-033	1	<0.2	6	122	10.30	1	<1	<2	0.008	<2	128
534	GCS-034	1	<0.2	8	121	10.35	<1	<1	6	0.007	<2	124
535	GCS-035	26	<0.2	22	156	7.47	<1	<1	2	0.007	<2	126
536	GCS-036	2	<0.2	4	114	11.90	<1	<1	6	0.005	<2	124
537	GCS-037	1	<0.2	4	113	10.95	<1	1	16	0.005	<2	106
538	GCS-038	3	<0.2	<2	137	>15.00	<1	2	<2	0.012	2	144
539	GCS-039	4	<0.2	<2	141	11.85	1	1	4	0.013	<2	130
540	GCS-040	3	<0.2	2	138	>15.00	1	2	4	0.009	2	148
541	GCS-041	3	<0.2	6	162	12.75	1	<1	4	0.014	4	110
542	GCS-042	2	<0.2	2	126	9.06	<1	<1	2	<0.001	<2	96
543	GCS-043	4	<0.2	<2	160	>15.00	<1	2	6	0.001	2	182
544	GCS-044	4	<0.2	<2	162	>15.00	<1	2	<2	0.006	<2	126
545	GCS-045	128	<0.2	<2	170	>15.00	1	1	<2	0.005	<2	122
546	GCS-046	3	<0.2	12	170	11.55	1	1	<2	0.009	<2	126
547	GCS-047	4	<0.2	6	196	8.71	<1	<1	14	0.011	<2	104
548	GCS-048	5	<0.2	6	187	13.10	<1	1	<2	<0.001	<2	106
549	GCS-049	3	<0.2	4	150	13.45	<1	2	<2	0.017	<2	126
550	GCS-050	5	<0.2	12	151	>15.00	<1	5	<2	0.020	6	162
551	GCS-051	6	<0.2	4	231	>15.00	<1	3	10	0.005	2	172
552	GCS-052	2	<0.2	14	132	9.53	<1	1	<2	0.006	<2	118
553	GCS-053	5	<0.2	10	233	14.60	<1	3	8	0.005	<2	164
554	GCS-054	5	<0.2	20	134	13.30	<1	<1	2	0.005	<2	148
555	GCS-055	3	<0.2	6	160	>15.00	<1	<1	12	0.005	<2	166
556	GCS-056	2	<0.2	6	98	>15.00	<1	2	<2	0.010	<2	206
557	GCS-057	4	<0.2	12	133	8.96	<1	<1	<2	0.002	<2	116
558	GCS-058	3	<0.2	<2	135	>15.00	<1	2	4	0.007	2	174
559	GCS-059	5	<0.2	8	154	10.65	<1	1	<2	0.006	2	124
560	GCS-060	3	<0.2	18	172	14.45	<1	3	<2	0.006	4	142
561	GCS-061	3	<0.2	12	149	10.70	<1	1	2	0.011	<2	126
562	GCS-062	3	<0.2	18	161	7.13	<1	<1	6	0.018	<2	96
563	GCS-063	<1	<0.2	18	138	>15.00	<1	4	<2	0.010	<2	162
564	GCS-064	<1	<0.2	18	135	13.30	<1	2	4	0.007	<2	134
565	GCS-065	<1	<0.2	6	118	>15.00	<1	1	<2	0.007	2	146
566	GCS-066	<1	<0.2	16	108	12.35	<1	<1	4	0.006	<2	158
567	GCS-067	1	<0.2	8	113	14.25	<1	<1	<2	0.002	<2	156
568	GCS-068	3	<0.2	18	134	8.98	<1	<1	8	0.007	<2	118
569	GCS-069	4	<0.2	12	147	12.35	<1	<1	16	0.013	<2	144
570	GCS-070	3630	<0.2	<2	128	13.50	<1	<1	4	0.008	<2	138
571	GCS-071	4	<0.2	20	158	12.50	<1	1	8	0.001	<2	138
572	GCS-072	2	<0.2	8	119	8.56	<1	<1	6	0.012	2	112
573	GCS-073	6	<0.2	8	124	12.95	<1	<1	8	0.018	<2	154
574	GCS-074	4	<0.2	12	117	11.45	<1	<1	4	0.005	<2	126
575	GCS-075	8	<0.2	6	109	6.46	<1	1	2	0.007	<2	90
576	GCS-076	710	<0.2	<2	97	>15.00	<1	1	8	0.003	<2	190
577	GCS-077	9	<0.2	2	123	10.25	<1	<1	<2	0.007	<2	120
578	GCS-078	2	<0.2	10	93	7.07	<1	<1	8	0.003	<2	78
579	GCS-079	2	<0.2	<2	89	>15.00	<1	<1	12	0.006	2	224
580	GCS-080	19	<0.2	4	137	12.95	<1	<1	4	0.002	<2	128
581	GCS-081	84	<0.2	<2	149	11.95	<1	<1	2	0.005	2	128
582	GCS-082	1045	<0.2	8	164	12.65	<1	<1	14	0.005	2	134
583	GCS-083	6	<0.2	16	96	8.73	<1	1	12	0.006	<2	90
584	GCS-084	5	<0.2	6	150	12.30	<1	<1	14	0.004	<2	128
585	GCS-085	3	<0.2	<2	100	6.56	<1	<1	10	0.004	<2	96
586	GCS-086	4	<0.2	12	122	9.22	<1	1	8	0.005	<2	108
587	GCS-087	21	<0.2	<2	94	6.39	<1	1	6	0.007	<2	90
588	GCS-088	2	<0.2	4	94	7.54	<1	1	8	0.005	<2	92
589	GCS-089	207	<0.2	<2	94	5.57	<1	<1	6	0.005	<2	80
590	GCS-090	<1	<0.2	2	135	14.45	<1	2	<2	0.010	2	188
591	GCS-091	8	<0.2	18	106	8.71	<1	1	4	0.031	<2	94
592	GCS-092	5	<0.2	12	100	6.53	<1	1	12	0.011	2	90
593	GCS-093	2	<0.2	2	86	10.45	<1	<1	6	0.044	<2	104
594	GCS-094	<1	<0.2	6	62	>15.00	<1	<1	<2	0.005	4	214
595	GCS-095	562	<0.2	<2	63	12.15	<1	<1	<2	0.009	<2	146
596	GCS-096	2	<0.2	<2	64	>15.00	<1	<1	<2	0.006	2	188
597	GCS-097	<1	<0.2	8	60	>15.00	<1	<1	<2	0.004	<2	222
598	GCS-098	<1	<0.2	<2	68	14.90	<1	<1	<2	0.007	<2	178
599	GCS-099	2	<0.2	6	83	>15.00	<1	1	<2	0.074	4	252
600	GCS-100	1	<0.2	<2	94	10.95	<1	<1	2	0.052	<2	168

Appendix-10 Chemical Analysis of Stream Sediments (Catanduanes Island)(7)

No.	Element Unit	Au ppb	Ag ppm	As ppm	Cu ppm	Fe %	Hg ppm	Mo ppm	Pb ppm	S % Total	Sb ppm	Zn ppm
601	GCS-101	<1	<0.2	<2	84	10.55	<1	<1	4	0.011	<2	166
602	GCS-102	9	<0.2	<2	155	9.28	<1	<1	<2	0.010	<2	96
603	GCS-103	1	<0.2	<2	129	8.24	<1	<1	<2	0.007	<2	98
604	GCS-104	34	<0.2	10	195	7.97	<1	<1	<2	0.009	<2	112
605	GCS-105	2	<0.2	<2	110	8.51	<1	<1	<2	0.004	<2	98
606	GCS-106	2	<0.2	<2	115	8.03	<1	<1	<2	0.003	<2	104
607	GCS-107	3	<0.2	<2	108	10.45	<1	<1	2	0.007	<2	122
608	GCS-108	2	<0.2	2	101	8.47	<1	<1	4	0.005	<2	106
609	GCS-109	1	<0.2	2	134	6.07	<1	<1	<2	0.007	<2	104
610	GCS-110	1	<0.2	<2	130	5.74	<1	<1	<2	0.003	<2	104
611	GCS-111	2	<0.2	<2	116	7.74	<1	<1	2	0.078	<2	126
612	HCS-001	5	<0.2	<2	112	9.90	<1	<1	<2	0.013	<2	102
613	HCS-002	2	<0.2	<2	121	7.22	1	<1	<2	0.007	<2	94
614	HCS-003	3	<0.2	<2	134	6.71	1	<1	<2	0.015	<2	94
615	HCS-004	<1	<0.2	<2	129	6.91	<1	<1	<2	0.008	<2	94
616	HCS-005	5	<0.2	8	143	7.11	1	<1	<2	0.008	<2	110
617	HCS-006	3	<0.2	<2	145	7.58	<1	<1	<2	0.011	<2	100
618	HCS-007	1	<0.2	<2	103	9.52	<1	<1	<2	0.003	<2	148
619	HCS-008	1	<0.2	<2	92	10.50	<1	<1	<2	0.011	<2	162
620	HCS-009	4	<0.2	<2	96	9.51	1	<1	<2	0.013	<2	146
621	HCS-010	3	<0.2	<2	106	9.76	<1	<1	<2	0.013	<2	158
622	HCS-013	4	<0.2	<2	101	13.75	<1	<1	<2	0.005	<2	200
623	HCS-014	4	<0.2	<2	119	8.69	<1	<1	2	0.069	<2	130
624	HCS-015	1	<0.2	2	104	9.37	<1	<1	<2	0.127	<2	132
625	HCS-016	2	<0.2	<2	100	10.40	<1	<1	2	0.255	<2	164
626	HCS-018	<1	<0.2	<2	95	10.25	<1	<1	<2	0.002	<2	168
627	HCS-020	2	<0.2	<2	117	7.63	<1	<1	<2	0.007	<2	134
628	HCS-021	1	<0.2	<2	66	>15.00	<1	<1	<2	0.007	<2	264
629	HCS-022	<1	<0.2	<2	79	13.45	<1	<1	<2	0.014	<2	224
630	HCS-023	<1	<0.2	<2	82	>15.00	<1	<1	<2	0.011	<2	248
631	HCS-024	18	<0.2	<2	128	>15.00	<1	<1	<2	0.191	<2	262
632	HCS-025	10	<0.2	<2	128	>15.00	<1	<1	2	0.452	<2	298
633	HCS-026	3	<0.2	<2	82	>15.00	<1	<1	<2	0.011	<2	308
634	HCS-027	<1	<0.2	<2	86	>15.00	<1	<1	<2	0.008	<2	320
635	HCS-029	2	<0.2	<2	100	>15.00	<1	<1	<2	0.038	<2	360
636	HCS-030	6	<0.2	38	105	>15.00	<1	<1	8	0.022	<2	378
637	HCS-031	11	<0.2	<2	166	>15.00	<1	<1	4	0.106	<2	312
638	HCS-032	3960	<0.2	<2	84	>15.00	<1	<1	<2	0.084	<2	306
639	HCS-033	2	<0.2	2	83	10.70	<1	<1	<2	0.010	<2	188
640	HCS-034	131	<0.2	<2	86	5.58	18	<1	<2	0.013	<2	98
641	HCS-035	270	<0.2	<2	67	5.39	12	<1	<2	0.008	<2	92
642	HCS-036	999	<0.2	<2	74	5.14	<1	<1	<2	0.013	<2	86
643	HCS-037	4	<0.2	<2	73	4.67	<1	<1	<2	0.007	<2	68
644	HCS-038	4	<0.2	<2	76	4.63	<1	<1	<2	0.014	<2	58
645	HCS-039	103	<0.2	<2	67	5.12	<1	<1	<2	0.003	<2	76
646	HCS-040	2	<0.2	<2	77	12.20	<1	<1	<2	0.021	<2	112
647	HCS-041	474	<0.2	<2	45	8.76	<1	<1	<2	0.005	<2	52
648	HCS-042	21	<0.2	<2	24	11.30	<1	<1	<2	0.009	<2	60
649	HCS-043	476	<0.2	<2	43	>15.00	<1	<1	<2	0.009	<2	62
650	HCS-044	1320	<0.2	<2	70	>15.00	<1	<1	<2	0.034	<2	130
651	HCS-045	2	<0.2	<2	70	7.87	<1	<1	<2	0.012	<2	96
652	HCS-046	3	<0.2	<2	74	8.24	<1	<1	<2	0.009	<2	100
653	HCS-047	2	<0.2	<2	70	7.06	<1	<1	<2	0.008	<2	90
654	HCS-048	66	<0.2	<2	70	6.51	<1	<1	<2	0.009	<2	84
655	HCS-049	15	<0.2	<2	223	5.41	<1	<1	2	0.083	<2	130
656	HCS-050	652	<0.2	2	180	5.13	<1	<1	4	0.100	<2	108
657	HCS-051	71	<0.2	<2	116	6.52	<1	<1	<2	0.005	<2	80
658	HCS-052	6	<0.2	18	85	6.14	<1	<1	<2	0.012	2	74
659	HCS-053	31	<0.2	2	131	5.69	<1	1	<2	0.028	<2	86
660	HCS-054	<1	<0.2	4	93	7.73	<1	3	<2	0.039	<2	52
661	HCS-055	2	<0.2	12	64	7.86	<1	<1	4	0.019	<2	88
662	HCS-056	4	<0.2	<2	124	9.27	<1	<1	<2	0.096	<2	96
663	HCS-057	911	<0.2	<2	99	12.05	<1	<1	<2	0.023	<2	96
664	HCS-058	4	<0.2	<2	126	9.23	<1	<1	<2	0.010	<2	102
665	HCS-059	807	<0.2	4	116	9.42	<1	<1	<2	0.008	<2	96
666	HCS-060	377	<0.2	<2	105	8.81	<1	<1	<2	0.006	<2	96
667	HCS-061	2	<0.2	2	113	6.99	<1	<1	2	0.007	<2	92
668	HCS-062	4	<0.2	14	208	8.64	<1	<1	6	0.020	<2	124
669	HCS-063	2	<0.2	12	104	8.06	<1	<1	2	0.004	2	122
670	HCS-064	3	<0.2	2	152	8.56	<1	<1	<2	0.017	<2	114
671	HCS-065	4	<0.2	<2	167	8.04	<1	<1	2	0.012	<2	110
672	HCS-066	4	<0.2	18	154	7.72	<1	<1	2	0.001	2	120
673	HCS-067	7	<0.2	<2	170	6.44	<1	<1	<2	0.015	<2	114
674	HCS-068	4	<0.2	2	171	7.32	<1	<1	2	0.006	<2	118
675	HCS-069	<1	<0.2	<2	60	12.75	<1	<1	<2	0.003	<2	176
676	HCS-070	<1	<0.2	<2	48	9.45	<1	<1	<2	0.002	<2	130
677	HCS-071	<1	<0.2	<2	66	9.94	<1	<1	<2	0.004	<2	152
678	HCS-072	3	<0.2	<2	60	13.85	<1	<1	2	0.006	<2	212
679	HCS-073	3	<0.2	<2	97	12.10	<1	<1	<2	0.004	<2	160
680	HCS-074	2	<0.2	10	99	11.75	<1	<1	2	0.002	<2	156
681	HCS-075	2	<0.2	<2	92	11.50	<1	<1	<2	0.003	<2	156
682	HCS-076	2	<0.2	<2	118	11.45	<1	<1	<2	0.001	<2	168
683	HCS-077	1	<0.2	<2	114	14.05	<1	<1	2	0.003	<2	198
684	HCS-078	34	<0.2	<2	112	11.95	<1	<1	<2	0.002	<2	152
685	HCS-079	3	<0.2	<2	84	7.73	<1	<1	<2	0.004	<2	100
686	HCS-080	689	<0.2	8	121	9.53	<1	<1	<2	0.004	<2	118
687	HCS-081	220	<0.2	2	96	7.71	<1	<1	<2	0.012	<2	120
688	HCS-082	3	<0.2	<2	124	9.83	<1	<1	<2	0.006	<2	144
689	HCS-083	3	<0.2	<2	108	6.78	<1	<1	<2	0.005	<2	110
690	HCS-084	133	<0.2	<2	117	9.15	<1	<1	<2	0.004	<2	124
691	HCS-085	<1	<0.2	<2	69	8.50	<1	<1	<2	0.028	<2	196
692	HCS-086	<1	<0.2	<2	63	6.27	<1	<1	2	0.056	<2	138
693	HCS-087	<1	<0.2	<2	70	6.80	<1	<1	<2	0.032	<2	156
694	HCS-088	<1	<0.2	<2	77	7.64	<1	<1	<2	0.035	<2	162
695	HCS-089	199	<0.2	<2	64	8.52	<1	<1	<2	0.027	<2	206
696	HCS-090	53	<0.2	<2	63	8.08	<1	<1	<2	0.024	<2	196
697	HCS-091	28	<0.2	<2	91	>15.00	<1	<1	6	0.005	<2	112
698	HCS-092	1	<0.2	<2	113	6.55	<1	<1	<2	0.008	<2	148
699	HCS-093	1	<0.2	<2	99	10.75	<1	<1	<2	0.006	<2	114
700	HCS-094	156	<0.2	<2	133	7.40	<1	<1	<2	0.011	<2	104

Appendix–10 Chemical Analysis of Stream Sediments (Catanduanes Island)(8)

No.	Element	Au	Ag	As	Cu	Fe	Hg	Mo	Pb	S %	Sb	Zn
	Unit	ppb	ppm	ppm	ppm	%	ppm	ppm	ppm	Total	ppm	ppm
701	HCS-095	3	<0.2	<2	132	7.55	<1	<1	<2	0.005	<2	104
702	HCS-096	2	<0.2	<2	108	9.19	<1	<1	<2	0.005	<2	90
703	HCS-097	2	<0.2	<2	122	8.47	<1	<1	<2	0.005	<2	100
704	HCS-098	3	<0.2	<2	137	7.08	<1	<1	<2	0.008	<2	104
705	HCS-099	2	<0.2	<2	130	9.09	<1	<1	<2	0.010	<2	112
706	HCS-100	3	<0.2	<2	127	8.67	<1	<1	<2	0.013	<2	108
707	HCS-101	3	<0.2	<2	136	8.59	<1	<1	<2	0.011	<2	106
708	HCS-102	3	<0.2	<2	140	9.54	<1	<1	<2	0.006	<2	110
709	HCS-103	5	<0.2	<2	137	7.34	<1	<1	<2	0.017	<2	112
710	HCS-104	2	<0.2	8	106	5.88	<1	<1	<2	0.017	<2	98
711	HCS-105	80	<0.2	<2	100	9.64	<1	<1	<2	0.019	<2	94
712	HCS-106	4	<0.2	6	159	6.61	<1	<1	<2	0.017	<2	130
713	HCS-107	32	<0.2	4	150	7.40	<1	<1	<2	0.015	2	120
714	HCS-108	13	<0.2	<2	66	4.00	<1	<1	<2	0.001	<2	80
715	HCS-109	3	<0.2	<2	145	8.70	<1	2	2	0.013	<2	64
716	HCS-110	96	<0.2	<2	91	7.92	<1	8	<2	0.030	<2	22
717	HCS-111	33	<0.2	4	96	5.86	<1	<1	<2	0.008	<2	116