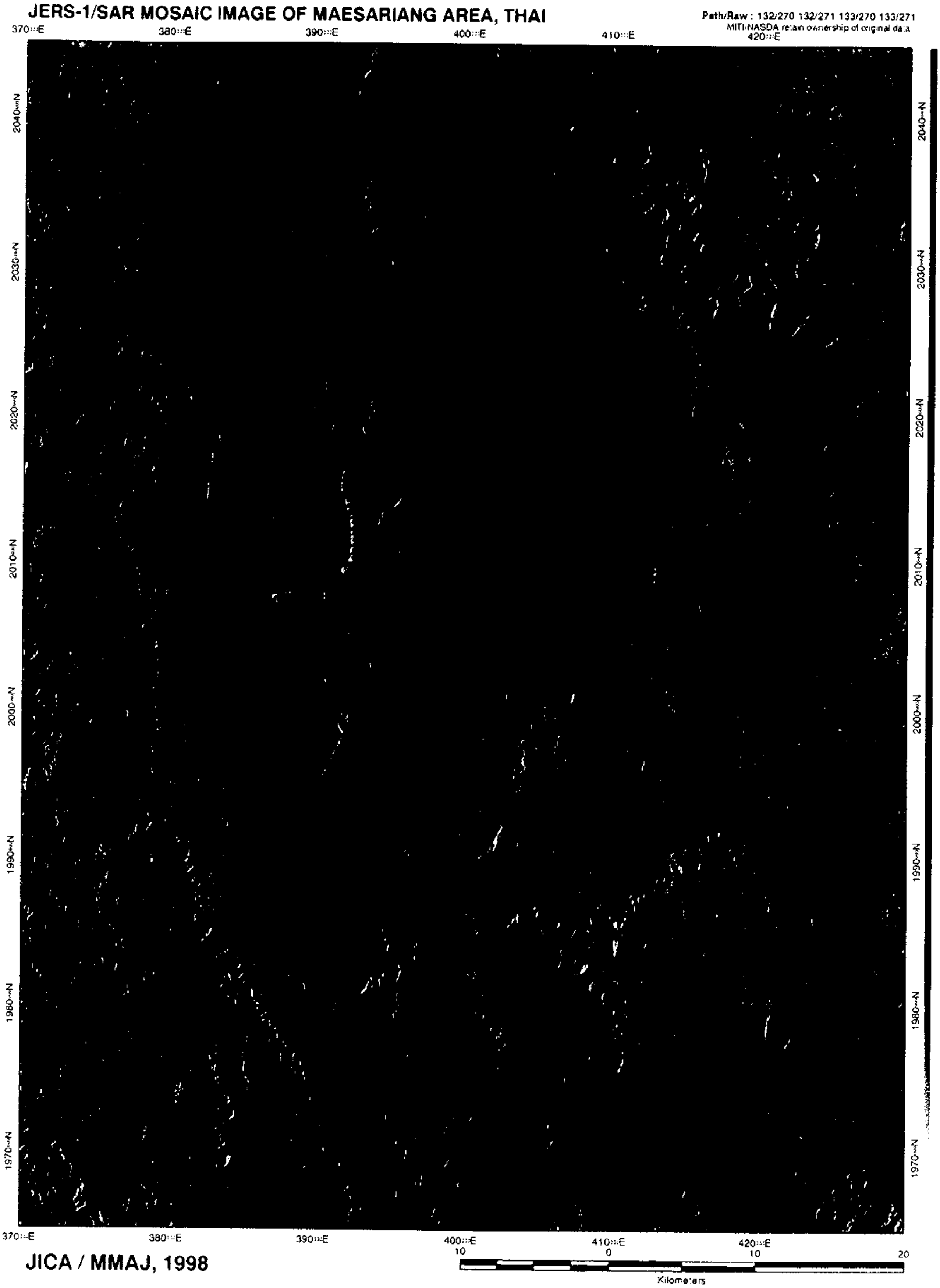

Fig.II-4-2 JERS-1/SAR digital mosaic imagery of Mae Sariang area, Thai occur at the joint between images. In the study, GCP was set between adjacent scenes to establish precise positioning.

c) Preparation of image for analysis

In this survey, a monochrome image (60km x 80km, 1/250,000) was prepared for geological analysis by cutting a sub-scene out from the mosaic image data. Assuming that analysis result will be integrated with existing information such as geological map, topographical map and location of ore deposit / mineral occurrence, latitude and longitude were indicated around the image. Also, a gray scale and a reduced scale were placed to allow correct re-printing.

4-1-3 JERS-1/OPS

(1) Selection and acquisition of image data

Since the study area belongs to the tropical zone, few scene of JERS-1/OPS image data without covering of cloud has been observed. So, the observation data with the least cloud were selected for each 4 scenes. Fortunately, we have obtained a set of JERS-1/OPS image data with almost 0% covering of cloud on the study area.

(2) Image processing

Almost all of the study area is covered by vegetation. Exposure of rocks representing geology and alteration zone was rarely found. Therefore, photo-geological analysis with attention to morphological expression would be the most effective for this study area. For this reason, the following image processing and color composite image were produced.

a) Corrections processes

1) Noise reduction process

Various types of noises that disturb analysis should be eliminated during preparation of images. In general, deficiency line, stripe noise and random noise can be found. Deficiency lines, stripe noise in the sample direction or the line direction that may affect analysis was not found on the image data used. Considering that the image for analysis is 1:250,000 in scale, noise elimination with smoothing or median value filter was not performed to prevent poor spatial resolution. Offset of registration between bands(1, 2 and 3) was not observed in the image data used.

2) UTM map projection

The JERS-1/OPS image data is basically projected in UTM. As these UTM coordinates are calculated from the satellite orbit information, they are not sufficiently accurate for the purpose of this analysis. In this study, UTM map projection has been carried out by mean of GCP method using topography maps (1:50,000) published by the Thailand.

3) Edge enhancement and gray level adjustment

In addition, the edge was enhanced using the spatial filter (3 x 3 Laplacian). It is also necessary to enhance topographical changes or lineament, because morphological expression is usually emphasized in photo-geological analysis.

Systematic difference in gray level (DN) was found between the image data of scenes used due to differences of observation dates and sun elevations. It is desirable that the brilliance of each scene is identical in analysis, and the brilliance should be suitable for analysis. In this study, adjustments have been made for the gray level to match their histogram between scenes and to be suitable for analysis by multiplying DN value of each scene by factors.

b) Preparation of mosaic image

Using 4 scene images, the digital mosaic image data covering the entire study area was prepared (Fig. II-4-3). In principle, as the image data of each scene has already been projected with the UTM map, the mosaic image data can be generated by only arranging each image data on the UTM coordinates. However, a few pixels (dozens of meters) of offset may occur at the joint between images. In the study, GCP was set between adjacent scenes to establish precise positioning.

c) Preparation of image for analysis

In this study, a color composite image (60km x 80km, 1/250,000) was prepared for geological analysis by cutting a sub-scene out from the mosaic image data with assignment of band 1, 2 and 3 to blue, green and red, respectively. Almost all of the study area is covered with vegetation and exposure of rocks reflecting geological and alteration zones was rarely found. Therefore, photo-geological analysis that indicates morphological expression would be the most effective for this study area. In this band combination (BGR=123), red-orange part in image represents vegetation areas, and the image is not so much affected by difference of vegetation. This facilitates analysis of topographical information.

Assuming that analysis result will be integrated with existing information such as geological map, topographical map and location of ore deposit / mineral occurrence, latitude and longitude were indicated around the image. Also, a gray scale and a reduced scale were placed to allow correct reprinting.

4-2 Analysis of Image

4-2-1 Criteria of Geological Analysis

(1) Analysis factor and their criteria

a) Analysis of geological interpretation unit

Factors and criteria for geological interpretation unit and their criteria are as follows:

1) Photo-geological characteristics (JERS-1/SAR and JERS-1/OPS)

Tone: Color on the image

Texture: Smooth, small grain, medium grain, rough grain

2) Morphological expression (JERS-1/SAR and JERS-1/OPS)

Drainage pattern: Branch, parallel, grid, radiation, annual ring, meandering

Fig.II-4-3 JERS-1/OPS digital mosaic imagery of Mae Sariang area, Thai

Drainage density: Extremely high, high, medium, low, extremely low

Rock resistance: Extremely high, high, medium, low, extremely low

Cross section: Waviness, shape of ridge and valley

Development of bedding: Bedded to massive

3) Vegetation (JERS-1/OPS)

Vegetation density: Dense - not dense

b) Analysis of geological structure (JERS-1/SAR and JERS-1/OPS)

Factors for analysis of geological structure and their criteria are as follows:

1) Stratum tracing: Selection of topography showing bedding (cuesta, flat iron, etc.) is used for analysis.

2) Folding structure: Distribution of identified geological interpretation unit and topography showing bedding (cuesta, flat iron, etc.) are used for analysis.

3) Fault structure: Discontinuity of identified geological interpretation unit or bedding, and various faults that appear at the rivers and ridge lines are used for analysis.

4) Ring structure: Caldera or crater topography is used as a cave-in fracture. Volcanic topography is used as a cone structure.

5) Lineament: Linear morphological expression reflecting the underground rupture is used as lineament. Lineament that is considered to be a fault or a tectonic line is separated.

(2) Characteristics of analysis factors in the study area

Rock resistance, drainage density, drainage pattern and texture in the photo-geological factors were especially effective for geological interpretation of satellite image analysis in the study area,

Rock resistance shows high values for most of all unit, while it shows low for sediment of recent era and limestone. On the other hand, it is considered that drainage density has relation to development of fracture but not to geologic age of unit. Thus, in this study, geological items are grouped by combination of rock resistance and drainage density. Here, rock resistance is grouped into "H", "M" and "L", and drainage density is grouped into "h", "m" and "l". Geological unit with high rock resistance and high drainage density is referred to as "Hh". Geological unit with medium rock resistance and low drainage density is referred to as "Ml". Further, detailed geological interpretation unit, for example from "Mh1" to "Mh12", is made according to other factors.

Lineament is grouped into "clear", "medium" and "obscure". Continuity of lineament does not show any relation to degree of clearness. It is not rare that continuous lineament that may represent a large geologic structure is not grouped to "clear".

4-2-2 Classification of Geological Units

(1) Result of geological interpretation of satellite images

Geological units were classified by photo-geologic interpretation (Table II-4-2, Fig. II-4-4). At the first, geological units were classified roughly based on the rock resistance and drainage density, then geological units were further subdivided based on the differences in other elements. As a result, 36 geological interpretation units were distinguished.

To see all the area for analysis, lowlands (geological interpretation unit: Q, showing only unit mark in follows) with less undulation distribute along the Yuam river that flows from north to south at the western margin of ground survey area, and characteristics of geological units differ between on west side and east side of the river. Geological unit with the same rock resistance and drainage density tends to distribute extending north and south along the river.

Along the Yuam river, geological units with low rock resistance (L**) extend north and south near the Mae Sariang city, and geological units with medium rock resistance (M**) extend northward of that. Geological units with high rock resistance (H**) extend continuously north and south on the West of them. It extends largely north and south on the East of the river, while it is separated into north and south parts by geological units with medium rock resistance (M**) that distribute near the Mae Kanai river on the center of the satellite image. On the East of the image, geological units with medium rock resistance (M**) extend largely north and south that adjoin the same analysis unit near the Mae Kanai river.

Geological units with high drainage density (*h*) extend along the Yuam river and on the center of the satellite image, while they are separated into east and west by geological units with medium drainage density (*m*) that elongating north and south on the east side of the river. Also, geological units with high drainage density (*h*) extend north and south on the East of the image. Other area is of geological units with medium drainage density (*m*), while it is dotted with geological units with low drainage density (*l*) on the center of the image.

(2) Result of geological analysis

Geological analysis units (Table II-4-3 and Fig. II-4-5) have been analyzed by examination of characteristics of geological unit classified through photo-geological interpretation and by comparison of them with existing materials. For sediments after Neogene age, geological analysis units correspond in one-to-one to geological interpretation unit, but for sediments of Paleozoic age and granite, some numbers of geological analysis units have been united into one geological analysis unit. Characteristics and distribution of geological analysis units will be shown below.

Alluvium (geological analysis unit: Q, showing only unit mark in follows) extend north and south along the Yuam river that flows from north to south at the western margin of ground survey area, and terrace sediments of Pliocene to Quaternary ages (N1 and N2) extend north and south on the both river side. Other geological analysis units also tend to elongate north and south.

Table.II-4-2 List of geologic unit on JERS-1/SAR and OPS image.

Geol. Unit		Caracteristics(SAR/OPS)		Morphological expression					Vegetation
Int.	Anal.	Tone	Texture	Drainage pattern & density		Resistance	Cross section	Bedding	density
Hh1	P1	B/M	C/M	SP	H	H		M	D
Hh2	P4	MD/M	S/F	B	H	H		M	D
Hm1	P1	MB/MB	M/M	B	M	H		M	D
Hm2	P4	M/M	M/M	B	M	H		M	D
Hm3	P4	M/M	F/F	B	M	H		M	D
Hm4	P4	M/M	F/F	B~SP	M	H		M	D
Hm5	P4	MD/MB	M/M	O	M	H		M	D
Hl1	Gr1	M/MB	M/F	R	L	H		M	D
Hl2	Gr2	MD/MD	M/M	SP	L	H		M	D
Mh1	P1	M/MD	C/C	SP	H	M		M	D
Mh2	N2	M/MD	M/M	B	H	M		M	D
Mh3	P1	M/MD	M/C	SP	H	M		M	D
Mh4	P3	MD/M	M/C	G	H	M		B	D
Mh5	Gr2	MD/B	C/C	G	H	M		M	D
Mh6	Gr2	M/M	C/C	G	H	M		M	D
Mh7	Gr2	M/MB	C/C	G	H	M		M	D
Mh8	P5	MB/MD	C/C	B	H	M		M	D
Mh9	P5	MB/M	C/M	B	H	M		M	D
Mh10	Gr4	M/MB	C/C	G	H	M		M	D
Mh11	Gr3	M/M	C/F	B	H	M		M	D
Mh12	Gr3	MD/MD	C/F	B	H	M		M	D
Mm1	P4	MD/MD	F/S	B	M	M		M	D
Mm2	P4	MD/B	C/M	G	M	M		M	D
Mm3	P4	M/B	M/M	G	M	M		M	D
Mm4	P5	MB/MD	F/F	B	M	M		M	D
Ml1	P2	MD/D	S/S	B	L	M		M	D
Ml2	P4	MD/MD	F/S	B	L	M		M	D
Ml3	Ls	MB/M	S/S	SP	L	M		M	D
Ml4	P4	MD/MD	F/F	B	L	M		M	D
Ml5	P4	MD/M	F/M	B	L	M		M	D
Ml6	Ls	MB/MD	S/S	B	L	M		M	D
Ml7	Gr3	M/MB	F/M	G	L	M		M	D
Lh1	N1	M/M	F/F	SP	H	L		M	D
Ll1	Ls	M/MD	S/S	B~P	L	L		M	D
Ll2	P4	D/M	F/M	B	L	L		M	ND
Q	Q	D/Blue	S/D	–	–	–		–	ND

Tone: B:bright, M:medium, D:dark
Texture: C:corse, M:medium, F:fine, S:smooth, D:dappled
Drainage pattern: P:pallarel, SP:subpallare, B:branch, G:grid, O:oblong, R:rudial
Density: H:high, M:medium, L:low
Bedding: B:bedded, M:mussiv
Vegetation density: D:dense, N:not dense

Fig.II-4-4 Photo-geologically interpreted unit and structure

Table. II-4-3 Comparison of interpretation and analytical unit.

Geologic unit by interpretation	Geologic unit by analysis	Assumed geology and lithology by comparison with existing materials
Q	Q	Alluvium
Lh1	N1	Quaternary terrace sediments
Mh2	N2	
Ml3 Ml6 Ll1	Ls	Paleozoic limestone
Hh1 Hm1 Mh1 Mh3	P1	Paleozoic(Western)
Ml1	P2	
Mh4	P3	Paleozoic(Central)
Hh2 Hm2 Hm3 Hm4 Hm5 Mm1 Mm2 Mm3 Ml2 Ml4 Ml5 Ll2	P4	
Mh8 Mh9 Mm4	P5	Paleozoic(Eaztern)
Hl1	Gr1	Granite(Western)
Hl2 Mh5 Mh6 Mh7	Gr2	Granite(Central)
Mh11 Mh12 Ml7	Gr3	Granite(Eastern)
Mh10	Gr4	

Fig. II-4-5 Distribution of geological unit analysed

Geological unit analyzed as Paleozoic Limestone shows smooth texture, low drainage density and smooth cross section. It elongates narrow and long (ca. 22km) north and south along its strike on the East of Mae Sariang city. It also extends, near the Rit river, Dong Noi and Mae Kanai, as a rectangle block (15km NS x 5km EW) between Central Granite (Gr2) and Central Paleozoic (P4) that will be presented bellow. On the Northeast of the image, it extends largely between Eastern Granite (Gr3) and Eastern Paleozoic (P5), while it is considered that its characteristics are different a little from two Limestone units mentioned above.

All geological interpretation units except for Alluvium, Paleozoic Limestone and Granite were analyzed as Paleozoic (partly Mesozoic). According to distribution and characteristics of them, they have been classified into five units; Western Paleozoic (P1 and P2), Central Paleozoic (P3 and P4) and Eastern Paleozoic (P5).

Western Paleozoic (partly Mesozoic) units (P1 and P2) distribute on the West of Yuam river and very rarely on the eastern side of the river. One of Western Paleozoic-Mesozoic (P1) on the West of the river is composed of three types of geological interpretation units. With considering of continuity and characteristics of them, a geological interpretation unit on the east river side south of Mae Sariang city was also classified as Western Paleozoic-Mesozoic (P1). Another Western Paleozoic (P2) extends only a little on the south margin of the image.

Central Paleozoic units (P3 and P4) extend largely north and south on the East of Yuam river and on the center of the image. A unit with bedded structure was classified to a Paleozoic unit (P3) and other massive units were classified to another Paleozoic unit (P4). The bedded Paleozoic (P3) is considered to be alternation of limestone, limy sediments or normal sediments, since it lies adjoining Paleozoic Limestone (Ls) on the West. The massive Paleozoic units (P4) extend largely surrounding Central Granite (Gr2) on the center of the image.

Eastern Paleozoic units (P5) extend largely surrounding Eastern Granite (Gr4) on the East of the image, and they are medium rock resistance and with less undulation.

Granite shows commonly medium rock resistance and fine drainage pattern. According to distribution and characteristics of geological interpretation units, four Granite units have been classified; Western Granite (Gr1), Central Granite (Gr2) and Eastern Granite (Gr3 and Gr4). Western Granite (Gr1) is an oval-shaped body (ca. 5km x 8km) lying in the Western Paleozoic-Mesozoic (P1) on the West of the image, and so it is considered as an intrusive body of Mesozoic or later age. Central Granite (Gr2) extends largely north and south in Central Paleozoic (P4) on the center of the image. With attention to drainage pattern of geological interpretation units, it is estimated that Granite along the Mae Sarinag river and north east of the river is different from Granite extending north or south of these area, and that Central Granite (Gr2) might be of composite intrusive or of two or more intrusions of different time. Eastern Granite units (Gr3 and Gr4) extend on the Northeast and south east of the image, and they are divided into two; Granite (Gr3) adjoining Central Paleozoic and Granite (Gr4) lying in Eastern Paleozoic.

4-2-3 Result of interpretation of geological structure

Through interpretations of geological structure using satellite image, only a few bedded structures have been found while we have made attentions to stratum tracing, folding structure, fault structure and ring structure.

On the West of the Yuam river, boundaries between Western Paleozoic units (Hm1/Hh1 or Hh1/Mh1) seem to reflect a bedded structure of them. Strike of the boundaries is ca. N5W on the North, and it turns to ca. N25W on the South. Westward dip may be assumed, while it is difficult to judge direction of dip since direction of radar probe crosses near a right angle with strike of geological unit. Paleozoic Limestone (Ls) and Paleozoic (P3) on the North of Mae Sariang along the Yuam river show NS strike and seem to dip westward.

4-2-4 Result of interpretation of lineament

Lineaments, interpreted using JERS-1/SAR and JERS-1/OPS images, are classified into three grades; clear, medium and obscure. Distribution of them is show in figures (Fig. II-4-4 and Fig. II-4-5) and tendency of their direction is shown in rose diagrams (Fig. II-4-6).

Concentration area of lineament is on the center-north, center and southeast, and is corresponding to distribution of Central Granite and Central Paleozoic. Lineament tends to be rare in the area of the Western Paleozoic-Mesozoic, northeast to eastern margin of the image.

Direction of lineament is different between grades of lineament or between east side and west side of the Yuam river. To see all grades of lineament, NS direction is dominant for both sides of the river, NWN-SES and NW-SE to E-W directions for west side, and NE-SW and NW-SE for east side. On the other hand, to see lineament of individual grade, NE-SW direction is dominant for grade "clear"; N-S, NWN-SES and ENE-WSW direction for grade "medium"; and ENE-SWS direction for grade "obscure". Further, to see continuity of lineament, lineaments are very continuous in N-S direction along or west of the river. For east side of the river, lineaments with N-S to NE-SW direction are continuous on the center to north of the image, while direction of continuous lineament is not concentrated in a certain direction on the South of the image.

According to the distribution of continuous lineament, the area might be divided into four blocks; NE block, NW block, SE block and SW block (left of Fig. II-4-7). Lineament pattern of these blocks is assumed to represent fracture system accompanied with a regional stress field. For the lineament pattern of the NE and NW blocks, lineaments with N-S or NE-SW direction are considered as a set of conjugate shear planes or faults that would be caused by a stress field with maximum compression axis in NNE-SSW direction. In this case, N-S lineament would correspond to right-lateral fault, NE-SW lineament to left-lateral

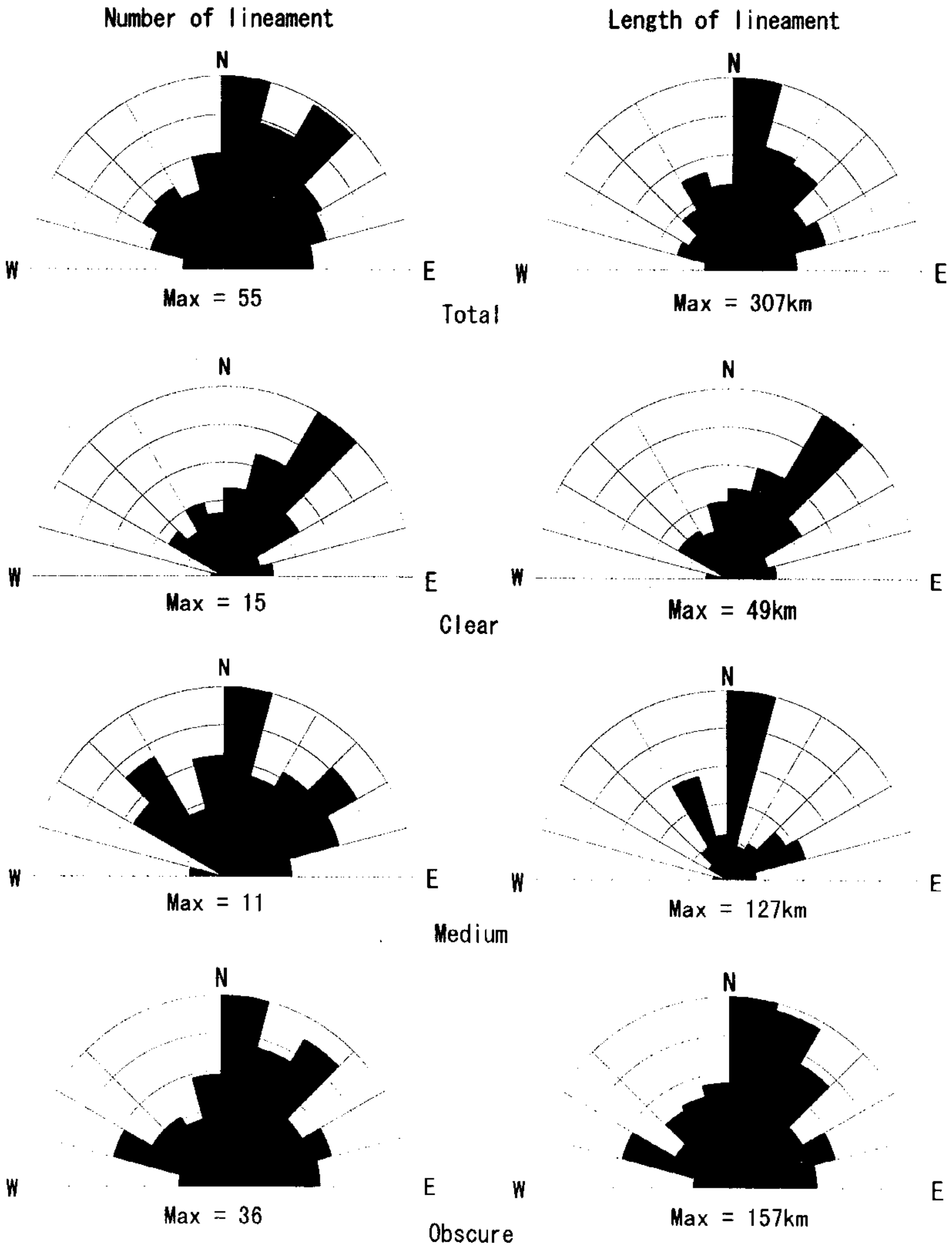

Fig.II-4-6 Rose diagram of lineament

fault, and NNE-SSW lineament to tension fracture.

In this way, lineament pattern on the center to north part of the image can be explain by a model; an assumption of a stress field with maximum compression axis in NNE-SSW direction, but lineaments on the south part of the image do not show typical fracture pattern accompanied with a regional stress field. According to the continuity of lineaments, the SW block might be explained by the same model, but lineaments in the SE block might be difficult to be explained by the same model. Thus, it is possible to assume that the central to north part is different to the south part in term of regional stress field or geological structure unit, and that the boundary of them is a tectonic line that is represented by NE-SW lineaments crossing the image at the center.

On the other hand, short or discontinuous lineaments tend to concentrate Dong Noi Mae Kanai area and Mae Sariang river area (right of Fig. II-4-7). Lineament density in both areas elongates parallel to the NE-SW lineaments crossing the image at the center. Further, center of the high lineament density area crosses in right angle and continues from Dong Noi area to Mae Sariang area with NW-SE direction.

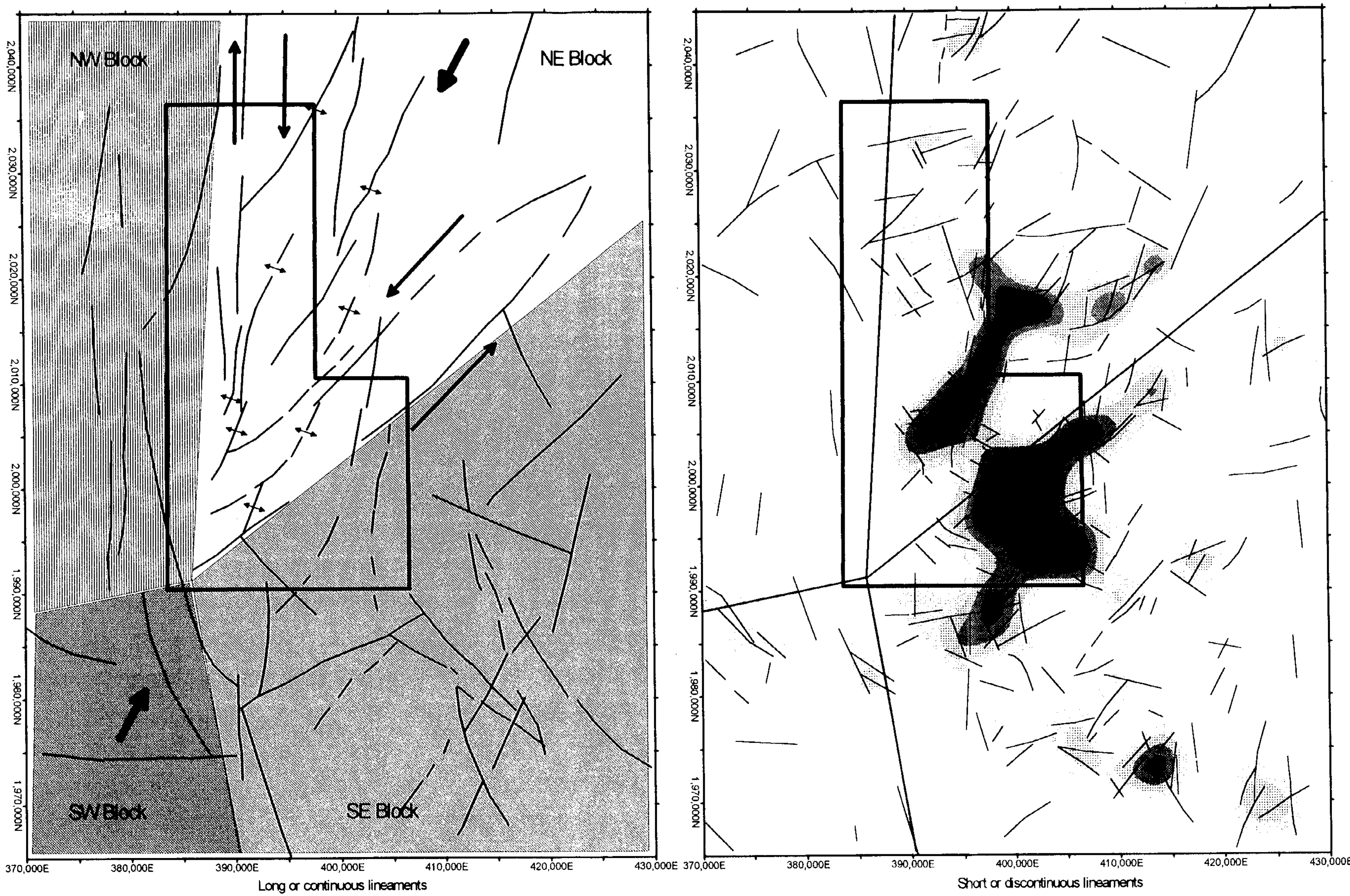

Fig. II-4-7 Structural analysis using lineament

4-3 Result of Satellite Image Analysis

4-3-1 Result of Image Analysis

As a result of photo-geological analysis using satellite image, it was revealed that geology of the study area consists of Paleozoic (partly Mesozoic) and Granite intruding into them, and that there are three limestone bodies in the Paleozoic. According to the arrangement and bedded structure of the interpreted units, it was assumed that the Paleozoic-Mesozoic has NS strike and dips to west. Granite extending in the ground survey area is Central Granite (Gr2) that might be of composite intrusive or of two or more intrusions of different time.

According to the distribution of continuous lineament, the area might be divided into four blocks. Lineament pattern on the center to north part of the image can be explain by a model; an assumption of a stress field with maximum compression axis in NNE-SSW direction. In this case, N-S lineament would correspond to right-lateral fault, NE-SW lineament to left-lateral fault, and NNE-SSW lineament to tension fracture. It is possible to assume that the central to north part is different to the south part in term of regional stress field or geological structure unit, and that the boundary of them is a tectonic line that is represented by NE-SW lineaments crossing the image at the center.

Short or discontinuous lineaments tend to concentrate Dong Noi - Mae Kanai area and Mae Sariang river area, and lineament density of them elongates parallel to the NE-SW lineaments crossing the image at the center, while the center of the high lineament density area continues from Dong Noi area to Mae Sariang area with NW-SE direction.

4-3-2 Relation between Image Analysis and Ore Deposit / Mineral Occurrence

Result of satellite image analysis is shown with distribution of mineral occurrence (Fig. II-4-8). Dong Noi and Mae Kanai mineral occurrences are on the south of the NE-SW lineaments (or tectonic line) crossing the image at the center, while other mineral occurrences are on the north of the lineaments.

Dong Noi and Mae Kanai mineral occurrences are located at the west margin of a Paleozoic Limestone (Ls), on the West of that Granite (Gr2) is extending. Also, these mineral occurrences correspond to high density area of short or discontinuous lineaments. Dong Noi mineral occurrence extends southward from a crossing point of this high density area and NNE-SSW continuous lineament. Mae Kanai mineral occurrence is located at a crossing point of the NE-SW lineaments (or tectonic line) and NNE-SSW continuous lineament on the North of this high density area.

Mae Pan river mineral occurrence is lined up on a NNE-SSW lineament in Paleozoic (P4). Since being held between two NE-SW lineaments, this NNE-SSW lineament is interpreted as a tension fracture based on a regional stress field model mentioned above, and existence of vein type deposits agrees with this interpretation. Also, this mineral occurrence corre-

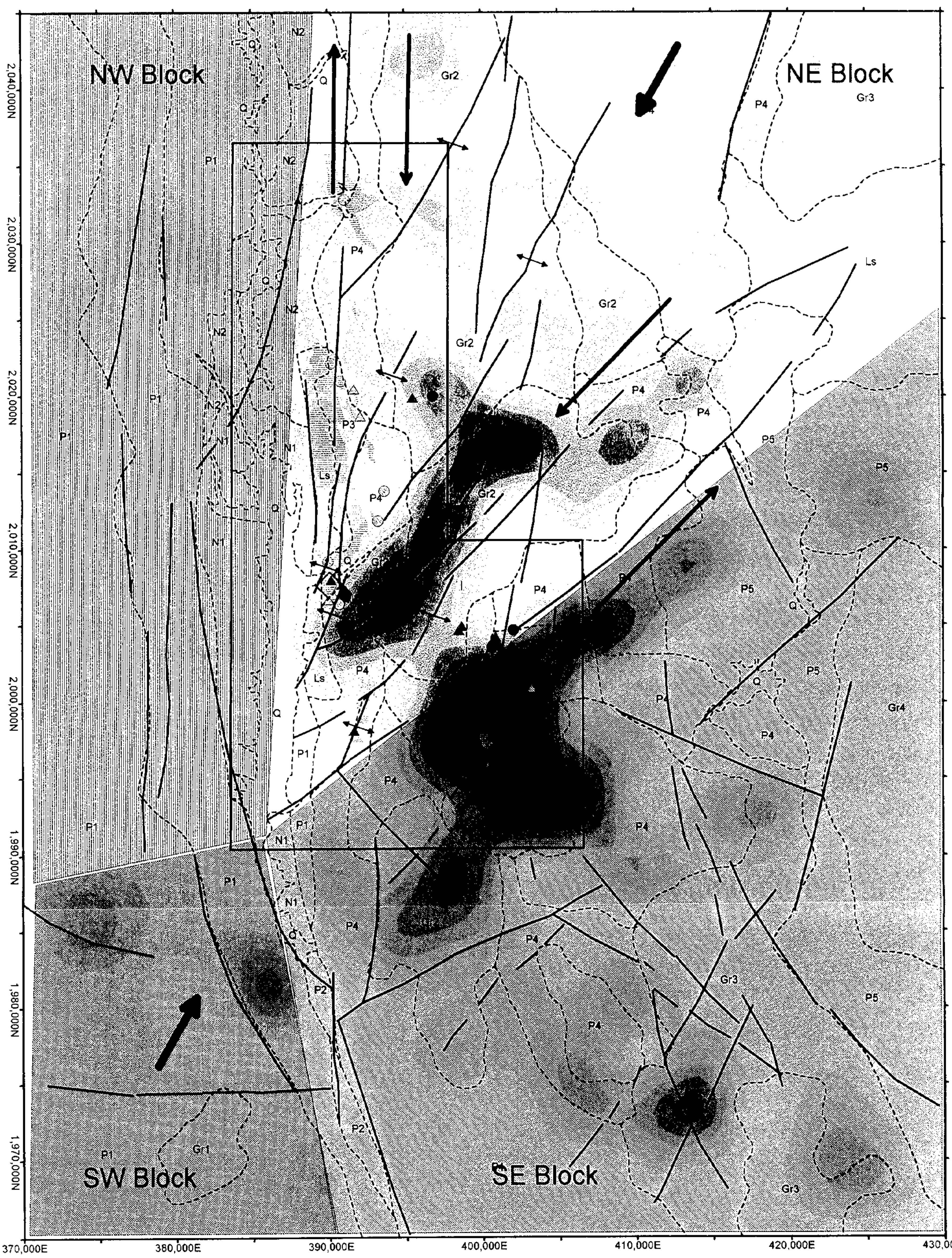

Fig. II-4-8 Result of analysis using JERS-1/SAR and OPS imagery

LEGEND

Satellite image analysis

Gr1 Geologic unit

Long or continuous lineament

Direction of stress

Tension stress field

Density of short or discountinuous lineament

Block of lineament pattern

Outcrop	**Floats**	**Mineral**
		Galena - Barite
		Galena
		Sphalerite
		Chalcopyrite, Copper Oxide
		Magnetite
		Gossan
		Barite
		Fluorite
		Limestone (Carb.-Devonian)
		Limestone (Ordovician)

sponds to low density area of short or discontinuous lineaments.

I-4 mineral occurrence is located near NNE-SSW lineaments among the boundary of Paleozoic (P4), Paleozoic Limestone (Ls) and Granite (Gr2), and corresponds to the west wing of high density area of short or discontinuous lineaments.

Hat Ta Lan river mineral occurrence is located in Paleozoic (P3 and P4) and is held between two N-S to NNW-SSW lineaments. This occurrence is lined up in NNW-SSE direction and corresponds to medium density area of short or discontinuous lineaments.

4-3-3 Promising Areas of Ore Deposit

In this satellite image analysis, it is suggested that mineral occurrences in Mae Sariang area relate hardly with Granite and Limestone, and with continuous lineaments and density of short or discontinuous lineaments. Therefore, possibility of ore deposit would be high for such area as satisfying the following condition;

1) nearby contacts of Limestone (Ls) and Granite (Gr2),
2) crossing point of continuous lineaments,
3) nearby NNE-SSW lineaments that are considered as tension fracture,
4) high density area of short or discontinuous lineaments.

Hereafter, it is necessary that making attention to these points.

Chapter 5 Laboratory test

5-1 Homogenized temperature and salinity of fluid inclusion

The measurement of homogenized temperature and salinity of fluid inclusions had been performed with an object of the formed temperature and the nature of mineralization. The results of those are shown in Appendix 11 and Fig. II-5-1.

The samples came from the Padeang mine, the Tak mine, Dong Noi area, I-4 area and Huai Mae Pan area.

The tested minerals were two, one is sphalerite from the Padeang mine and the Tak mine, and another is quartz from other area.

An easily visualized from the figure, combinations of temperature and salinity are divided into three groups.

The Padeang and Tak mines are the stratiform deposits replacing limestone. The originated fossils are remained in sphalerite ore body of the Tak mine. The effects of contact metamorphism and alteration are not remarkably observed in wall rocks. From these facts, it is may be inferred that the mineralization had been occurred under static condition and low temperature. Homogenized temperature of TAK-1 (Tak mine) and PHL-1 (Hue Lon deposit, Padeang mine) shows low temperature from 100 to 140℃ anticipatively. The salinity of Tak-1 is two to three times of it of PHL-1.

Two samples from the Dong Noi area, one came from a outcrop of galena-barite occurrence and another came from top soil layer of Test-pit No.2, are plotting in the different domains of the figure. S-3 from outcrop has high temperature(200 to 280℃) and high salinity (13 to 18 wt%). AR-002, which might be barren quartz vein at the latest stage, varies from 140 to 180℃ of homogenized temperature and has extremely low salinity.

For quartz vein and its float from Dong Noi area (BR-022), I-4 area (AR-010), and Huai Mae Pan area (AR-043, BR-025, DR-006), its temperatures vary from 100 to 320℃ and its salinity from 1 to 6 wt% and plot on a continuous trend. This trend is similar to its of hydrothermal deposits in Japan. On the other hands, for AR-006, which is chalcopyrite-cuprite-galena-barite-quartz vein in Huai Mae Pan, BR-040, which is galena disseminated siliceous rocks, and AR-007, which is galena-quartz vein float, in I-4 area, these fluid inclusions indicate low temperature and extremely high salinity in spite of coexisting with the former samples.

5-2 Stable isotope measurement

Carbon and oxygen stable isotope analysis was done in regard to the evaluation of efficacy for exploration in this area. The results are given in Appendix 10 an d Fig. II-5-2.

Tested samples were limestone of Mae Sod deposit (AR-011) and Hue Lon deposit (AR-013) of Padeang mine, Tak Mine (AR-015), limestone contact with barite vein in Chamrat mine

(AR-009), recrytstaline limestone (AR-033) and marble (BR-032) in Dong Noi area, and marble(BR-047, DR-028) and coarse calcite vein in I-4 area.

Naito et al.(1995) and Nakano et al.(1997) about Kamioka mine, Japan, and Fu et al.(1991) about Dachang mine, Chaina, reported that both isotope become lighter from unaltered marble to ore body.

$\delta^{13}C$ and $\delta^{18}O$ of Padeang and Tak mine are almost similar to that of unaltered limestone. Limestone from Chamrat mine underwent hydrothermal effect indicates the lowest $\delta^{13}C$ and $\delta^{18}O$ among all of samples. $\delta^{13}C$ and $\delta^{18}O$ of Dong Noi area are slightly lighter than those of Padeang Mine. $\delta^{13}C$ of I-4 area is also ligther than that of Padeang mine, but $\delta^{18}O$ is almost same.

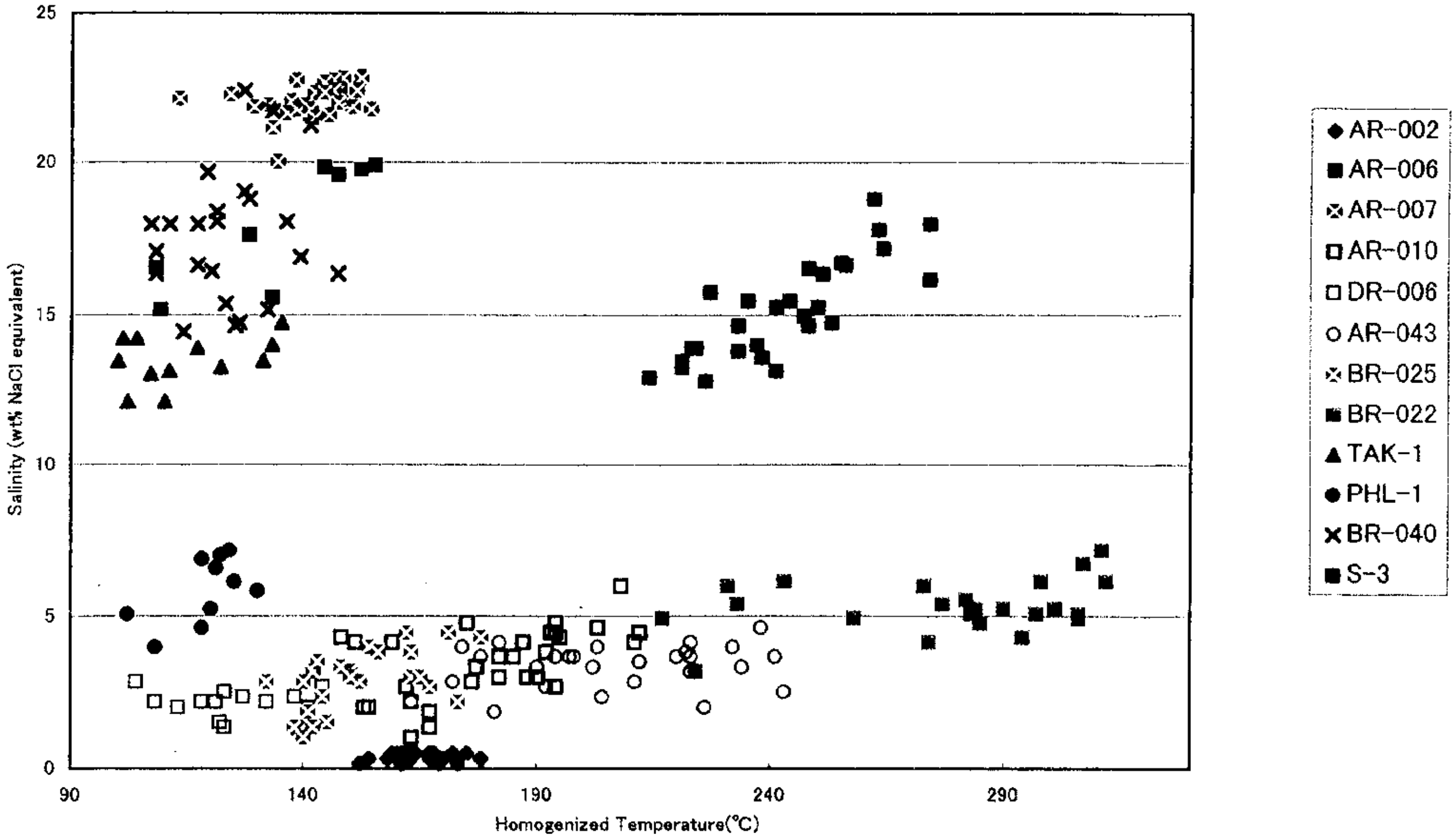

Fig.II-5-1 Variation diagram between homogenized temparature and salinity of fluid inclusion

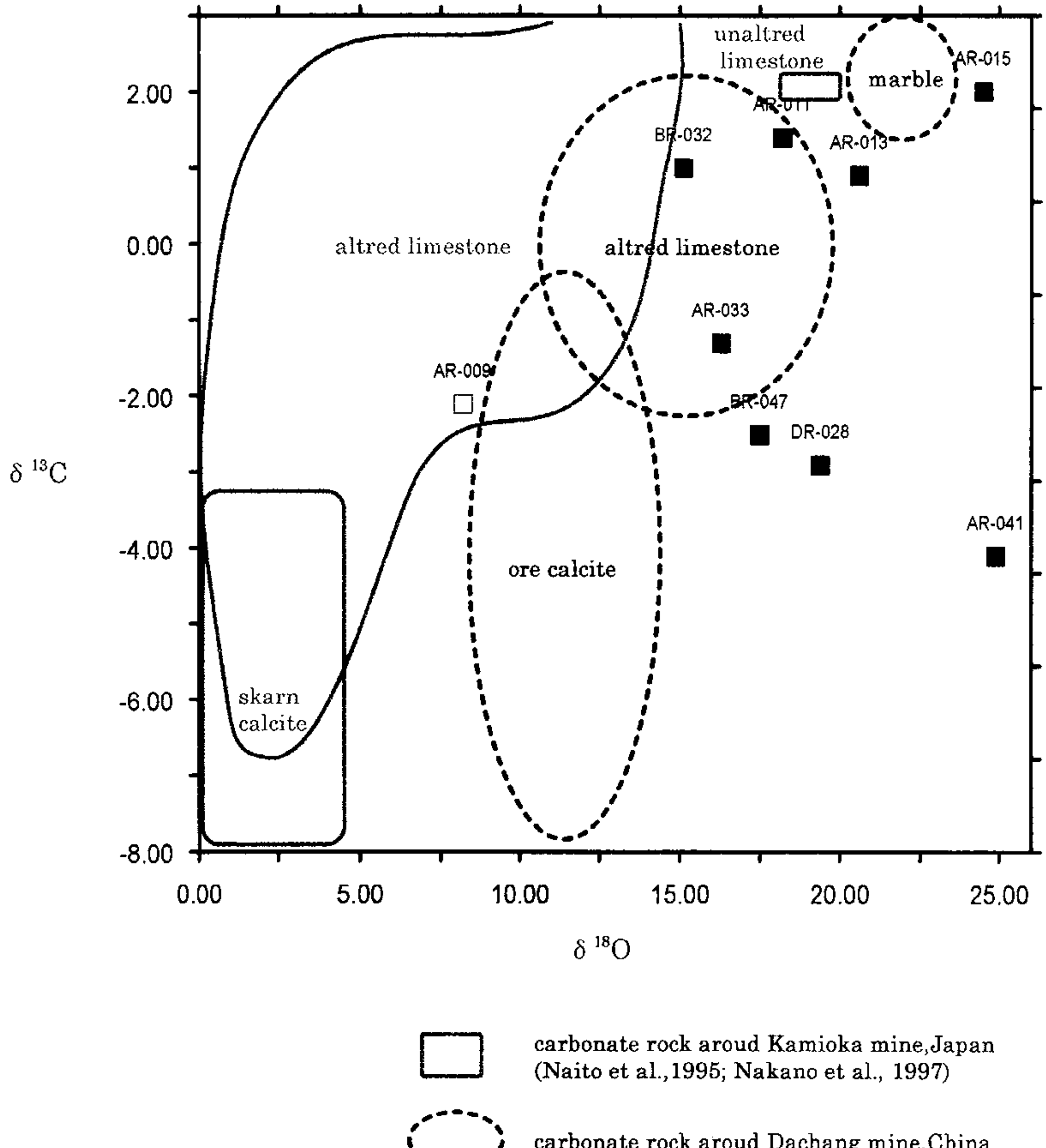

Fig. II-5-2 Plot of $\delta^{13}C$ vs $\delta^{18}O$ values of carbonate rock

III Conclusions and Recommendation

III Conclusions and Recommendations

Chapter I Conclusions

1-1 Mae Sariang Area

The distributions of various minaral occurrences and geochemical anomalies in Mae Sariang Area are closely related to the distribution of carbonate rocks such as limestone and limestone lens, alternating beds of shale and limestone in the Ordovician system, from the Devonian to Carboniferous systems, from the Permian to Triassic systems. It is considered that since carbonate rocks play a great role in the formation of ore mineralization.

In judging that, areas where distributions of limestone, mineral showings and geochemical anomalies overlap have high potential in occurrence of mineral deposits. Four districts of Mae Ka Nai, from Huai Pu to Huai Mae Pan, Um Mae Sariang West Bank and from Huai Hat Ta Lan to Huai Ng have been selected as the promising area for next phase. In the areas of Mae Ka Nai and Mae Sariang West Bank, there are possibilities of originating strati-form deposits or skarn type massive sulfide ore deposits through the metasomatism of limestone. In the district extending from Huai Pu to Huai Mae Pan and that from Huai Hat Ta Lan to Huai Ngu, there is a promising potential of vein type sulfide deposits and massive deposits through metasomatism of limestone lenses.

1-2 Don Noi Area

The mineralization in Don Noi area is considered to be as follows:
ore solution which has gone up along the fault of north-south system bordering between Cambrian sandstone and Ordovician has formed a vein type ore body which mainly consists of galena, barite and pyrite. The remained solution has diffused and replaced along some particular horizons of limestone in the surroundings to form zinc mineralization.

Vein type ore bodies certainly distribute at the places which correspond to high electric charging area in the north side of the east and west faults. The center is the middle of traverse lines A and B at the depth of 100 to 150 m.

At present, how the occurrences of zinc through metasomatism of limestone are existing cannot be seen clearly with the naked eye. But their features resemble with those of Mae Sod mineral deposit owned by Padeang Industry Inc. Mineralization seems to have occurred at various horizons in limestone.

1-3 I-4 Area

In the I-4 area, geological situation and mineral showings of one side remarkably differ from those of the other side of the NE-SW fault running through the center of the district.

In the northern side of the area, Ordovician limestone formation distributes and geochemical anomalies of Zn and Pb and F are recognized in the limestone. The distribution of anomalies suggests a high possibility that the distribution is controlled by the N-S fracture system. The anomaly levels are lower than those of Don Noi district by one figure. The fact that there is no anomaly of Cd is also different from Don Noi district. Judging from the fact that there are the mineralization of zinc at a certain level in this rock, the geochemical anomaly of zinc in the Ordovician limestone which is continuing from the north side of this limestone is showing a possibility of existing zinc ore body.

In the southern side of the area, a mineralization zone in which several stockwork vein zones with sulfide minerals are found in the shale from the Permian to Triassic along the river. Geochemical anomalies and low specific resistivity and high chargeability zones distribute in the northwest direction that is the extension direction of the veins. Judging from this correlation, there is a high possibility of existing of vein type ore bodies under this zone which are more concentrated than the stockwork veins on the surface. From the distribution of geochemical anomalies and that of high chargeabikity, it is recognized that the center of the ore body is somewhere below the measurement point 700 of the traverse line A.

1-4 Satellite Images Analysis

In this satellite image analysis, it is suggested that mineral occurrences in Mae Sariang area relate hardly with Granite and Limestone, and with continuous lineaments and density of short or discontinuous lineaments. Therefore, possibility of ore deposit would be high for such area as satisfying the following condition;

1) nearby contacts of Limestone (Ls) and Granite (Gr2),
2) crossing point of continuous lineaments,
3) nearby NNE-SSW lineaments that are considered as tension fracture,
4) high density area of short or discontinuous lineaments

Chapter 2 Recommendations for the Second Year Survey

The most promising area among those selected on the basis of the preliminary survey results of Mae Sarian Area is Mae Ka Nai district. In this district, it is necessary to carry out geological detailed surveys, geochemical detailed surveys and IP prospecting to grasp the distribution of mineralization and geological structures to point out locations of existing of mineral deposits.

In the area from Huai Pu to Huai Mae Pan, it is not considered that there is a large scale stratiform mineral deposit, but since geochemical anomalies of zinc and lead are the highest within this area. It is desirable that geological detailed surveys, soil geochemical survey and trench surveys are to be carried out to clarify the existing forms of mineral occurrences

In the northeastern area of Nam Mae Sariang Town in the west bank of Nam Me Sariang, it is necessary to carry out soil geochemical survey along the stream where geochemical anomalies of zinc are found this year to confirm the possibility of zinc occurrence.

In the Don Noi detailed survey area, it is necessary to confirm the scale and the grade of ore body by drilling surveys at the center point of vein type ore body. As for the zone of geochemical anomalies of zinc, it is necessary to clarify existing forms of zinc mineralization and horizons of mineral deposit in limestone by trenching surveys and drilling surveys. It is also necessary to confirm the range of distribution of ore showings by carrying out soil geochemical survey from the southwest side to the west side of the area.

In the I-4 area, it will be useful to carry out a drilling survey at the center of vein type ore body to confirm the occurrence conditions and the grade of ore body. At the same time, it is considered that together with the survey results of the area from Huai Pu to Huai Mae Pan of which geological conditions are similar, clarification of its vein type mineralization will be useful for elucidation of the features of mineralization in Mae Sariang Area.

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APPENDICES

Appendix 1 Microscopic Observation of Rock Thin Section

NO.	Sample No.	Locality	Rock Type	Texture	PHENOCRYST/GRAIN															GROUNDMASS/MATRI							Fragment			ALTERATION · METAMORPHI										REMARKS
					Quartz	Plagioclase	K-feldspar	Biotite	Muscobite	Hornblende	Fe-mineral	Garnet	Tourmaline	Tremolite	Diopside	Wollastonite	Andalusite	Cordierite	Calcite	Quartz	Plagioclase	K-feldspar	Biotite	Fe-mineral	Glass	Calcite	Sandstone	Granite	Tuff	Quartz	Chlorite	Sericite	Calcite	Magnesite	Fe-oxide	Fe-hydro-oxide	Opaque mineral	Sphene	Monazite	
1	AR-025		Biotite granite porphyry	Porphyritic, Equigranular	○	△	○	△												◎	○	◎	△	△							△	△				△				Intrusive or dyke.
2	AR-039		Metamorphosed quartzose sandstone		◎			○				△	△																		○					○				
3	BR-015		Saccharoidal limestone		○														◎												△						△			Calcite veinlet
4	BR-016		Garnet skarn		△							◎		△	◎	△			◎																					
5	BR-031		Conglomerate																	◎	◎		◎				◎	△	△		◎									Recrystalized
6	BR-039		Hornfels		◎						○			◎						◎	△																			Basic rock origin
7	BR-055		Hornblende bearing biotite dacite	Porphyritic, Vitric	○	○		△		△													△	△	◎						○	○				○				
8	BR-058		Saccharoidal limestone																◎							◎									△					
9	BR-06		Cordierite argillaceous hornfels		◎			△	◎									◎		◎			△	△							△							△		Mud stone origin
10	DR-002		pyroxene skarn		○										◎						△		△								△	△	△		△			△		
11	DR-014		Andesite (lava?)			◎														△	◎			△	◎					○	○									Unknown carbonate minera
12	DR-025		Cordierite argillaceous hornfels		◎			△	◎								△	◎													△	△						△		Mud stone origin. Pinitization
13	GR-050		Garnet skarn		△							◎			○				◎																			△		
14	AR-014		Carbonate rock		◎																													◎						Bearing fossils.

Legend
◎:Abundant ○:Medium △:Minor ・:Rare

Appendix 2 Microscopic Observation of Ore Polished Section

NO.	SAMPLE N	HOST ROCK	MINERALS																		Remarks
			Chalcopyrite	Pyrite	Galena	Sphalerite	Calcosite	Cuprite	Arsenopyrite	Tetrahedrite	Magnetite	Malachyte	Lepidochrocite	Goethite		Hematite	Clay Mineral	Tremolite	K-Feldspar	Calcite	Quartz	
1	AR-001				◎														△	◎	◎	
2	AR-006		△		○		△	○				•								◎	◎	
3	AR-007				◎															△	◎	
4	AR-010		△	○	◎	△				•								◎			◎	
5	AR-028			△	•												•	○			◎	
6	AR-040			◎	△													△		○	◎	
7	BR-043			◎	•	•												•		△	◎	
8	DR-006			△																○	◎	
9	ER-001			○					△												◎	
10	ER-029		△	△		△														◎		
11	HR-004										◎								△		○	
12	Z-475												◎	◎					△		△	

Legend
◎:Abundant ○:Common △:Minor • :Rare

Appendix 3 Result of X-ray Diffracton

samples		minerals	silicate mineral													sulphate			carbonate				ore mineral						Remarks
			clay mineral													mineral			mineral										
No.	Sample No.	Description	Montmollironite	Chlorite/Mont.	Sericite/Mont.	Chlorite	Sericite	Kaolinite	Albite	Halloysite	Toumaline	Potash-feldspar	Tremorite	Garnet	Hemimorphite	Barite	Gypsum	Jarosite	Calcite	Dolomite	Magnesite		Pyrite	Hematite	Goethite		Quartz	Plagioclase	
1	AR-010												15			7	1	3									13		
2	AR-014		1				2														4						80		
3	AR-017						3					14															59		
4	AR-028						2																3				77		
5	AR-038																								3				
6	AR-045						?					40															52	75	
7	AR-046		3				1					15															15		
8	BR-011						3	3				6															59		
9	BR-039											3	15			?		5									20		
10	·BX-01						3		25	2		12															10		
11	CR-016					8	6																				31		
12	DR-002					1	1					9	1														8		
13	ER-001											3	14				1	3									24		
14	ER-002										6							2									41		
15	GR-050		2									?		9					30								2		garnet:: grossular
16	PMS-1				3										5												80		Hemimorphite $Zn_4Si_2O_7(OH)_2 \cdot H_2O$
17																													
18																													

Appendix 4 Geochemical Data of Stream Sediment

	SAMPLE DESCRIP	Au ppb FA+AA	Sn ppm	F ppm	Ag ppm	As ppm	Ba ppm	Cu ppm	Fe %	Hg ppb	Mg %	Mn ppm	P ppm	Pb ppm	Sb ppm	W ppm	Zn ppm
1	A-001	<5	11	380	<0.2	10	100	13	1.73	<10	0.40	285	460	32	<2	<10	36
2	A-002	<5	5	550	<0.2	22	90	11	1.93	<10	0.67	305	560	34	<2	<10	62
3	A-003	<5	3	870	<0.2	32	150	15	2.70	<10	1.02	400	820	50	<2	<10	92
4	A-004	<5	3	760	<0.2	20	120	16	2.48	<10	0.78	350	630	36	<2	<10	86
5	A-005	<5	57	470	<0.2	26	60	15	1.49	<10	0.42	265	810	44	<2	10	50
6	A-006	<5	6	680	<0.2	26	120	20	2.77	<10	0.81	385	1030	42	<2	<10	114
7	A-007	<5	5	400	<0.2	26	60	7	1.50	<10	0.46	250	560	38	2	<10	100
8	A-008	<5	7	540	<0.2	40	100	12	2.15	<10	0.68	415	1140	72	<2	<10	132
9	A-009	<5	9	660	<0.2	16	100	14	2.63	30	0.04	1485	90	122	6	<10	190
10	A-010	<5	2	300	<0.2	22	320	20	2.68	40	0.17	1485	140	82	6	<10	60
11	A-011	<5	22	440	<0.2	32	110	23	3.68	70	0.05	2250	150	608	8	<10	118
12	A-012	<5	<2	280	<0.2	24	200	19	2.61	10	0.10	1360	110	56	4	<10	62
13	A-013	<5	<2	300	<0.2	28	120	24	2.97	<10	0.19	980	140	20	2	<10	46
14	A-014	<5	<2	270	<0.2	32	230	23	3.17	20	0.14	1440	160	70	<2	<10	70
15	A-015	<5	3	230	<0.2	24	160	17	2.24	<10	0.15	850	170	22	4	<10	30
16	A-016	<5	7	240	<0.2	20	200	17	2.28	<10	0.14	985	180	14	6	<10	28
17	A-017	<5	2	270	<0.2	26	160	22	2.68	10	0.14	955	170	40	2	<10	58
18	A-018	<5	8	400	<0.2	16	100	10	1.64	<10	0.41	270	310	26	<2	<10	32
19	A-019	<5	3	230	<0.2	10	60	5	1.21	<10	0.29	215	230	36	<2	<10	24
20	A-020	<5	2	150	<0.2	8	90	10	1.28	<10	0.17	335	210	36	<2	<10	22
21	A-021	<5	31	140	<0.2	24	90	4	0.81	<10	0.14	270	150	28	<2	<10	14
22	A-022	<5	105	200	<0.2	18	80	7	1.20	<10	0.15	155	290	58	2	<10	24
23	A-023	<5	3	180	<0.2	8	100	6	1.14	<10	0.13	135	170	26	<2	<10	20
24	A-024	<5	3	250	<0.2	18	110	7	1.80	<10	0.25	215	270	38	2	<10	32
25	A-025	<5	4	240	<0.2	18	110	35	1.80	<10	0.28	250	490	672	4	<10	26
26	A-026	<5	2	50	<0.2	10	100	5	0.82	<10	0.01	920	50	8	<2	<10	10
27	A-027	<5	<2	310	<0.2	98	240	20	2.94	220	0.04	1280	180	30	10	20	64
28	A-028	<5	<2	480	<0.2	406	380	45	4.64	220	0.04	1885	380	44	26	30	102
29	A-029	<5	<2	180	<0.2	40	280	11	1.24	10	0.07	1330	90	26	4	<10	38
30	A-030	<5	<2	280	<0.2	58	330	23	3.33	10	0.03	1665	140	56	10	<10	70
31	A-031	<5	<2	210	<0.2	56	470	22	2.50	30	0.03	2050	200	42	8	<10	44
32	A-032	<5	<2	200	<0.2	74	490	14	1.77	10	0.12	1975	140	62	6	<10	48
33	A-033	<5	<2	260	<0.2	48	360	25	3.10	30	0.11	1425	150	28	8	<10	62
34	A-034	<5	<2	170	<0.2	46	120	17	2.16	20	0.12	465	110	18	6	<10	46
35	A-035	<5	2	70	<0.2	2	50	4	0.50	10	0.02	165	90	30	<2	<10	16
36	A-036	<5	2	50	<0.2	6	220	3	0.49	<10	0.01	230	70	14	2	<10	12
37	A-037	<5	11	250	<0.2	12	80	7	1.23	<10	0.31	245	230	28	<2	<10	28
38	A-038	<5	2	280	<0.2	10	110	8	1.26	<10	0.29	250	290	56	2	<10	66
39	A-039	<5	3	50	<0.2	2	80	<1	0.26	<10	0.01	105	50	4	<2	<10	8
40	A-040	<5	2	50	<0.2	<2	70	4	0.35	<10	<0.01	100	60	6	<2	<10	2
41	A-041	<5	3	40	<0.2	6	80	3	0.49	<10	<0.01	250	90	6	2	<10	2
42	A-042	<5	3	110	<0.2	2	50	1	0.59	<10	0.09	170	120	24	2	<10	14
43	A-043	<5	7	190	<0.2	4	80	6	0.86	370	0.19	160	300	28	2	<10	18
44	A-044	<5	<2	280	<0.2	6	80	10	1.35	10	0.26	225	310	138	<2	<10	30
45	A-045	<5	12	230	<0.2	8	60	6	0.91	<10	0.23	245	300	56	<2	<10	30
46	A-046	<5	<2	150	<0.2	4	80	5	0.83	<10	0.13	610	220	72	2	<10	26
47	A-047	<5	12	400	<0.2	18	110	11	1.67	10	0.40	465	340	64	2	<10	44
48	A-048	<5	2	260	<0.2	2	70	6	1.17	<10	0.29	265	230	32	2	<10	28
49	A-049	<5	<2	160	<0.2	2	60	2	0.63	<10	0.14	165	180	26	<2	<10	18
50	A-050	<5	4	200	<0.2	<2	60	4	0.80	<10	0.19	190	230	30	<2	<10	24
51	A-051	<5	9	420	<0.2	20	80	7	1.46	<10	0.39	365	250	42	<2	<10	72
52	A-052	<5	10	150	<0.2	18	80	5	0.97	<10	0.14	330	150	26	<2	<10	72
53	A-053	<5	7	170	<0.2	24	80	7	1.48	<10	0.12	725	200	50	<2	<10	72
54	A-054	<5	<2	400	<0.2	106	200	39	5.22	40	0.08	3230	460	96	4	<10	130
55	A-055	<5	6	370	<0.2	22	160	10	2.04	<10	0.41	1040	280	82	2	<10	70
56	A-056	<5	<2	280	<0.2	24	100	25	2.28	<10	0.05	1470	260	18	<2	<10	40
57	A-057	<5	7	280	<0.2	30	140	9	2.10	<10	0.27	790	270	78	2	<10	90
58	A-058	<5	4	280	<0.2	24	120	8	1.80	<10	0.27	660	240	70	<2	<10	90
59	A-059	<5	2	230	0.4	108	310	28	5.21	70	0.18	4800	300	1215	18	<10	322
60	A-060	<5	3	310	<0.2	66	390	40	4.10	10	0.31	1520	270	86	4	<10	126
61	A-061	<5	2	320	<0.2	70	780	44	4.94	<10	0.36	1840	260	116	2	<10	136
62	A-062	<5	83	480	<0.2	64	110	16	2.01	<10	0.44	650	980	88	<2	<10	86
63	A-063	5	5	370	<0.2	74	370	47	4.28	<10	0.75	3540	330	350	2	<10	420
64	A-064	<5	3	390	<0.2	46	300	55	4.65	<10	0.57	1950	310	102	<2	<10	202
65	A-065	<5	<2	280	<0.2	44	410	27	2.90	10	0.19	1310	280	150	2	<10	386
66	A-066	<5	2	350	<0.2	42	290	40	4.26	<10	0.68	1960	240	184	<2	<10	370
67	A-067	<5	2	330	<0.2	44	790	34	4.21	<10	0.41	1300	240	220	4	<10	348
68	A-068	<5	<2	580	<0.2	24	160	20	3.84	<10	0.11	890	210	46	2	<10	68
69	A-069	<5	<2	210	<0.2	<2	60	3	0.61	<10	0.03	155	60	12	<2	<10	22
70	A-070	5	<2	320	<0.2	10	40	16	1.96	<10	0.36	435	260	4	<2	<10	12
71	A-071	<5	<2	200	<0.2	14	40	11	1.54	<10	0.28	290	260	6	<2	<10	12
72	A-072	<5	<2	270	<0.2	20	40	14	2.11	<10	0.33	510	280	8	<2	<10	12
73	A-073	<5	<2	260	<0.2	22	40	14	1.88	<10	0.32	385	180	6	<2	<10	12
74	A-074	<5	<2	260	<0.2	22	40	12	1.67	<10	0.30	335	280	6	<2	<10	14
75	A-075	<5	<2	320	<0.2	10	110	11	2.23	<10	0.34	665	200	12	<2	<10	20
76	A-076	<5	<2	200	<0.2	20	70	18	2.06	<10	0.29	370	240	16	<2	<10	34
77	A-077	<5	<2	270	<0.2	16	100	26	2.95	<10	0.41	640	450	12	<2	<10	24
78	A-078	<5	<2	200	<0.2	8	300	19	2.40	<10	0.28	465	250	14	<2	<10	16
79	A-079	<5	<2	210	<0.2	14	360	21	2.32	<10	0.32	440	250	22	<2	<10	24
80	B-001	<5	49	260	<0.2	14	70	6	1.09	<10	0.28	175	410	28	<2	<10	36
81	B-002	<5	2	50	<0.2	4	50	<1	0.53	<10	0.01	90	80	4	<2	<10	6
82	B-003	<5	<2	50	<0.2	10	90	1	0.80	<10	0.02	295	80	8	<2	<10	8
83	B-004	<5	14	420	<0.2	20	90	8	1.41	<10	0.46	250	420	28	<2	<10	56
84	B-005	<5	<2	60	<0.2	2	40	<1	0.44	<10	0.03	105	60	<2	<2	<10	8
85	B-006	<5	22	860	<0.2	74	120	19	2.57	<10	0.98	440	1080	94	2	<10	152
86	B-007	<5	4	180	<0.2	28	80	11	1.47	<10	0.39	260	490	28	<2	<10	34
87	B-008	<5	115	290	<0.2	32	90	20	1.65	<10	0.31	295	680	42	<2	20	30
88	B-009	<5	33	340	<0.2	18	100	9	1.72	<10	0.79	275	140	32	2	<10	52
89	B-010	<5	220	690	<0.2	18	90	10	1.68	<10	0.80	220	240	32	<2	<10	50
90	B-011	<5	49	380	<0.2	14	60	5	1.08	<10	0.37	170	130	24	<2	<10	46

Appendix 4 Geochemical Data of Stream Sediment

	SAMPLE DESCRIP	Au ppb FA+AA	Sn ppm	F ppm	Ag ppm	As ppm	Ba ppm	Cu ppm	Fe %	Hg ppb	Mg %	Mn ppm	P ppm	Pb ppm	Sb ppm	W ppm	Zn ppm
91	B-012	<5	48	400	<0.2	24	90	8	1.42	<10	0.52	260	360	34	<2	<10	54
92	B-013	<5	350	500	<0.2	34	110	11	1.86	<10	0.78	340	240	46	<2	<10	62
93	B-014	<5	530	470	<0.2	32	100	13	1.74	<10	0.64	310	420	42	<2	<10	64
94	B-015	<5	85	160	<0.2	8	70	3	0.67	<10	0.23	150	260	16	<2	<10	18
95	B-016	<5	130	240	<0.2	44	60	6	1.09	<10	0.32	285	260	38	<2	<10	38
96	B-017	<5	12	280	<0.2	18	90	9	1.36	<10	0.39	285	490	30	<2	<10	50
97	B-018	<5	<2	150	<0.2	6	60	4	0.87	<10	0.13	115	190	22	<2	<10	18
98	B-019	<5	<2	180	<0.2	12	120	5	1.28	<10	0.18	250	260	62	<2	<10	34
99	B-020	<5	3	220	<0.2	8	80	7	1.46	<10	0.19	355	230	46	2	<10	28
100	B-021	<5	115	240	<0.2	12	80	8	1.32	<10	0.32	215	300	40	<2	<10	40
101	B-022	<5	4	160	<0.2	6	60	6	0.88	<10	0.18	130	180	48	<2	<10	22
102	B-023	<5	52	240	<0.2	16	80	7	1.26	<10	0.31	235	300	52	2	<10	34
103	B-024	<5	16	250	<0.2	14	80	10	1.36	10	0.28	215	340	56	<2	<10	30
104	B-025	<5	9	180	<0.2	<2	100	4	0.90	<10	0.22	180	200	22	<2	<10	20
105	B-026	<5	48	290	<0.2	12	90	14	1.69	<10	0.30	320	420	90	<2	<10	34
106	B-027	<5	15	160	<0.2	8	100	6	1.48	<10	0.30	320	260	20	<2	<10	30
107	B-028	<5	4	290	<0.2	56	390	35	3.25	10	0.28	2230	200	160	14	<10	100
108	B-029	<5	2	370	0.8	66	1150	70	2.58	40	1.34	5630	190	828	38	<10	196
109	B-030	<5	2	370	<0.2	28	180	28	3.07	<10	0.11	940	260	18	2	<10	56
110	B-031	<5	2	270	<0.2	124	420	47	4.39	30	0.07	4300	170	224	18	<10	202
111	B-032	<5	<2	350	<0.2	20	120	40	3.59	30	0.15	1640	240	24	<2	<10	66
112	B-033	<5	2	400	<0.2	30	150	39	3.90	30	0.15	1945	290	38	6	<10	88
113	B-034	<5	<2	300	<0.2	44	180	19	2.17	<10	0.86	1205	270	68	6	<10	80
114	B-035	<5	2	290	<0.2	34	170	23	2.91	40	0.01	980	200	30	2	<10	70
115	B-036	<5	27	290	<0.2	78	440	17	1.79	10	0.36	1075	200	116	10	<10	68
116	B-037	<5	2	170	<0.2	148	260	27	3.50	30	0.09	2420	260	74	6	<10	102
117	B-038	<5	12	130	<0.2	58	450	10	1.12	<10	0.45	675	150	68	2	<10	44
118	B-039	<5	3	120	<0.2	6	320	5	0.61	<10	0.01	415	150	14	2	<10	8
119	B-040	<5	<2	230	<0.2	18	480	15	1.19	<10	0.06	1305	170	80	2	<10	36
120	B-041	<5	37	110	<0.2	30	140	9	1.26	<10	0.04	515	140	98	2	<10	50
121	B-042	<5	15	100	<0.2	20	140	7	1.00	<10	0.04	505	110	66	2	<10	32
122	B-043	<5	2	100	<0.2	12	130	11	0.88	<10	0.03	430	120	116	8	<10	24
123	B-044	<5	2	150	<0.2	42	260	16	1.19	<10	0.08	850	130	98	8	<10	34
124	B-045	<5	3	140	<0.2	30	280	17	1.15	<10	0.04	720	130	190	6	<10	26
125	B-046	<5	150	270	<0.2	28	150	19	1.78	<10	0.25	920	280	114	2	<10	50
126	B-047	<5	12	330	<0.2	8	50	10	1.14	<10	0.33	175	400	24	<2	<10	22
127	B-048	<5	5	470	<0.2	14	70	21	2.67	<10	0.47	405	750	28	2	<10	36
128	B-049	<5	10	340	<0.2	10	60	9	1.57	<10	0.32	245	300	26	<2	<10	26
129	B-050	<5	12	210	<0.2	6	40	29	0.81	<10	0.18	315	510	16	<2	<10	10
130	B-051	<5	46	160	<0.2	2	30	11	0.70	<10	0.15	205	310	14	4	<10	12
131	B-052	<5	6	700	<0.2	18	100	15	1.81	10	0.71	390	830	30	2	<10	42
132	B-053	<5	170	320	<0.2	18	610	28	1.51	<10	0.25	310	700	28	<2	<10	20
133	B-054	<5	4	440	<0.2	10	80	21	1.29	<10	0.33	245	870	50	<2	<10	46
134	B-055	<5	7	280	<0.2	10	60	6	1.09	<10	0.23	230	350	20	<2	<10	28
135	B-056	<5	24	220	<0.2	14	40	4	0.76	<10	0.21	165	220	16	<2	<10	20
136	B-057	<5	4	230	<0.2	<2	20	4	0.68	<10	0.21	80	270	10	<2	<10	18
137	B-058	<5	18	270	<0.2	<2	40	4	0.77	<10	0.24	120	300	16	<2	<10	20
138	B-059	<5	<2	170	<0.2	8	70	6	1.17	<10	0.17	155	200	12	<2	<10	28
139	B-060	<5	6	450	<0.2	6	40	9	1.48	<10	0.42	240	590	26	2	<10	30
140	B-061	<5	<2	190	<0.2	16	100	19	2.85	<10	0.18	650	240	28	4	<10	64
141	B-062	<5	2	220	<0.2	6	140	6	1.39	<10	0.24	350	280	12	<2	<10	28
142	B-063	<5	4	450	<0.2	10	50	9	1.40	<10	0.41	230	590	24	<2	<10	36
143	B-064	<5	4	250	<0.2	<2	40	9	0.87	<10	0.24	185	460	24	<2	<10	18
144	B-065	<5	8	360	<0.2	12	60	10	1.45	<10	0.34	395	700	18	<2	<10	26
145	B-066	<5	7	810	<0.2	8	60	12	1.97	<10	0.81	290	1330	18	<2	<10	48
146	B-067	15	5	430	<0.2	16	50	12	1.62	<10	0.53	255	880	32	<2	<10	74
147	B-068	<5	2	470	<0.2	8	60	8	1.67	<10	0.58	245	600	18	<2	<10	42
148	B-069	<5	3	470	<0.2	20	210	14	2.06	<10	0.55	570	620	50	4	<10	62
149	B-070	<5	4	360	<0.2	16	210	12	1.86	<10	0.43	535	560	52	<2	<10	54
150	B-071	<5	3	620	<0.2	14	200	17	2.45	<10	0.73	680	780	64	<2	<10	84
151	B-072	<5	<2	100	<0.2	20	60	27	1.43	<10	0.01	175	140	12	2	<10	32
152	B-073	<5	<2	140	<0.2	12	70	22	1.44	<10	0.06	370	150	28	<2	<10	46
153	B-074	<5	<2	90	<0.2	8	60	19	1.06	<10	0.03	160	140	12	2	<10	18
154	B-075	<5	<2	100	<0.2	12	540	11	5.15	<10	0.08	1515	210	10	6	<10	12
155	B-076	<5	<2	80	<0.2	4	460	5	2.64	<10	0.01	80	120	6	<2	<10	12
156	B-077	<5	<2	60	<0.2	<2	480	4	2.69	<10	0.02	515	100	2	2	<10	8
157	B-078	<5	<2	50	<0.2	<2	240	3	1.29	<10	<0.01	105	80	2	2	<10	6
158	B-079	<5	<2	90	<0.2	32	50	103	4.08	20	0.01	765	260	44	6	<10	22
159	B-080	<5	<2	50	<0.2	10	60	20	1.16	10	<0.01	245	110	8	2	<10	2
160	B-081	<5	6	250	<0.2	12	200	4	1.15	<10	0.30	530	330	18	<2	<10	28
161	B-082	<5	37	190	<0.2	<2	60	3	0.65	<10	0.23	140	320	8	<2	<10	16
162	B-083	<5	5	370	<0.2	12	130	11	1.86	<10	0.39	550	480	30	2	<10	50
163	B-084	<5	8	200	<0.2	74	200	21	3.98	<10	0.12	1505	210	238	2	<10	150
164	B-085	<5	46	300	<0.2	<2	50	7	1.21	<10	0.29	325	370	20	2	<10	22
165	B-086	<5	4	170	<0.2	4	40	5	1.34	<10	0.15	215	220	16	2	<10	18
166	B-087	<5	4	330	<0.2	8	50	9	1.14	<10	0.35	445	250	26	<2	<10	34
167	B-088	<5	36	340	<0.2	4	70	6	1.09	<10	0.29	285	330	22	<2	<10	24
168	B-089	<5	9	430	<0.2	8	90	8	1.60	<10	0.45	510	370	34	<2	<10	42
169	B-090	<5	<2	120	<0.2	10	210	9	3.58	10	0.03	2000	260	30	4	<10	26
170	B-091	<5	<2	190	<0.2	18	150	7	2.60	10	0.06	2480	240	34	<2	<10	30
171	B-092	5	<2	620	<0.2	30	110	10	3.15	50	0.12	1695	350	80	4	<10	112
172	B-093	<5	<2	370	<0.2	32	120	7	2.81	20	0.10	1320	460	68	2	<10	92
173	B-094	<5	3	280	<0.2	40	240	25	2.65	10	0.03	2430	230	48	2	<10	58
174	B-095	<5	6	250	<0.2	20	110	10	1.95	10	0.20	620	220	54	2	<10	58
175	B-096	5	3	210	<0.2	40	320	36	3.17	20	0.13	1975	420	96	8	<10	60
176	B-097	<5	3	180	<0.2	32	250	26	2.51	20	0.11	2150	300	146	8	<10	52
177	B-098	<5	2	150	<0.2	14	130	13	1.82	<10	0.09	1825	140	30	6	<10	20
178	B-099	<5	<2	160	<0.2	30	340	38	2.75	30	0.10	1850	270	78	8	<10	42
179	B-100	<5	<2	150	<0.2	22	220	15	2.46	10	0.07	1935	270	86	6	<10	40
180	B-101	<5	5	230	<0.2	20	390	15	1.88	<10	0.20	860	270	100	<2	<10	114

Appendix 4 Geochemical Data of Stream Sediment

	SAMPLE DESCRIP	Au ppb FA+AA	Sn ppm	F ppm	Ag ppm	As ppm	Ba ppm	Cu ppm	Fe %	Hg ppb	Mg %	Mn ppm	P ppm	Pb ppm	Sb ppm	W ppm	Zn ppm
181	B-102	<5	<2	230	<0.2	20	400	16	1.91	<10	0.20	850	300	98	<2	<10	112
182	B-103	<5	3	240	<0.2	18	380	11	1.48	<10	0.18	570	300	78	<2	<10	96
183	B-104	<5	3	360	<0.2	36	830	41	4.47	10	0.31	2400	310	268	2	<10	478
184	B-105	<5	5	200	<0.2	14	200	8	1.20	<10	0.15	485	260	60	<2	<10	56
185	B-106	<5	3	210	<0.2	8	200	5	1.00	<10	0.18	330	340	28	<2	<10	28
186	B-107	<5	140	310	<0.2	26	470	15	1.62	<10	0.28	325	390	272	<2	10	132
187	B-108	<5	<2	260	<0.2	34	120	19	1.59	<10	0.17	765	380	16	<2	<10	32
188	B-109	<5	<2	320	<0.2	60	360	30	3.85	<10	0.24	1315	270	118	2	<10	276
189	B-110	<5	3	300	<0.2	66	480	35	4.07	<10	0.24	1215	240	200	2	<10	364
190	B-111	<5	6	260	<0.2	82	230	21	3.19	<10	0.09	725	250	94	2	<10	294
191	B-112	<5	<2	50	<0.2	78	370	23	3.86	<10	0.17	1170	210	98	2	<10	570
192	B-113	<5	<2	210	<0.2	22	120	18	2.72	<10	0.06	1875	250	16	<2	<10	40
193	B-114	<5	<2	380	<0.2	60	350	43	5.10	<10	0.39	2430	340	148	2	<10	254
194	B-115	<5	<2	430	<0.2	54	570	53	5.83	<10	0.49	2340	360	150	4	<10	318
195	B-116	<5	<2	180	<0.2	26	210	14	2.38	10	0.23	805	170	24	<2	<10	92
196	B-117	<5	<2	210	<0.2	58	280	25	3.80	<10	0.30	2050	200	62	6	<10	156
197	B-118	<5	<2	230	<0.2	44	260	25	3.38	<10	0.30	1460	230	38	2	<10	130
198	B-119	<5	<2	270	<0.2	44	360	38	4.06	<10	0.33	1605	260	66	4	<10	166
199	B-120	<5	<2	310	<0.2	46	290	43	4.49	<10	0.29	2340	390	60	6	<10	256
200	B-121	<5	<2	290	<0.2	40	290	36	4.02	<10	0.35	1490	270	62	4	<10	186
201	B-122	<5	4	290	<0.2	66	290	43	4.88	<10	0.43	1820	230	90	2	<10	202
202	B-123	<5	7	320	<0.2	86	360	48	5.71	<10	0.45	2430	230	94	4	<10	202
203	B-124	<5	5	290	<0.2	86	630	40	5.96	10	0.43	2650	270	140	2	<10	322
204	B-125	<5	7	300	<0.2	102	270	47	5.85	10	0.35	2720	230	80	2	<10	168
205	B-126	<5	10	410	<0.2	10	90	6	1.39	<10	0.42	385	470	20	<2	<10	26
206	B-127	<5	2	620	<0.2	20	80	13	2.11	<10	0.72	495	760	48	<2	<10	86
207	B-128	<5	43	150	<0.2	8	70	3	0.65	<10	0.13	480	190	12	<2	<10	16
208	B-129	<5	5	440	<0.2	14	80	9	1.75	<10	0.54	350	1210	22	<2	<10	28
209	B-130	<5	7	530	<0.2	50	110	15	2.34	<10	0.55	755	690	60	<2	<10	84
210	B-131	<5	4	310	<0.2	232	280	55	7.69	<10	0.09	2210	400	102	8	<10	178
211	B-132	<5	120	290	<0.2	184	310	46	4.66	<10	0.18	4190	300	100	2	<10	176
212	B-133	<5	3	340	<0.2	120	410	59	3.75	<10	0.47	2560	570	164	4	<10	292
213	B-134	<5	2	180	<0.2	26	130	15	1.95	<10	0.18	585	200	48	<2	<10	50
214	B-135	<5	8	290	<0.2	32	200	32	2.23	<10	0.79	1215	230	102	2	<10	126
215	B-136	<5	4	380	<0.2	36	150	24	2.83	<10	0.88	1000	210	46	2	<10	102
216	B-137	<5	39	170	<0.2	12	150	11	0.92	<10	0.12	320	200	48	<2	<10	34
217	B-138	<5	160	180	<0.2	14	170	13	1.01	<10	0.12	375	230	68	<2	10	36
218	B-139	<5	3	100	<0.2	18	210	11	1.06	<10	0.05	245	190	14	<2	<10	16
219	B-140	<5	3	260	<0.2	16	120	25	2.24	<10	0.16	980	190	10	<2	<10	30
220	C-001	<5	19	270	<0.2	36	80	13	2.04	<10	0.58	355	1080	62	<2	<10	56
221	C-002	<5	330	650	<0.2	32	90	34	1.99	<10	0.61	285	2090	70	<2	70	62
222	C-003	<5	13	400	<0.2	26	80	12	2.12	<10	0.61	280	980	48	<2	<10	68
223	C-004	<5	10	780	<0.2	26	90	16	2.10	<10	0.80	375	1650	50	<2	<10	76
224	C-005	<5	11	750	<0.2	38	90	15	1.79	<10	0.55	335	1630	54	<2	<10	58
225	C-006	<5	33	300	<0.2	24	70	8	1.26	<10	0.23	280	600	30	<2	<10	44
226	C-007	<5	38	700	<0.2	38	120	8	2.04	<10	0.50	295	1340	28	<2	<10	46
227	C-008	<5	175	720	<0.2	104	120	14	2.28	<10	0.57	290	1130	60	<2	<10	82
228	C-009	<5	4	120	<0.2	20	90	5	1.31	<10	0.27	395	290	12	2	<10	28
229	C-010	<5	140	260	<0.2	14	60	7	1.19	<10	0.24	155	300	22	<2	<10	18
230	C-011	<5	150	280	<0.2	28	110	12	1.74	<10	0.35	265	520	44	<2	<10	30
231	C-012	<5	93	220	<0.2	56	130	17	2.14	30	0.25	385	460	132	<2	10	36
232	C-013	<5	350	330	<0.2	32	90	18	1.44	10	0.28	245	780	52	<2	20	30
233	C-014	<5	5	840	<0.2	48	120	19	2.50	<10	0.62	440	1440	64	2	<10	108
234	C-015	<5	26	910	<0.2	50	100	28	2.29	<10	0.73	345	2020	90	<2	<10	146
235	C-016	<5	490	410	<0.2	36	80	12	1.38	<10	0.39	270	610	42	<2	<10	40
236	C-017	<5	81	170	<0.2	14	50	7	0.85	<10	0.27	120	580	12	<2	10	20
237	C-018	<5	170	490	<0.2	28	100	10	1.56	<10	0.52	290	460	38	<2	<10	48
238	C-019	<5	69	50	<0.2	6	70	4	0.73	<10	0.10	165	290	24	<2	<10	14
239	C-020	<5	18	80	<0.2	6	110	4	0.65	<10	0.07	145	270	12	2	<10	8
240	C-021	<5	5	130	<0.2	24	130	13	1.57	<10	0.07	585	260	48	2	<10	28
241	C-022	<5	5	100	<0.2	<2	70	4	0.68	10	0.08	215	220	24	2	<10	10
242	C-023	<5	4	90	<0.2	<2	60	4	0.56	<10	0.06	95	250	26	<2	<10	8
243	C-024	<5	50	190	<0.2	10	90	8	1.09	<10	0.18	120	380	82	<2	<10	22
244	C-025	<5	<2	310	<0.2	2	110	8	1.46	<10	0.47	160	340	12	2	<10	28
245	C-026	<5	<2	110	<0.2	18	340	8	0.94	10	0.02	435	130	30	2	<10	16
246	C-027	<5	<2	70	<0.2	16	250	6	0.80	<10	0.01	200	140	26	2	<10	14
247	C-028	<5	<2	110	<0.2	24	1210	10	0.77	10	0.01	455	130	12	<2	<10	20
248	C-029	<5	18	230	<0.2	30	2720	26	2.15	60	0.10	1265	190	16	2	<10	32
249	C-030	<5	<2	230	<0.2	24	2520	25	2.14	10	0.11	985	200	24	2	<10	36
250	C-031	<5	<2	360	<0.2	90	810	31	2.81	20	0.10	1090	230	72	4	<10	56
251	C-032	<5	11	220	<0.2	106	690	22	2.67	30	0.04	825	120	44	6	<10	58
252	C-033	<5	20	260	<0.2	12	90	9	1.23	10	0.25	325	270	38	<2	<10	28
253	C-034	<5	<2	140	<0.2	26	220	10	1.21	<10	0.20	595	140	140	2	<10	38
254	C-035	<5	49	250	<0.2	78	130	21	2.09	<10	0.16	785	220	48	6	<10	72
255	C-036	<5	4	450	<0.2	104	340	46	4.32	10	0.21	2370	330	162	8	<10	216
256	C-037	<5	<2	370	<0.2	26	100	37	2.71	<10	0.20	1510	320	16	6	<10	38
257	C-038	<5	<2	350	<0.2	14	80	24	1.98	10	0.15	775	250	22	4	<10	60
258	C-039	<5	<2	150	0.2	6	60	2	0.34	<10	0.03	160	30	14	8	<10	16
259	C-040	<5	<2	370	<0.2	28	140	16	2.79	10	0.05	1130	110	26	<2	<10	30
260	C-041	<5	2	280	<0.2	12	370	15	1.14	<10	0.31	215	730	36	<2	<10	26
261	C-042	<5	<2	600	<0.2	20	80	36	1.93	<10	0.55	345	1340	52	2	<10	50
262	C-043	<5	220	530	<0.2	18	80	24	2.02	<10	0.55	370	1210	32	2	<10	48
263	C-044	<5	11	710	<0.2	16	80	46	1.94	<10	0.74	345	1240	26	<2	<10	46
264	C-045	<5	55	370	<0.2	28	200	16	2.43	<10	0.35	405	850	38	<2	<10	50
265	C-046	<5	190	500	<0.2	32	70	21	1.88	<10	0.52	275	1250	30	<2	<10	40
266	C-047	<5	860	430	<0.2	50	70	20	1.74	<10	0.45	425	1110	36	<2	60	30
267	C-048	<5	330	550	<0.2	64	80	21	1.96	<10	0.59	335	1100	40	<2	<10	50
268	C-049	<5	6	580	<0.2	16	60	12	2.05	<10	0.63	260	990	34	<2	<10	42
269	C-050	<5	26	660	<0.2	18	90	9	2.08	<10	0.72	355	340	26	<2	<10	44
270	C-051	<5	10	500	<0.2	22	60	11	1.77	<10	0.62	470	670	24	<2	<10	52

Appendix 4 Geochemical Data of Stream Sediment

	SAMPLE DESCRIP	Au ppb FA+AA	Sn ppm	F ppm	Ag ppm	As ppm	Ba ppm	Cu ppm	Fe %	Hg ppb	Mg %	Mn ppm	P ppm	Pb ppm	Sb ppm	W ppm	Zn ppm
271	C-052	<5	4	500	<0.2	22	70	9	1.82	<10	0.56	380	480	30	<2	<10	42
272	C-053	<5	2	500	<0.2	26	150	14	2.86	<10	0.83	765	1210	22	<2	<10	42
273	C-054	<5	7	320	<0.2	30	70	15	2.60	<10	0.37	530	560	26	<2	<10	36
274	C-055	<5	5	390	<0.2	30	210	18	2.62	<10	0.53	555	890	32	<2	<10	34
275	C-056	<5	5	490	<0.2	22	60	23	2.56	<10	0.57	330	950	30	<2	<10	42
276	C-057	<5	390	450	<0.2	34	310	15	2.42	<10	0.64	445	1130	34	<2	<10	38
277	C-058	<5	<2	150	<0.2	16	80	38	1.71	<10	0.18	525	140	14	2	<10	16
278	C-059	<5	<2	120	<0.2	36	40	150	1.74	<10	0.15	440	140	22	2	<10	24
279	C-060	<5	<2	140	<0.2	10	70	33	1.63	<10	0.18	395	130	14	<2	<10	14
280	C-061	<5	<2	130	<0.2	8	30	45	1.18	<10	0.12	225	150	10	<2	<10	20
281	C-062	<5	<2	160	<0.2	12	100	42	1.85	<10	0.22	550	150	16	<2	<10	14
282	C-063	<5	<2	170	<0.2	10	50	19	1.37	<10	0.19	285	120	12	<2	<10	20
283	C-064	<5	2	120	<0.2	12	40	15	1.00	<10	0.17	250	90	14	<2	<10	16
284	C-065	<5	<2	140	<0.2	18	60	17	1.32	<10	0.16	315	110	12	<2	<10	20
285	C-066	<5	<2	100	<0.2	10	70	8	0.99	<10	0.13	195	110	10	<2	<10	14
286	C-067	10	9	160	<0.2	22	90	16	1.93	<10	0.25	495	170	24	<2	<10	24
287	C-068	<5	4	220	<0.2	12	80	4	0.96	<10	0.25	305	190	18	<2	<10	24
288	C-069	<5	<2	100	<0.2	2	50	1	0.39	<10	0.07	230	130	10	<2	<10	6
289	C-070	<5	2	170	<0.2	16	100	3	1.12	<10	0.16	415	180	16	<2	<10	22
290	C-071	<5	5	300	<0.2	16	100	3	1.07	<10	0.30	295	220	20	<2	<10	18
291	C-072	<5	9	120	<0.2	24	80	6	1.23	10	0.12	315	120	30	<2	<10	58
292	C-073	<5	9	130	<0.2	30	130	8	1.54	<10	0.19	385	150	28	<2	<10	88
293	C-074	<5	9	120	<0.2	100	120	10	1.91	10	0.14	695	140	24	<2	<10	62
294	C-075	<5	5	150	<0.2	26	120	16	4.09	40	0.12	765	1100	68	<2	<10	64
295	C-076	<5	<2	110	<0.2	8	90	4	1.29	<10	0.10	340	130	12	<2	<10	32
296	C-077	<5	<2	310	<0.2	46	420	34	3.22	<10	0.37	1165	330	138	2	<10	244
297	C-078	<5	<2	310	<0.2	56	690	39	3.89	<10	0.26	1720	300	230	2	<10	302
298	C-079	<5	<2	330	<0.2	60	710	36	3.65	10	0.26	1395	300	168	<2	<10	344
299	C-080	<5	<2	260	<0.2	24	50	19	1.39	<10	0.22	300	240	30	<2	<10	80
300	C-081	<5	<2	400	<0.2	40	420	52	4.42	<10	0.52	2600	500	214	2	<10	432
301	C-082	<5	<2	300	<0.2	38	300	29	2.32	<10	0.39	1460	420	126	2	<10	190
302	C-083	<5	<2	360	<0.2	40	260	39	3.04	<10	0.46	1785	420	120	2	<10	208
303	C-084	<5	<2	350	<0.2	50	260	34	2.85	<10	0.40	2250	240	266	4	<10	258
304	C-085	<5	<2	480	<0.2	54	150	58	5.31	<10	0.45	1885	370	88	2	<10	244
305	C-086	<5	<2	440	<0.2	60	500	47	4.83	<10	0.43	1880	410	142	2	<10	360
306	C-087	<5	<2	380	<0.2	50	540	42	3.78	<10	0.35	1870	300	190	2	<10	364
307	C-088	<5	<2	570	<0.2	36	190	75	4.45	<10	0.78	2810	360	56	<2	<10	140
308	C-089	<5	<2	500	<0.2	48	190	63	4.67	<10	0.42	2380	330	42	<2	<10	98
309	C-090	5	<2	410	<0.2	56	220	61	4.40	<10	0.56	2060	340	90	<2	<10	204
310	C-091	<5	<2	400	<0.2	64	270	71	4.90	<10	0.61	2470	380	122	2	<10	250
311	C-092	<5	8	340	<0.2	42	1070	33	3.20	<10	0.37	1910	220	174	2	<10	274
312	C-093	<5	<2	320	<0.2	56	340	45	4.47	<10	0.41	1825	300	92	6	<10	222
313	C-094	<5	<2	440	<0.2	30	1000	39	3.43	<10	0.50	1500	230	204	2	<10	326
314	C-095	<5	<2	300	<0.2	18	110	26	2.65	<10	0.25	840	190	40	<2	<10	132
315	C-096	<5	<2	360	<0.2	30	210	41	3.43	<10	0.46	2580	190	204	2	<10	390
316	C-097	<5	<2	280	<0.2	22	90	20	1.80	<10	0.19	330	190	10	<2	<10	12
317	C-098	<5	<2	290	<0.2	10	80	16	1.68	<10	0.22	445	160	12	<2	<10	16
318	C-099	<5	<2	300	<0.2	8	40	11	1.65	<10	0.17	500	240	4	<2	<10	10
319	C-100	<5	<2	170	<0.2	8	40	6	1.09	<10	0.19	205	270	6	<2	<10	10
320	C-101	<5	<2	210	<0.2	18	150	13	1.41	<10	0.28	470	150	14	<2	<10	10
321	C-102	<5	<2	280	<0.2	46	340	31	2.69	<10	0.55	1080	210	70	<2	<10	34
322	C-103	<5	<2	290	<0.2	10	310	1	2.07	<10	0.52	885	280	14	<2	<10	12
323	C-104	<5	<2	230	<0.2	16	570	9	1.61	<10	0.06	375	160	10	<2	<10	20
324	C-105	45	<2	240	0.2	84	810	38	6.01	50	0.35	3780	290	556	10	<10	174
325	C-106	<5	4	170	<0.2	10	70	6	1.28	<10	0.16	390	140	14	<2	<10	22
326	C-107	<5	7	220	<0.2	4	90	5	0.77	<10	0.19	210	280	22	<2	10	18
327	C-108	<5	2	240	<0.2	32	70	10	1.61	<10	0.25	495	280	18	<2	<10	44
328	C-109	<5	3	250	<0.2	36	90	14	1.68	<10	0.14	880	220	36	<2	<10	30
329	C-110	<5	21	430	<0.2	30	110	3	1.45	<10	0.43	315	170	24	<2	<10	26
330	C-111	<5	11	370	<0.2	34	90	5	1.71	10	0.30	410	160	44	<2	<10	26
331	D-001	<5	11	300	<0.2	20	80	13	1.45	<10	0.33	265	420	30	<2	10	28
332	D-002	<5	5	1030	<0.2	34	130	16	2.63	<10	1.01	540	700	46	<2	<10	74
333	D-003	<5	3	420	<0.2	8	100	6	1.37	<10	0.48	275	270	22	<2	<10	32
334	D-004	<5	5	370	<0.2	26	80	11	1.46	<10	0.35	270	440	22	<2	<10	30
335	D-005	<5	6	520	<0.2	20	100	8	1.77	<10	0.68	335	540	18	<2	<10	42
336	D-006	<5	8	460	<0.2	24	90	12	1.71	<10	0.46	305	540	30	<2	10	36
337	D-007	<5	9	390	<0.2	18	80	8	1.48	<10	0.41	305	530	24	<2	<10	34
338	D-008	<5	105	940	<0.2	68	110	14	2.63	<10	0.89	535	1320	76	<2	<10	98
339	D-009	<5	6	470	<0.2	20	80	9	1.64	<10	0.46	325	680	30	<2	<10	38
340	D-010	<5	59	260	<0.2	80	90	24	1.82	<10	0.30	340	670	58	2	30	30
341	D-011	<5	53	280	<0.2	28	70	12	1.48	<10	0.36	270	520	32	<2	<10	32
342	D-012	<5	15	800	<0.2	58	110	14	2.61	<10	1.03	475	1560	92	4	<10	168
343	D-013	<5	15	600	<0.2	64	100	13	2.04	<10	0.78	405	1070	102	<2	<10	136
344	D-014	<5	3	950	<0.2	48	110	13	2.45	<10	0.93	510	1410	70	<2	<10	128
345	D-015	<5	25	430	<0.2	20	50	5	1.36	<10	0.54	315	520	16	<2	<10	42
346	D-016	<5	10	310	<0.2	34	80	13	1.50	<10	0.34	245	810	32	2	<10	30
347	D-017	<5	18	400	<0.2	12	100	9	1.60	10	0.44	290	240	28	<2	<10	34
348	D-018	<5	26	520	<0.2	38	150	17	2.37	<10	0.63	400	1030	86	<2	<10	70
349	D-019	<5	11	360	<0.2	20	90	11	1.51	<10	0.36	255	280	36	2	<10	30
350	D-020	<5	7	410	<0.2	14	100	9	1.65	<10	0.44	235	260	26	<2	<10	34
351	D-021	<5	4	180	<0.2	14	250	7	1.44	10	0.17	600	230	56	<2	<10	20
352	D-022	<5	3	200	<0.2	12	120	8	1.46	<10	0.18	245	240	38	<2	<10	24
353	D-023	<5	<2	150	<0.2	24	420	6	0.60	<10	0.18	165	270	<2	<2	<10	18
354	D-024	<5	<2	180	<0.2	36	520	19	1.66	10	0.12	830	120	20	<2	<10	36
355	D-025	<5	<2	250	<0.2	30	1390	27	2.46	10	0.15	1170	170	20	2	<10	40
356	D-026	<5	<2	250	<0.2	8	210	4	1.57	<10	0.51	835	160	10	2	<10	22
357	D-027	<5	<2	290	<0.2	34	2340	24	2.11	<10	0.17	1745	210	20	<2	<10	36
358	D-028	<5	<2	390	<0.2	24	3180	37	2.46	10	0.08	1260	250	20	<2	<10	42
359	D-029	<5	<2	310	<0.2	16	2460	30	2.85	20	0.21	1170	100	16	2	<10	56
360	D-030	<5	4	140	<0.2	2	40	3	0.67	<10	0.07	170	130	22	<2	<10	16

Appendix 4 Geochemical Data of Stream Sediment

	SAMPLE DESCRIP	Au ppb FA+AA	Sn ppm	F ppm	Ag ppm	As ppm	Ba ppm	Cu ppm	Fe %	Hg ppb	Mg %	Mn ppm	P ppm	Pb ppm	Sb ppm	W ppm	Zn ppm
361	D-031	<5	5	200	<0.2	8	80	4	0.87	10	0.13	440	280	32	<2	<10	26
362	D-032	<5	25	100	<0.2	2	40	3	0.54	<10	0.05	185	120	22	<2	<10	10
363	D-033	10	6	100	<0.2	4	50	2	0.55	<10	0.06	195	100	26	<2	<10	12
364	D-034	<5	2	110	<0.2	<2	40	7	0.79	<10	0.05	135	170	26	<2	<10	8
365	D-035	<5	8	90	<0.2	2	50	3	0.57	930	0.07	165	110	30	<2	<10	14
366	D-036	<5	5	250	<0.2	14	90	8	1.32	<10	0.26	335	230	44	<2	<10	30
367	D-037	<5	34	150	<0.2	78	270	22	1.65	<10	0.21	590	310	2340	6	<10	152
368	D-038	<5	25	150	<0.2	70	260	28	1.49	<10	0.15	525	290	2260	4	<10	112
369	D-039	<5	10	170	<0.2	60	350	23	1.69	<10	0.17	625	210	832	6	<10	116
370	D-040	<5	3	150	<0.2	22	230	9	1.32	<10	0.26	740	150	114	<2	<10	42
371	D-041	<5	2	140	<0.2	28	300	9	1.40	<10	0.24	710	120	128	<2	<10	42
372	D-042	<5	3	140	<0.2	26	250	8	1.32	<10	0.23	670	120	108	2	<10	40
373	D-043	<5	3	210	<0.2	10	120	5	1.00	<10	0.18	320	310	26	<2	<10	22
374	D-044	5	10	310	<0.2	12	150	12	1.47	<10	0.30	405	820	56	<2	<10	48
375	D-045	<5	9	540	<0.2	8	120	10	1.50	<10	0.49	275	1030	28	<2	<10	34
376	D-046	<5	30	490	<0.2	10	160	12	1.63	<10	0.48	415	900	44	<2	<10	48
377	D-047	<5	4	790	<0.2	14	110	16	2.75	<10	0.96	375	1650	46	<2	<10	104
378	D-048	<5	4	700	<0.2	16	150	21	2.33	<10	0.68	330	1420	58	<2	<10	58
379	D-049	<5	17	630	<0.2	36	210	13	1.95	<10	0.63	415	1050	58	<2	<10	94
380	D-050	<5	4	610	<0.2	16	90	14	1.90	<10	0.57	210	770	28	<2	<10	42
381	D-051	<5	6	580	<0.2	26	240	21	2.04	<10	0.52	695	2240	128	<2	<10	66
382	D-052	<5	3	750	<0.2	28	90	15	2.19	<10	0.81	375	1120	38	<2	<10	48
383	D-053	<5	2	530	<0.2	10	140	16	1.59	<10	0.49	365	1280	52	<2	<10	96
384	D-054	<5	8	340	<0.2	6	90	7	1.24	<10	0.33	230	640	26	<2	<10	48
385	D-055	<5	4	500	<0.2	8	150	14	1.58	<10	0.53	290	830	40	<2	<10	80
386	D-056	<5	3	280	<0.2	4	70	6	1.16	<10	0.32	200	370	22	<2	<10	60
387	D-057	<5	<2	370	<0.2	16	150	7	1.85	<10	0.43	450	530	26	<2	<10	34
388	D-058	<5	2	240	<0.2	14	100	4	0.92	<10	0.15	230	280	20	<2	<10	26
389	D-059	<5	5	340	<0.2	24	210	9	1.45	<10	0.28	440	300	44	<2	<10	62
390	D-060	<5	6	170	<0.2	52	140	12	2.55	<10	0.05	1475	130	102	<2	<10	80
391	D-061	<5	<2	130	<0.2	20	380	17	2.06	<10	0.11	160	180	14	<2	<10	32
392	D-062	<5	<2	160	<0.2	18	70	14	1.35	<10	0.24	450	120	12	<2	<10	20
393	D-063	<5	12	240	<0.2	16	130	15	2.44	<10	0.33	990	220	50	<2	<10	62
394	D-064	<5	<2	100	<0.2	22	80	12	1.30	<10	0.07	385	130	18	<2	<10	20
395	D-065	<5	<2	90	<0.2	8	140	6	0.87	<10	0.03	375	120	12	<2	<10	16
396	D-066	<5	26	540	<0.2	44	120	14	2.42	<10	0.60	1775	360	90	2	<10	110
397	D-067	<5	5	300	<0.2	12	60	6	1.31	<10	0.32	245	250	30	<2	<10	26
398	D-068	<5	12	450	<0.2	24	120	8	1.50	<10	0.45	395	550	38	<2	<10	52
399	D-069	<5	10	360	<0.2	20	110	6	1.27	<10	0.35	550	650	44	<2	<10	68
400	D-070	<5	9	430	<0.2	24	110	8	1.42	<10	0.43	370	540	32	<2	<10	48
401	D-071	<5	6	630	<0.2	136	170	32	2.29	10	0.58	1000	1270	128	8	<10	146
402	D-072	<5	63	430	<0.2	8	100	4	1.24	<10	0.39	265	330	22	<2	<10	32
403	D-073	<5	5	580	<0.2	22	120	8	1.71	<10	0.56	390	900	24	<2	<10	36
404	D-074	<5	4	350	<0.2	6	110	5	0.90	<10	0.33	475	250	26	<2	<10	18
405	D-075	<5	2	430	<0.2	10	130	5	1.35	<10	0.41	300	230	26	<2	<10	38
406	D-076	<5	<2	250	<0.2	42	200	35	3.05	<10	0.35	1265	270	48	2	<10	136
407	D-077	<5	<2	160	<0.2	14	190	9	1.48	<10	0.04	720	130	14	<2	<10	28
408	D-078	<5	<2	250	<0.2	36	110	26	2.75	<10	0.19	1080	280	22	2	<10	74
409	D-079	<5	<2	140	<0.2	10	70	9	1.21	10	0.04	360	130	8	<2	<10	18
410	D-080	<5	<2	340	<0.2	70	250	59	3.94	10	0.59	1945	400	70	2	<10	214
411	D-081	<5	<2	370	<0.2	80	260	62	4.19	<10	0.63	1955	420	66	2	<10	214
412	D-082	<5	<2	260	<0.2	50	200	24	2.26	<10	0.04	1690	270	48	2	<10	86
413	D-083	<5	<2	350	<0.2	70	240	55	3.89	<10	0.57	1845	380	66	2	<10	198
414	D-084	<5	<2	320	<0.2	44	180	33	2.86	<10	0.33	1085	280	34	<2	<10	118
415	D-085	<5	<2	870	<0.2	34	150	11	1.73	<10	0.88	445	1100	66	<2	<10	86
416	D-086	<5	<2	600	<0.2	8	120	9	1.49	<10	0.56	440	1180	54	<2	<10	64
417	D-087	<5	37	830	<0.2	44	180	19	1.92	<10	0.69	805	1710	206	<2	10	140
418	D-088	<5	17	840	<0.2	46	150	14	1.89	<10	0.86	565	1000	94	<2	<10	120
419	D-089	<5	44	660	<0.2	58	120	16	1.85	<10	0.62	640	950	92	<2	<10	102
420	D-090	<5	38	370	<0.2	26	80	8	1.28	<10	0.32	370	530	36	<2	<10	42
421	D-091	<5	17	240	<0.2	84	170	26	3.41	<10	0.24	1015	250	58	6	<10	130
422	D-092	<5	45	400	<0.2	32	110	9	1.38	<10	0.39	460	510	36	<2	<10	48
423	D-093	<5	<2	460	<0.2	36	150	52	4.86	<10	0.46	1985	410	134	2	<10	290
424	D-094	<5	<2	440	<0.2	58	490	55	5.24	<10	0.50	2570	450	170	6	<10	356
425	D-095	<5	<2	430	<0.2	52	510	55	4.92	<10	0.48	2370	430	148	6	<10	316
426	D-096	<5	<2	380	<0.2	52	270	47	4.43	<10	0.38	2030	410	134	<2	<10	242
427	D-097	<5	<2	350	<0.2	38	490	36	3.72	<10	0.34	985	210	108	4	<10	244
428	D-098	<5	<2	340	<0.2	48	290	35	3.70	<10	0.30	1130	350	118	4	<10	220
429	D-099	<5	<2	300	<0.2	14	120	25	2.95	<10	0.48	1030	280	62	<2	<10	214
430	D-100	<5	<2	430	<0.2	42	110	65	5.37	<10	0.50	1535	390	72	6	<10	244
431	D-101	<5	<2	430	<0.2	58	70	62	5.70	<10	0.33	1250	480	122	8	<10	448
432	D-102	<5	<2	510	<0.2	84	150	52	5.26	10	0.28	1540	400	164	2	<10	464
433	D-103	<5	<2	280	<0.2	18	50	14	1.58	<10	0.33	265	310	10	2	<10	16
434	D-104	<5	<2	310	<0.2	16	50	15	1.68	<10	0.38	295	280	8	<2	<10	18
435	D-105	<5	<2	250	<0.2	16	40	13	1.44	<10	0.29	250	280	10	<2	<10	16
436	D-106	<5	<2	300	<0.2	24	180	23	2.24	<10	0.29	430	250	14	<2	<10	16
437	D-107	<5	9	310	<0.2	20	60	15	1.61	<10	0.31	315	310	10	<2	<10	14
438	D-108	<5	11	80	<0.2	4	90	5	0.92	<10	0.06	275	80	12	<2	<10	10
439	D-109	<5	10	70	<0.2	4	80	5	0.90	<10	0.06	340	90	14	<2	<10	10
440	D-110	<5	10	70	<0.2	8	100	6	0.89	<10	0.05	275	80	10	<2	<10	10
441	D-111	<5	12	420	<0.2	18	140	11	1.72	<10	0.47	280	550	46	<2	<10	52
442	D-112	<5	9	330	<0.2	18	120	9	1.44	<10	0.34	295	410	34	<2	<10	40
443	D-113	<5	<2	280	<0.2	20	210	32	2.87	<10	0.30	1295	270	34	<2	<10	52
444	D-114	<5	<2	290	<0.2	40	250	34	3.06	<10	0.34	1400	270	34	<2	<10	54
445	D-115	<5	<2	450	<0.2	30	210	49	4.81	<10	0.40	1615	410	56	2	<10	74
446	D-116	<5	160	100	<0.2	8	40	3	0.66	<10	0.06	45	90	50	<2	<10	8
447	D-117	<5	25	510	<0.2	20	130	11	2.26	<10	0.55	310	190	70	<2	<10	46
448	D-118	<5	20	340	<0.2	48	110	5	1.41	<10	0.43	460	200	26	<2	<10	24
449	D-119	<5	38	180	<0.2	28	100	4	1.02	<10	0.19	280	170	42	<2	<10	20
450	D-120	<5	61	210	<0.2	6	140	3	0.95	<10	0.24	545	190	18	<2	<10	14

Appendix 4 Geochemical Data of Stream Sediment

	SAMPLE DESCRIP	Au ppb FA+AA	Sn ppm	F ppm	Ag ppm	As ppm	Ba ppm	Cu ppm	Fe %	Hg ppb	Mg %	Mn ppm	P ppm	Pb ppm	Sb ppm	W ppm	Zn ppm
451	D-121	<5	<2	480	0.2	116	2070	48	3.87	160	0.04	7290	350	238	10	<10	172
452	D-122	<5	<2	300	0.2	160	1090	62	4.75	40	0.28	2220	210	146	6	<10	186
453	D-123	<5	<2	570	<0.2	18	60	9	1.80	30	0.07	535	340	40	2	<10	102
454	D-124	<5	<2	910	<0.2	20	100	12	2.19	110	0.05	895	160	78	2	<10	188
455	D-125	<5	<2	600	<0.2	10	40	8	1.70	<10	0.03	305	230	20	<2	<10	48
456	D-126	<5	<2	670	<0.2	8	60	11	2.12	30	0.05	700	250	22	<2	<10	48
457	D-127	<5	<2	680	<0.2	10	40	10	2.33	30	0.05	740	170	34	<2	<10	70
458	E-001	<5	2	350	<0.2	32	270	28	2.72	<10	0.08	2150	360	20	<2	<10	38
459	E-002	<5	2	410	<0.2	204	210	32	3.86	<10	0.12	1135	490	42	2	<10	64
460	E-003	<5	42	410	<0.2	444	260	38	4.42	<10	0.66	1945	450	112	4	<10	126
461	E-004	<5	17	100	<0.2	40	110	9	1.65	<10	0.43	330	590	52	2	<10	40
462	E-005	<5	33	420	<0.2	28	110	4	0.63	<10	0.04	280	90	42	<2	<10	10
463	E-006	<5	34	350	<0.2	44	100	10	1.47	<10	0.33	320	650	96	<2	<10	36
464	E-007	<5	12	420	<0.2	48	130	12	1.83	<10	0.50	390	530	58	<2	<10	48
465	E-008	<5	4	150	<0.2	20	120	6	0.69	<10	0.12	200	180	62	<2	<10	24
466	E-009	<5	3	100	<0.2	24	250	8	0.72	<10	0.03	225	190	46	<2	<10	12
467	E-010	<5	3	90	<0.2	16	100	5	0.58	<10	0.02	125	140	16	<2	<10	40
468	E-011	<5	13	550	<0.2	32	120	8	1.63	<10	0.49	340	210	36	<2	<10	50
469	E-012	<5	46	400	<0.2	28	70	5	1.30	<10	0.48	285	620	26	<2	<10	34
470	E-013	<5	10	430	<0.2	26	120	8	1.59	<10	0.46	330	280	34	2	<10	50
471	E-014	<5	47	300	<0.2	16	110	9	1.15	<10	0.31	345	590	30	<2	<10	46
472	E-015	<5	55	460	<0.2	20	80	8	1.58	<10	0.46	230	630	24	<2	<10	62
473	E-016	<5	23	320	<0.2	20	60	53	1.10	<10	0.29	420	540	40	8	<10	36
474	E-017	<5	18	450	<0.2	30	140	14	1.68	<10	0.49	425	440	44	2	<10	60
475	E-018	<5	27	380	<0.2	30	100	11	1.55	<10	0.38	265	740	38	2	<10	38
476	E-019	<5	18	250	<0.2	18	100	11	1.51	<10	0.26	285	460	36	2	<10	32
477	E-020	<5	20	260	<0.2	20	120	8	1.24	<10	0.27	240	380	34	<2	<10	36
478	E-021	<5	59	280	<0.2	36	100	13	1.95	30	0.22	335	600	70	4	<10	40
479	E-022	<5	90	360	<0.2	36	140	14	1.94	<10	0.40	350	690	50	2	<10	42
480	E-023	<5	4	200	<0.2	20	120	9	1.53	<10	0.21	210	370	44	<2	<10	34
481	E-024	<5	11	240	<0.2	24	120	8	1.57	<10	0.24	330	470	52	<2	<10	48
482	E-025	<5	29	300	<0.2	32	100	10	1.54	<10	0.32	270	580	46	<2	<10	38
483	E-026	<5	9	260	<0.2	16	70	8	1.19	<10	0.25	235	530	36	<2	<10	30
484	E-027	<5	53	160	<0.2	80	400	19	2.67	<10	0.11	1775	240	80	22	<10	70
485	E-028	<5	150	200	<0.2	96	260	13	1.52	<10	0.10	895	170	88	16	<10	40
486	E-029	<5	150	230	<0.2	1140	230	13	2.05	<10	0.17	930	110	180	30	<10	42
487	E-030	<5	27	410	1	242	2800	63	3.16	70	0.12	6800	170	566	46	<10	100
488	E-031	<5	5	430	<0.2	60	210	29	3.45	40	0.03	1475	330	28	8	<10	46
489	E-032	<5	31	260	<0.2	56	520	19	1.74	40	0.27	1240	180	190	12	<10	62
490	E-033	<5	81	260	0.2	102	1880	27	2.04	20	0.13	2500	160	220	14	<10	66
491	E-034	<5	<2	270	<0.2	24	140	25	2.45	<10	0.14	985	200	14	<2	<10	44
492	E-035	<5	<2	280	<0.2	24	220	37	2.26	<10	0.13	1555	210	14	<2	<10	42
493	E-036	<5	<2	350	<0.2	20	110	27	3.09	<10	0.08	1640	180	22	<2	<10	40
494	E-037	<5	<2	360	<0.2	30	160	27	2.66	10	0.09	1110	200	22	<2	<10	60
495	E-038	<5	<2	440	<0.2	22	120	19	2.24	30	0.02	935	170	16	2	<10	34
496	E-039	<5	<2	560	<0.2	44	70	17	3.32	50	0.03	1210	140	62	2	<10	76
497	E-040	<5	<2	190	<0.2	14	50	9	1.52	<10	0.01	585	170	8	<2	<10	16
498	E-041	<5	<2	590	<0.2	70	100	22	3.60	60	0.04	1040	70	32	6	<10	50
499	E-042	<5	<2	550	<0.2	14	100	8	2.00	20	0.04	770	130	64	<2	<10	138
500	E-043	<5	<2	440	<0.2	8	80	6	1.20	<10	0.04	490	100	40	<2	<10	110
501	E-044	<5	<2	540	<0.2	52	90	7	4.13	10	0.05	910	120	44	6	<10	56
502	E-045	<5	<2	350	<0.2	12	60	5	1.20	<10	0.03	380	110	36	<2	<10	74
503	E-046	<5	<2	540	<0.2	44	80	5	3.47	<10	0.06	815	70	40	4	<10	32
504	E-047	<5	<2	250	<0.2	26	140	19	2.74	20	0.03	1060	250	14	2	<10	42
505	E-048	<5	<2	530	<0.2	50	330	25	4.41	30	0.06	2000	320	36	4	<10	58
506	E-049	<5	<2	580	<0.2	78	430	37	5.09	30	0.05	4690	100	120	6	<10	62
507	E-050	<5	<2	610	<0.2	30	250	20	3.39	30	0.05	1710	220	70	2	<10	30
508	E-051	<5	<2	370	<0.2	50	90	9	3.62	10	0.05	730	90	32	2	<10	40
509	E-052	<5	<2	380	<0.2	98	140	29	4.09	<10	1.18	2130	190	150	18	<10	396
510	E-053	<5	<2	430	<0.2	38	110	56	4.45	<10	0.24	1705	310	100	4	<10	142
511	E-054	<5	5	340	<0.2	122	160	6	1.22	<10	0.21	520	100	104	2	<10	140
512	E-055	<5	<2	370	<0.2	14	80	25	2.31	<10	0.20	1005	250	14	<2	<10	52
513	E-056	<5	<2	250	0.2	108	1080	16	1.80	80	0.13	535	240	1300	4	<10	228
514	E-057	<5	<2	400	<0.2	22	240	29	2.50	<10	0.14	1385	250	28	<2	<10	34
515	E-058	<5	<2	250	<0.2	14	200	20	2.49	<10	0.20	540	450	24	<2	<10	30
516	E-059	<5	14	340	<0.2	22	200	20	2.02	<10	0.30	545	580	32	<2	<10	40
517	E-060	<5	<2	390	<0.2	48	690	24	8.76	10	0.47	3190	870	288	6	<10	222
518	E-061	<5	8	520	<0.2	26	370	14	2.63	<10	0.55	860	880	80	<2	<10	68
519	E-062	<5	3	170	<0.2	26	250	19	2.42	<10	0.25	755	260	94	2	<10	58
520	E-063	<5	7	140	<0.2	28	1010	30	2.47	<10	0.26	955	190	92	<2	<10	96
521	E-064	<5	5	300	<0.2	14	110	10	1.64	<10	0.38	370	540	44	<2	<10	60
522	E-065	<5	<2	110	<0.2	10	70	25	2.86	<10	0.05	925	160	20	<2	<10	28
523	E-066	<5	<2	50	<0.2	8	60	1	0.81	<10	<0.01	60	40	6	<2	<10	2
524	E-067	<5	<2	100	<0.2	8	60	9	1.62	<10	0.04	345	100	10	<2	<10	14
525	E-068	<5	<2	100	<0.2	6	30	4	0.82	<10	0.01	70	100	8	<2	<10	8
526	E-069	<5	<2	90	<0.2	16	50	37	1.86	<10	0.02	390	80	54	2	<10	16
527	E-070	<5	<2	110	<0.2	42	720	118	8.33	<10	0.16	3430	110	140	14	<10	50
528	E-071	<5	<2	110	<0.2	20	140	35	2.67	<10	0.08	575	120	38	4	<10	46
529	E-072	<5	<2	90	<0.2	10	480	18	1.96	<10	0.04	440	90	42	<2	<10	40
530	E-073	<5	<2	80	<0.2	20	850	34	2.37	<10	0.03	410	80	64	2	<10	26
531	E-074	<5	<2	70	<0.2	28	100	39	1.83	<10	0.01	260	70	26	<2	<10	12
532	E-075	<5	4	110	<0.2	4	50	2	0.65	<10	0.11	135	180	16	<2	<10	24
533	E-076	<5	2	200	<0.2	<2	50	3	0.56	10	0.25	105	140	20	<2	<10	42
534	E-077	<5	4	120	<0.2	8	50	2	0.60	10	0.06	135	110	14	<2	<10	12
535	E-078	<5	150	600	<0.2	62	160	11	2.58	10	0.62	380	170	52	<2	<10	48
536	E-079	<5	53	150	<0.2	2	70	3	0.69	<10	0.12	245	150	14	<2	<10	12
537	E-081	<5	120	210	<0.2	10	100	3	0.94	10	0.19	290	160	22	<2	<10	22
538	E-082	<5	10	160	<0.2	14	120	5	1.03	<10	0.21	365	230	54	<2	<10	40
539	E-083	<5	5	160	<0.2	8	70	3	0.82	<10	0.12	440	170	46	<2	<10	36
540	E-084	<5	29	200	<0.2	18	70	5	1.18	<10	0.17	285	230	100	<2	<10	80

Appendix 4 Geochemical Data of Stream Sediment

	SAMPLE DESCRIP	Au ppb FA+AA	Sn ppm	F ppm	Ag ppm	As ppm	Ba ppm	Cu ppm	Fe %	Hg ppb	Mg %	Mn ppm	P ppm	Pb ppm	Sb ppm	W ppm	Zn ppm
541	E-085	<5	6	100	<0.2	6	40	1	0.47	<10	0.07	120	150	12	<2	<10	16
542	E-086	<5	25	160	<0.2	20	50	4	0.98	<10	0.08	130	140	28	<2	<10	28
543	E-087	<5	99	160	<0.2	16	70	4	0.87	<10	0.22	280	230	20	<2	<10	22
544	E-088	<5	23	150	<0.2	14	70	4	1.10	10	0.12	310	210	92	<2	<10	58
545	E-089	<5	3	280	<0.2	36	180	17	2.22	<10	0.08	820	190	66	6	<10	156
546	E-090	<5	3	290	<0.2	24	160	15	2.39	<10	0.05	680	180	20	<2	<10	48
547	E-091	<5	3	250	<0.2	24	350	18	1.92	<10	0.17	945	290	106	2	<10	116
548	E-092	<5	3	300	<0.2	58	240	33	2.95	<10	0.23	1490	340	88	<2	<10	144
549	E-093	<5	<2	280	<0.2	32	220	35	4.50	<10	0.23	1805	340	58	4	<10	208
550	E-094	<5	7	280	<0.2	68	250	29	2.58	<10	0.21	1590	350	126	<2	<10	152
551	E-095	<5	6	240	<0.2	18	80	10	1.42	<10	0.14	420	340	36	<2	<10	46
552	E-096	<5	<2	260	<0.2	34	280	26	3.47	<10	0.13	1560	270	90	<2	<10	228
553	E-097	<5	<2	230	<0.2	18	120	23	2.38	<10	0.21	740	210	26	<2	<10	78
554	E-098	<5	<2	270	<0.2	20	110	28	2.44	<10	0.18	990	230	16	2	<10	44
555	E-099	<5	<2	240	<0.2	20	170	26	2.59	<10	0.24	985	240	34	2	<10	96
556	E-100	<5	<2	320	<0.2	30	220	55	4.56	<10	0.57	1790	390	98	<2	<10	240
557	E-101	<5	<2	410	<0.2	40	300	64	3.42	<10	0.20	3240	180	94	<2	<10	232
558	E-102	<5	<2	330	<0.2	46	160	39	3.45	<10	0.28	1475	310	50	<2	<10	156
559	E-103	<5	<2	210	<0.2	24	150	20	2.33	<10	0.25	690	180	30	<2	<10	76
560	E-104	<5	<2	300	<0.2	14	110	18	2.20	<10	0.33	875	180	40	4	<10	106
561	E-105	<5	<2	320	<0.2	46	160	60	3.86	<10	0.28	2190	420	48	2	<10	186
562	E-106	<5	4	130	<0.2	58	50	13	2.07	<10	0.03	635	140	32	<2	<10	32
563	E-107	<5	<2	180	<0.2	22	40	15	1.51	<10	0.04	515	90	32	<2	<10	38
564	E-108	<5	<2	80	<0.2	2	<10	1	0.13	<10	<0.01	45	20	18	<2	<10	8
565	E-109	<5	<2	190	<0.2	10	80	17	2.18	<10	0.29	825	190	22	<2	<10	66
566	E-110	<5	<2	190	<0.2	22	100	15	1.92	<10	0.20	545	150	18	<2	<10	34
567	E-111	<5	<2	220	<0.2	30	240	19	2.22	<10	0.26	680	210	24	<2	<10	84
568	E-112	<5	<2	200	<0.2	18	140	16	2.12	<10	0.23	620	160	16	2	<10	50
569	E-113	<5	<2	200	<0.2	18	130	18	2.12	<10	0.24	645	170	24	<2	<10	62
570	E-114	<5	<2	390	<0.2	30	310	44	4.10	<10	0.50	1895	290	78	2	<10	298
571	E-115	<5	2	260	<0.2	14	130	11	1.75	<10	0.23	610	220	64	<2	<10	62
572	E-116	<5	<2	300	<0.2	4	190	7	1.75	10	0.08	1545	120	18	<2	<10	10
573	E-117	<5	2	260	<0.2	16	140	10	1.62	<10	0.20	645	210	50	<2	<10	54
574	E-118	<5	<2	170	<0.2	24	110	4	0.74	<10	0.04	160	150	10	<2	<10	6
575	E-119	<5	<2	170	<0.2	20	250	25	1.67	<10	0.13	815	170	28	<2	<10	36
576	E-120	<5	<2	130	<0.2	<2	30	2	0.63	<10	0.06	345	120	6	<2	<10	8
577	E-121	<5	<2	80	<0.2	4	10	<1	0.67	<10	0.01	310	70	2	<2	<10	2
578	E-122	<5	<2	120	<0.2	10	40	5	0.71	<10	0.04	205	110	4	<2	<10	6
579	E-123	<5	<2	530	<0.2	18	70	18	1.86	<10	0.57	380	1120	44	2	<10	40
580	E-124	<5	<2	170	<0.2	14	140	19	1.77	<10	0.21	585	220	34	<2	<10	46
581	E-125	<5	<2	210	<0.2	12	200	94	1.83	<10	0.35	420	250	30	<2	<10	26
582	E-126	<5	<2	350	0.8	68	580	24	5.21	10	0.74	2290	300	556	8	<10	306
583	F-001	<5	6	310	<0.2	40	190	18	1.74	<10	0.14	750	210	60	4	<10	42
584	F-002	<5	5	320	<0.2	50	280	21	2.11	<10	0.12	950	220	104	6	<10	48
585	F-003	<5	3	340	<0.2	42	360	24	2.32	10	0.12	1610	170	42	4	<10	42
586	F-004	<5	3	340	<0.2	42	320	20	2.37	10	0.12	1170	220	70	6	<10	58
587	F-005	<5	3	380	<0.2	44	230	32	2.91	20	0.05	1405	290	30	2	<10	54
588	F-006	<5	<2	300	<0.2	36	230	17	1.74	10	0.12	940	180	42	2	<10	42
589	F-007	<5	<2	300	<0.2	30	170	16	1.78	<10	0.10	750	190	38	2	<10	38
590	F-008	<5	14	300	<0.2	22	130	9	1.29	<10	0.27	310	550	38	<2	<10	30
591	F-009	<5	10	280	<0.2	28	270	31	2.81	<10	0.30	1345	280	34	2	<10	46
592	F-010	<5	5	330	<0.2	22	190	14	1.70	<10	0.30	530	510	32	2	<10	40
593	F-011	<5	38	340	<0.2	26	220	30	2.19	<10	0.70	1200	250	112	4	<10	110
594	F-012	<5	14	300	<0.2	24	190	18	1.88	<10	0.31	600	460	34	4	<10	42
595	F-013	5	<2	500	<0.2	12	360	38	4.32	<10	0.40	1750	470	14	2	<10	52
596	F-014	<5	6	280	<0.2	26	920	30	1.94	<10	0.24	1420	320	42	<2	<10	40
597	F-015	<5	3	280	<0.2	110	260	31	2.87	<10	0.09	1420	230	50	10	<10	102
598	F-016	<5	6	260	0.2	48	210	12	1.00	<10	0.15	490	240	198	<2	<10	48
599	F-017	<5	2	290	<0.2	62	230	11	1.05	<10	0.16	515	230	154	6	<10	48
600	F-018	<5	<2	480	<0.2	34	170	40	4.22	<10	0.24	1310	380	22	2	<10	42
601	F-019	<5	<2	380	<0.2	50	140	27	3.50	<10	0.12	1000	280	22	<2	<10	30
602	F-020	<5	<2	270	<0.2	62	200	17	1.87	<10	0.16	760	220	156	6	<10	52
603	F-021	<5	<2	250	<0.2	32	250	34	2.89	<10	0.19	1555	220	30	6	<10	30
604	F-022	<5	<2	220	<0.2	32	240	28	2.50	<10	0.16	1795	180	34	6	<10	30
605	F-023	<5	<2	360	<0.2	106	300	46	4.59	<10	0.43	1815	270	184	8	<10	258
606	F-024	<5	7	400	<0.2	102	310	47	4.64	<10	0.44	1700	290	178	6	<10	268
607	F-025	<5	<2	450	<0.2	32	440	36	3.67	<10	0.31	1630	300	32	2	<10	82
608	F-026	<5	<2	400	<0.2	54	530	28	3.00	<10	0.23	1430	220	84	2	<10	84
609	F-027	<5	<2	410	<0.2	64	400	45	4.07	<10	0.30	1520	350	104	4	<10	178
610	F-028	<5	<2	400	<0.2	84	180	25	4.15	<10	0.10	1550	340	64	6	10	102
611	F-029	<5	13	430	<0.2	42	140	10	2.06	10	0.52	300	280	36	<2	<10	40
612	F-030	<5	46	310	<0.2	42	120	6	2.14	<10	0.34	225	350	38	<2	<10	26
613	F-031	<5	10	400	<0.2	18	130	9	1.92	10	0.44	290	280	36	<2	<10	36
614	F-032	10	4	480	<0.2	70	130	12	2.14	<10	0.51	605	550	46	<2	<10	56
615	F-033	<5	19	400	<0.2	16	110	8	1.60	<10	0.47	295	520	30	<2	<10	42
616	G-001	<5	2	390	<0.2	34	320	38	2.64	<10	0.21	1940	220	24	2	<10	46
617	G-002	<5	4	270	<0.2	50	340	14	1.78	<10	0.42	1785	310	32	6	<10	60
618	G-003	<5	2	110	<0.2	40	150	11	1.68	<10	0.05	830	110	24	2	<10	26
619	G-004	<5	2	320	<0.2	32	150	44	4.01	40	0.39	1435	260	28	8	<10	36
620	G-005	<5	3	200	<0.2	34	70	4	1.04	<10	0.39	390	130	14	4	<10	24
621	G-006	<5	15	190	<0.2	22	140	20	1.92	<10	0.19	875	180	16	6	<10	32
622	G-007	<5	7	200	<0.2	22	130	5	1.14	<10	0.07	1145	80	14	2	<10	22
623	G-008	<5	37	250	<0.2	40	100	19	2.25	<10	0.07	980	190	24	6	<10	34
624	G-009	<5	180	190	<0.2	34	100	12	2.04	<10	0.05	665	150	18	4	<10	20
625	G-010	<5	9	290	<0.2	26	220	23	2.92	<10	0.14	1290	210	24	6	<10	42
626	G-011	<5	19	420	<0.2	130	200	18	2.82	<10	0.33	870	760	202	8	<10	50
627	G-012	<5	5	150	<0.2	30	70	4	0.94	<10	0.10	340	230	26	2	<10	12
628	G-013	<5	3	260	<0.2	20	240	10	0.92	<10	0.22	185	480	620	16	<10	26
629	G-014	<5	5	500	<0.2	26	100	10	1.58	<10	0.34	425	860	50	2	<10	36
630	G-015	<5	8	410	<0.2	230	360	69	1.89	80	0.26	2330	310	4160	30	<10	108

Appendix 4 Geochemical Data of Stream Sediment

	SAMPLE DESCRIP	Au ppb FA+AA	Sn ppm	F ppm	Ag ppm	As ppm	Ba ppm	Cu ppm	Fe %	Hg ppb	Mg %	Mn ppm	P ppm	Pb ppm	Sb ppm	W ppm	Zn ppm
631	G-016	<5	3	480	<0.2	42	130	17	1.65	<10	0.33	560	650	402	6	<10	44
632	G-017	<5	23	440	<0.2	34	100	9	1.55	<10	0.41	300	550	48	<2	<10	38
633	G-018	<5	4	250	<0.2	16	210	12	0.96	10	0.22	175	430	586	16	<10	28
634	G-019	<5	24	180	<0.2	10	100	5	1.12	10	0.21	115	370	20	2	<10	20
635	G-020	<5	4	180	<0.2	4	120	7	0.87	<10	0.24	210	370	34	<2	<10	24
636	G-021	<5	5	220	<0.2	10	130	10	1.43	<10	0.32	365	450	40	<2	<10	40
637	G-022	<5	4	240	<0.2	8	90	7	1.12	610	0.22	360	370	30	<2	<10	22
638	G-023	<5	2	50	<0.2	<2	40	3	0.53	10	0.05	150	130	26	<2	<10	10
639	G-024	<5	<2	150	<0.2	8	130	7	0.93	<10	0.08	220	290	66	<2	<10	16
640	G-025	<5	<2	230	<0.2	6	110	6	1.08	10	0.20	195	250	20	<2	<10	18
641	G-026	<5	<2	470	<0.2	22	210	69	3.47	20	0.25	1575	510	14	2	<10	66
642	G-027	<5	<2	390	<0.2	60	280	46	4.14	100	0.04	2470	320	60	16	<10	112
643	G-028	<5	5	340	<0.2	44	280	25	3.39	1010	0.04	1475	280	26	8	<10	48
644	G-029	<5	86	190	<0.2	80	3060	23	1.82	60	0.13	1610	130	200	18	<10	58
645	G-030	<5	4	420	<0.2	46	260	23	3.46	30	0.04	1360	300	22	6	<10	48
646	G-031	<5	2	510	<0.2	30	260	11	2.88	60	0.06	1330	90	54	<2	<10	90
647	G-032	<5	<2	700	<0.2	32	330	14	2.34	730	0.06	1165	120	92	<2	<10	248
648	G-033	<5	<2	580	<0.2	120	470	30	4.73	3200	0.05	3490	200	138	14	<10	168
649	G-034	<5	<2	>10000	<0.2	216	80	8	1.49	140	0.31	365	190	74	44	<10	142
650	G-035	<5	<2	880	<0.2	92	40	6	1.99	<10	0.12	360	120	30	36	<10	100
651	G-036	<5	<2	2650	<0.2	40	90	7	1.08	<10	0.15	240	140	14	6	<10	40
652	G-037	<5	<2	250	<0.2	12	90	11	0.98	10	0.14	360	310	12	<2	<10	28
653	G-038	5	<2	470	<0.2	70	180	48	3.61	<10	0.21	2430	360	32	4	<10	58
654	G-039	<5	<2	590	<0.2	54	250	57	3.35	<10	0.59	1870	340	36	4	<10	120
655	G-040	<5	<2	520	<0.2	94	790	61	3.54	<10	0.25	2200	450	48	6	<10	100
656	G-041	<5	<2	470	<0.2	46	800	43	3.39	<10	0.25	1680	350	30	2	<10	96
657	G-042	<5	<2	460	<0.2	50	240	56	3.54	<10	0.26	2200	450	20	2	<10	46
658	G-043	<5	3	450	<0.2	54	70	43	3.39	10	0.20	1565	250	14	2	<10	28
659	G-044	<5	8	220	<0.2	10	90	6	1.50	10	0.19	195	270	48	<2	<10	24
660	G-045	<5	64	330	<0.2	2	100	8	1.01	<10	0.14	125	270	144	<2	<10	18
661	G-046	<5	3	250	<0.2	12	110	7	1.28	<10	0.23	180	270	88	<2	<10	24
662	G-047	<5	12	180	<0.2	10	70	5	1.11	<10	0.10	190	220	64	<2	<10	16
663	G-048	<5	7	260	<0.2	8	70	6	1.25	<10	0.19	130	180	62	<2	<10	22
664	G-049	<5	7	410	<0.2	6	70	8	1.08	<10	0.30	170	390	60	<2	<10	34
665	G-050	<5	3	220	<0.2	6	60	7	1.45	<10	0.25	320	340	44	<2	<10	30
666	G-051	<5	16	220	<0.2	8	100	5	1.07	<10	0.21	150	280	54	<2	10	22
667	G-052	<5	12	490	<0.2	14	60	14	2.05	<10	0.57	400	900	46	<2	<10	56
668	G-053	<5	6	500	<0.2	12	150	9	1.59	<10	0.43	285	960	30	<2	<10	34
669	G-054	<5	5	440	<0.2	24	280	12	2.18	<10	0.42	380	610	86	<2	<10	44
670	G-055	<5	3	670	<0.2	16	80	15	1.89	<10	0.43	325	1160	46	<2	<10	56
671	G-056	<5	4	430	<0.2	22	220	11	1.90	<10	0.35	375	470	74	<2	<10	36
672	G-057	<5	4	790	<0.2	16	90	9	2.27	10	0.67	350	1810	46	<2	<10	40
673	G-058	<5	4	700	<0.2	16	80	15	1.88	<10	0.51	335	1760	28	<2	<10	32
674	G-059	<5	2	800	<0.2	10	80	15	1.64	<10	0.57	210	2050	22	<2	20	28
675	G-060	<5	29	330	<0.2	30	60	10	1.53	<10	0.37	265	630	26	<2	<10	28
676	G-061	<5	5	170	<0.2	10	40	5	1.28	10	0.08	295	250	20	<2	<10	12
677	G-062	<5	3	240	<0.2	12	70	5	1.46	<10	0.26	390	470	18	<2	<10	28
678	G-063	<5	10	230	<0.2	12	50	6	1.14	<10	0.24	290	580	18	<2	<10	22
679	G-064	<5	4	100	<0.2	6	30	3	0.58	<10	0.06	175	230	40	<2	<10	14
680	G-065	<5	6	270	<0.2	10	50	8	1.18	<10	0.24	340	710	20	<2	<10	20
681	G-066	<5	9	320	<0.2	8	70	13	1.64	<10	0.30	370	970	24	<2	<10	26
682	G-067	<5	29	520	<0.2	56	110	14	2.23	<10	0.52	480	700	56	<2	<10	50
683	G-068	<5	28	200	<0.2	14	40	10	1.76	<10	0.23	325	380	18	<2	<10	22
684	G-069	<5	14	500	<0.2	72	150	16	2.62	<10	0.52	620	770	64	2	<10	66
685	G-070	<5	6	460	<0.2	36	310	16	3.05	<10	0.54	855	880	72	<2	<10	60
686	G-071	<5	14	410	<0.2	66	180	14	2.50	<10	0.40	860	390	62	<2	<10	56
687	G-072	<5	19	200	<0.2	44	390	11	3.98	10	0.20	1310	220	68	<2	<10	64
688	G-073	<5	<2	310	<0.2	20	80	14	1.73	10	0.06	1245	180	190	2	<10	40
689	G-074	<5	<2	150	<0.2	8	120	4	1.45	10	0.05	750	110	20	<2	<10	8
690	G-075	<5	<2	130	<0.2	8	190	4	1.19	<10	0.11	545	150	38	<2	<10	16
691	G-076	120	<2	140	<0.2	8	200	4	1.17	10	0.12	365	140	40	<2	<10	16
692	G-077	<5	<2	150	<0.2	26	450	29	2.31	10	0.13	710	180	52	<2	<10	44
693	G-078	<5	<2	220	<0.2	48	110	17	2.86	80	0.57	1610	200	208	6	<10	236
694	G-079	<5	<2	150	<0.2	24	270	34	1.96	<10	0.14	585	160	40	<2	<10	36
695	G-080	<5	<2	230	<0.2	22	80	17	2.07	10	0.15	1450	200	52	<2	<10	46
696	G-081	<5	<2	220	<0.2	104	970	45	3.43	10	0.14	1515	210	114	2	<10	132
697	G-082	<5	<2	160	<0.2	38	320	14	2.52	10	0.22	2480	310	564	8	<10	142
698	G-083	<5	7	230	<0.2	50	90	5	1.22	<10	0.22	420	400	30	<2	<10	64
699	G-084	<5	<2	220	<0.2	14	100	7	1.21	<10	0.22	780	220	56	<2	<10	62
700	G-085	<5	9	200	<0.2	28	200	14	2.27	<10	0.16	2950	410	118	<2	<10	216
701	G-086	<5	19	220	<0.2	14	80	7	1.10	<10	0.22	470	270	176	<2	<10	52
702	G-087	<5	32	120	<0.2	8	70	3	0.73	<10	0.12	240	220	16	<2	<10	16
703	G-088	<5	8	180	<0.2	10	80	6	1.04	10	0.20	345	320	14	<2	<10	22
704	G-089	<5	2	120	<0.2	14	90	6	1.12	<10	0.14	390	110	16	<2	<10	20
705	G-090	<5	<2	90	<0.2	8	60	6	1.09	<10	0.11	330	120	14	<2	<10	26
706	G-091	<5	<2	480	<0.2	138	820	67	5.66	<10	0.14	6180	570	246	4	<10	260
707	G-092	<5	<2	420	<0.2	70	810	53	5.26	<10	0.24	4190	480	168	2	<10	240
708	G-093	<5	<2	250	<0.2	36	120	23	2.83	<10	0.20	1130	250	108	2	<10	158
709	G-094	<5	<2	330	<0.2	50	430	40	4.18	<10	0.25	2310	380	108	4	<10	176
710	G-095	<5	<2	310	<0.2	130	750	43	4.13	<10	0.25	2700	280	150	4	<10	204
711	G-096	<5	<2	310	<0.2	44	190	29	3.59	<10	0.29	1290	350	62	2	<10	132
712	G-097	<5	<2	330	<0.2	50	130	30	3.02	<10	0.22	1090	260	54	2	<10	118
713	G-098	<5	<2	280	<0.2	36	360	29	3.35	<10	0.07	2930	270	42	4	<10	56
714	G-099	<5	<2	160	<0.2	14	60	7	1.14	<10	0.05	410	150	6	<2	<10	14
715	G-100	<5	<2	230	<0.2	16	130	12	1.96	<10	0.05	1065	220	10	<2	<10	28
716	G-101	<5	<2	200	<0.2	22	140	20	1.73	<10	0.19	515	180	32	<2	<10	100
717	G-102	<5	<2	350	<0.2	38	130	47	2.92	<10	0.22	1780	330	28	2	<10	80
718	G-103	<5	<2	170	<0.2	18	40	18	1.96	<10	0.12	715	100	10	<2	<10	34
719	G-104	<5	<2	220	<0.2	30	330	23	2.21	<10	0.24	800	200	68	2	<10	190
720	G-105	<5	<2	190	<0.2	12	210	7	1.33	<10	0.05	355	120	4	<2	<10	16

Appendix 4 Geochemical Data of Stream Sediment

	SAMPLE DESCRIP	Au ppb FA+AA	Sn ppm	F ppm	Ag ppm	As ppm	Ba ppm	Cu ppm	Fe %	Hg ppb	Mg %	Mn ppm	P ppm	Pb ppm	Sb ppm	W ppm	Zn ppm
721	G-106	<5	<2	190	<0.2	12	60	8	1.26	<10	0.08	275	170	6	<2	<10	24
722	G-107	<5	<2	180	<0.2	20	60	8	0.89	<10	0.03	305	90	22	<2	<10	30
723	G-108	<5	<2	400	<0.2	48	120	11	3.02	10	0.04	1025	170	40	8	<10	52
724	G-109	<5	13	560	<0.2	50	230	15	4.01	10	0.06	1030	250	38	6	<10	66
725	G-110	<5	<2	250	<0.2	20	120	9	1.31	10	0.04	450	130	24	2	<10	34
726	G-111	<5	<2	170	<0.2	14	80	12	1.35	<10	0.03	325	190	16	<2	<10	30
727	G-112	<5	<2	130	<0.2	8	90	6	0.71	10	0.03	180	110	14	<2	<10	14
728	G-113	<5	<2	160	<0.2	14	90	6	1.30	<10	0.04	345	120	12	<2	<10	22
729	G-114	<5	<2	130	<0.2	8	70	5	0.85	<10	0.03	365	90	6	<2	<10	14
730	G-115	<5	<2	230	<0.2	<2	40	5	1.00	<10	0.18	265	140	4	<2	<10	12
731	G-116	<5	<2	260	<0.2	6	50	6	3.26	<10	0.11	305	300	8	2	<10	10
732	G-117	<5	<2	230	<0.2	8	40	7	1.14	<10	0.07	375	170	8	<2	<10	8
733	G-118	<5	<2	180	<0.2	8	40	5	0.92	<10	0.24	130	320	6	<2	<10	10
734	G-119	<5	<2	260	<0.2	16	310	3	1.36	30	0.09	380	420	20	2	<10	12
735	G-120	<5	<2	210	<0.2	6	40	2	4.67	<10	0.03	210	240	2	<2	<10	10
736	G-121	<5	<2	330	<0.2	4	140	4	1.01	10	0.27	615	220	16	<2	<10	14
737	G-122	<5	<2	250	<0.2	20	140	10	1.58	<10	0.18	645	240	52	<2	<10	52
738	G-123	<5	<2	400	<0.2	146	240	69	5.75	<10	0.57	1885	350	94	4	<10	200
739	G-124	<5	<2	310	<0.2	62	140	48	3.68	<10	0.48	1745	320	64	<2	<10	148
740	G-125	<5	<2	180	<0.2	28	80	18	1.26	<10	0.17	880	250	30	2	<10	48
741	G-126	<5	33	250	<0.2	40	80	20	1.45	<10	0.25	905	370	44	<2	<10	36
742	G-127	<5	29	210	<0.2	2	100	3	0.66	<10	0.15	205	230	16	<2	<10	14
743	G-128	<5	<2	330	<0.2	14	240	31	2.62	<10	0.18	1715	260	12	<2	<10	32
744	G-129	<5	<2	410	<0.2	36	350	43	3.64	10	0.15	2970	270	72	2	<10	80
745	G-130	<5	<2	150	<0.2	10	70	15	1.30	10	0.10	580	80	14	<2	<10	14
746	G-131	<5	<2	360	<0.2	36	410	45	3.75	10	0.16	3060	280	82	2	<10	90
747	G-132	<5	<2	360	<0.2	24	130	69	4.55	<10	0.80	1305	320	18	<2	<10	50
748	G-133	<5	<2	380	<0.2	48	580	45	3.85	10	0.23	3030	290	114	6	<10	122
749	G-134	<5	42	340	<0.2	26	70	10	1.27	<10	0.29	245	660	48	<2	<10	30
750	G-135	<5	<2	590	<0.2	12	50	8	1.81	40	0.05	690	70	54	<2	<10	128
751	G-136	<5	<2	500	<0.2	8	110	7	1.69	30	0.05	755	350	32	<2	<10	94
752	G-137	<5	<2	370	<0.2	12	50	5	1.03	<10	0.04	525	150	28	4	<10	52
753	G-138	<5	<2	780	<0.2	16	100	9	2.20	30	0.07	1020	160	82	2	<10	130
754	G-139	<5	<2	600	<0.2	44	70	7	3.81	20	0.09	1035	140	54	6	<10	92
755	G-140	<5	<2	200	<0.2	14	50	2	1.00	<10	<0.01	315	70	20	<2	<10	12
756	H-001	<5	11	480	<0.2	34	80	18	1.56	<10	0.41	260	630	34	2	<10	40
757	H-002	<5	3	70	<0.2	16	80	1	0.61	<10	0.01	380	90	4	<2	<10	6
758	H-003	<5	18	430	<0.2	46	100	11	1.58	<10	0.40	315	510	78	2	<10	38
759	H-004	<5	19	470	<0.2	44	110	10	1.68	<10	0.48	335	520	64	2	<10	44
760	H-005	<5	64	370	<0.2	40	80	22	1.60	<10	0.30	255	740	62	<2	<10	30
761	H-006	<5	25	500	<0.2	18	110	7	1.30	<10	0.46	245	520	26	<2	<10	40
762	H-007	<5	5	380	<0.2	14	70	7	1.29	10	0.40	300	440	22	<2	<10	44
763	H-008	<5	32	880	<0.2	34	110	20	2.09	<10	0.77	405	1440	52	2	<10	84
764	H-009	<5	19	970	<0.2	94	110	18	2.50	<10	0.83	475	1810	90	2	<10	130
765	H-010	<5	16	360	<0.2	30	110	9	1.60	<10	0.48	345	520	40	2	<10	60
766	H-011	<5	28	300	<0.2	26	90	10	1.20	<10	0.33	270	430	38	4	<10	44
767	H-012	<5	3	420	<0.2	12	70	9	1.47	10	0.03	570	140	22	2	<10	26
768	H-013	<5	<2	380	<0.2	40	180	20	2.39	10	0.12	875	200	24	2	<10	38
769	H-014	<5	<2	470	<0.2	38	190	21	2.51	10	0.11	975	220	30	6	<10	36
770	H-015	<5	<2	750	<0.2	32	130	9	2.47	60	0.03	1370	70	112	6	<10	130
771	H-016	<5	<2	280	<0.2	78	760	13	1.89	70	0.05	890	120	38	6	<10	44
772	H-017	<5	<2	210	<0.2	220	100	12	2.58	10	0.02	480	110	22	10	<10	40
773	H-018	<5	<2	400	<0.2	116	310	15	2.63	60	0.04	1670	100	96	8	<10	182
774	H-019	<5	5	220	<0.2	60	240	16	2.31	10	0.21	640	180	24	2	<10	44
775	H-020	<5	3	100	<0.2	14	330	11	0.91	30	0.03	585	260	40	2	<10	18
776	H-021	<5	12	110	<0.2	32	1310	14	2.26	30	0.01	1040	200	138	10	<10	28
777	H-022	<5	<2	70	<0.2	32	220	8	0.67	50	0.04	520	240	24	2	<10	18
778	H-023	<5	<2	90	<0.2	18	200	8	0.69	630	0.03	415	220	32	4	<10	16
779	H-024	<5	7	110	<0.2	20	510	10	1.17	440	0.01	630	100	36	2	<10	12
780	H-025	<5	6	90	<0.2	20	350	8	0.99	130	0.01	505	100	44	<2	<10	14
781	H-026	<5	3	100	<0.2	22	240	13	1.08	40	0.01	370	170	22	2	<10	14
782	H-027	<5	2	120	<0.2	16	250	2	1.57	150	0.05	710	300	354	<2	<10	26
783	H-028	<5	4	110	<0.2	6	60	5	0.84	<10	0.10	245	210	32	<2	<10	22
784	H-029	<5	6	110	<0.2	6	50	3	0.74	<10	0.09	175	170	34	<2	<10	18
785	H-030	<5	2	150	<0.2	4	90	3	1.03	<10	0.08	260	240	72	<2	<10	28
786	H-031	<5	12	100	<0.2	4	60	1	0.58	<10	0.06	185	130	26	<2	<10	14
787	H-032	<5	6	100	<0.2	4	60	2	0.55	<10	0.06	265	140	26	<2	<10	14
788	H-033	<5	3	80	<0.2	2	50	3	0.50	<10	0.06	185	140	38	<2	<10	14
789	H-034	<5	5	670	<0.2	24	70	20	2.37	<10	0.61	365	1460	84	<2	<10	48
790	H-035	<5	<2	670	<0.2	18	70	13	2.21	<10	0.70	405	1030	54	<2	<10	78
791	H-036	<5	<2	850	<0.2	20	70	19	2.57	<10	0.85	450	1420	44	<2	<10	100
792	H-037	<5	<2	670	<0.2	18	70	13	2.17	<10	0.71	375	980	50	<2	<10	80
793	H-038	<5	2	640	<0.2	18	60	12	2.20	<10	0.57	320	1040	40	<2	<10	50
794	H-039	<5	2	2800	<0.2	36	90	17	2.63	<10	0.94	315	1460	32	<2	<10	92
795	H-040	<5	4	1400	<0.2	26	70	16	2.26	<10	0.78	360	1450	50	<2	<10	70
796	H-041	<5	4	690	<0.2	28	70	15	2.17	<10	0.63	375	1330	50	<2	<10	60
797	H-042	<5	8	680	<0.2	28	130	18	2.52	<10	0.71	480	1420	86	<2	<10	98
798	H-043	<5	4	610	<0.2	22	120	14	2.06	<10	0.62	345	1250	64	<2	<10	72
799	H-044	<5	6	820	<0.2	26	300	14	2.18	<10	0.49	340	1400	58	<2	<10	50
800	H-045	<5	49	500	<0.2	16	80	11	1.64	<10	0.49	295	1440	30	<2	<10	36
801	H-046	<5	2	520	<0.2	14	190	13	1.92	<10	0.55	315	1620	44	<2	<10	40
802	H-047	<5	5	350	<0.2	10	290	10	1.42	<10	0.35	280	1210	84	<2	<10	44
803	H-048	<5	22	460	<0.2	10	120	10	1.50	<10	0.42	305	1180	42	<2	<10	36
804	H-049	<5	4	310	<0.2	10	90	4	1.39	<10	0.31	375	650	24	<2	<10	46
805	H-050	<5	12	500	<0.2	12	100	9	1.53	<10	0.45	245	1070	36	<2	<10	38
806	H-051	<5	9	450	<0.2	16	120	9	1.50	<10	0.43	250	1270	34	<2	<10	40
807	H-052	<5	11	190	<0.2	60	80	20	2.55	<10	0.24	720	170	48	<2	<10	104
808	H-053	<5	4	190	<0.2	8	60	5	0.93	<10	0.27	185	440	14	<2	<10	34
809	H-054	<5	4	210	<0.2	14	50	4	0.93	<10	0.25	190	380	14	<2	<10	26
810	H-055	<5	7	260	<0.2	10	60	6	1.10	<10	0.30	180	460	28	<2	<10	26

Appendix 4 Geochemical Data of Stream Sediment

	SAMPLE DESCRIP	Au ppb FA+AA	Sn ppm	F ppm	Ag ppm	As ppm	Ba ppm	Cu ppm	Fe %	Hg ppb	Mg %	Mn ppm	P ppm	Pb ppm	Sb ppm	W ppm	Zn ppm
811	H-056	<5	23	180	<0.2	10	50	3	0.72	<10	0.18	160	370	16	<2	<10	28
812	H-057	<5	160	230	<0.2	24	50	7	0.99	<10	0.23	225	680	20	<2	<10	28
813	H-058	<5	12	260	<0.2	16	50	8	1.29	<10	0.33	190	470	20	<2	<10	30
814	H-059	<5	34	220	<0.2	12	40	7	1.07	<10	0.26	150	400	20	<2	<10	22
815	H-060	<5	20	270	<0.2	10	50	8	1.44	<10	0.30	190	380	28	<2	<10	30
816	H-061	<5	29	220	<0.2	16	60	6	1.08	<10	0.29	210	440	24	<2	<10	30
817	H-062	<5	7	530	<0.2	12	60	12	2.24	<10	0.82	305	1170	28	<2	<10	520
818	H-063	<5	16	220	<0.2	12	40	6	1.22	<10	0.23	210	460	18	<2	<10	50
819	H-064	<5	42	60	<0.2	12	100	7	1.38	<10	0.05	605	140	20	<2	<10	12
820	H-065	<5	<2	40	<0.2	6	20	1	1.10	<10	0.03	175	60	8	<2	<10	2
821	H-066	<5	32	40	<0.2	6	50	4	0.86	20	0.03	355	60	10	<2	<10	10
822	H-067	<5	<2	70	<0.2	<2	50	1	0.71	<10	0.09	235	40	8	<2	<10	6
823	H-068	<5	14	50	<0.2	6	60	4	1.01	<10	0.03	540	40	8	<2	<10	6
824	H-069	<5	<2	60	<0.2	28	90	5	1.34	<10	0.05	420	210	8	<2	<10	10
825	H-070	<5	<2	40	<0.2	12	100	3	1.66	<10	0.04	670	90	10	<2	<10	8
826	H-071	<5	<2	80	<0.2	10	70	10	1.53	<10	0.08	350	100	8	<2	<10	6
827	H-072	<5	<2	100	<0.2	12	110	12	1.61	<10	0.15	760	190	20	<2	<10	20
828	H-073	<5	<2	180	<0.2	22	470	10	2.31	10	0.10	1150	170	16	2	<10	16
829	H-074	<5	<2	170	<0.2	30	410	37	2.43	170	0.14	980	170	48	<2	<10	46
830	H-075	<5	<2	120	<0.2	18	70	6	2.06	<10	0.01	760	90	16	2	<10	8
831	H-076	<5	<2	380	<0.2	56	110	26	2.92	<10	0.09	1170	260	32	2	<10	78
832	H-077	<5	<2	250	<0.2	50	120	23	2.58	10	0.06	1165	200	28	2	<10	62
833	H-078	<5	<2	280	<0.2	76	140	28	3.15	20	0.04	1090	290	36	2	<10	58
834	H-079	205	<2	240	<0.2	52	120	33	3.04	<10	0.06	1225	230	28	2	<10	62
835	H-080	<5	<2	120	<0.2	40	650	35	3.07	<10	0.10	915	170	48	2	<10	58
836	H-081	<5	<2	200	<0.2	46	70	13	1.44	<10	0.14	550	160	30	<2	<10	38
837	H-082	<5	<2	210	<0.2	50	90	22	2.13	<10	0.19	490	140	58	2	<10	94
838	H-083	<5	<2	340	<0.2	24	110	20	2.02	<10	0.18	895	190	20	<2	<10	54
839	H-084	<5	<2	570	<0.2	50	100	69	5.11	<10	0.23	2350	440	98	<2	<10	320
840	H-085	<5	21	420	<0.2	36	730	36	2.90	<10	0.28	1095	310	236	4	<10	498
841	H-086	<5	<2	480	<0.2	54	590	55	4.23	10	0.26	2090	400	242	4	<10	406
842	H-087	<5	<2	440	<0.2	54	500	36	3.19	<10	0.31	1690	290	82	2	<10	152
843	H-088	<5	<2	340	<0.2	32	540	26	2.86	<10	0.30	1020	280	98	<2	<10	136
844	H-089	<5	<2	480	<0.2	38	420	42	4.38	<10	0.22	1915	440	46	2	<10	108
845	H-090	<5	<2	210	<0.2	10	40	12	1.75	<10	0.11	395	150	10	<2	<10	32
846	H-091	<5	<2	610	<0.2	26	380	14	4.59	10	0.18	1100	260	42	4	<10	70
847	H-092	<5	<2	790	<0.2	24	570	11	3.32	30	0.08	1165	230	56	8	<10	70
848	H-093	<5	<2	450	<0.2	18	100	7	2.32	30	0.05	735	210	34	2	<10	62
849	H-094	<5	<2	610	<0.2	56	190	17	3.94	30	0.06	1395	120	42	2	30	72