

Chapter 3

SITE DESCRIPTION

3.1 TOPOGRAPHY AND CLIMATIC OF STUDY AREA

The Muang Kut zinc-lead deposit is located in Amphoe Mae Taeng, Chiang Mai province. The mine is near Ban Muang Kut and is 13 km west of Amphoe Mae Taeng. The ore was exploited from 1966 until 1968. Because of the lack of further reserves as well as new investigation, the mine was abandoned. The overall view of the mine is shown in Figure 3.1. The mine location is shown in Figure 3.2.



Figure 3.1 The panorama of the inactive mine

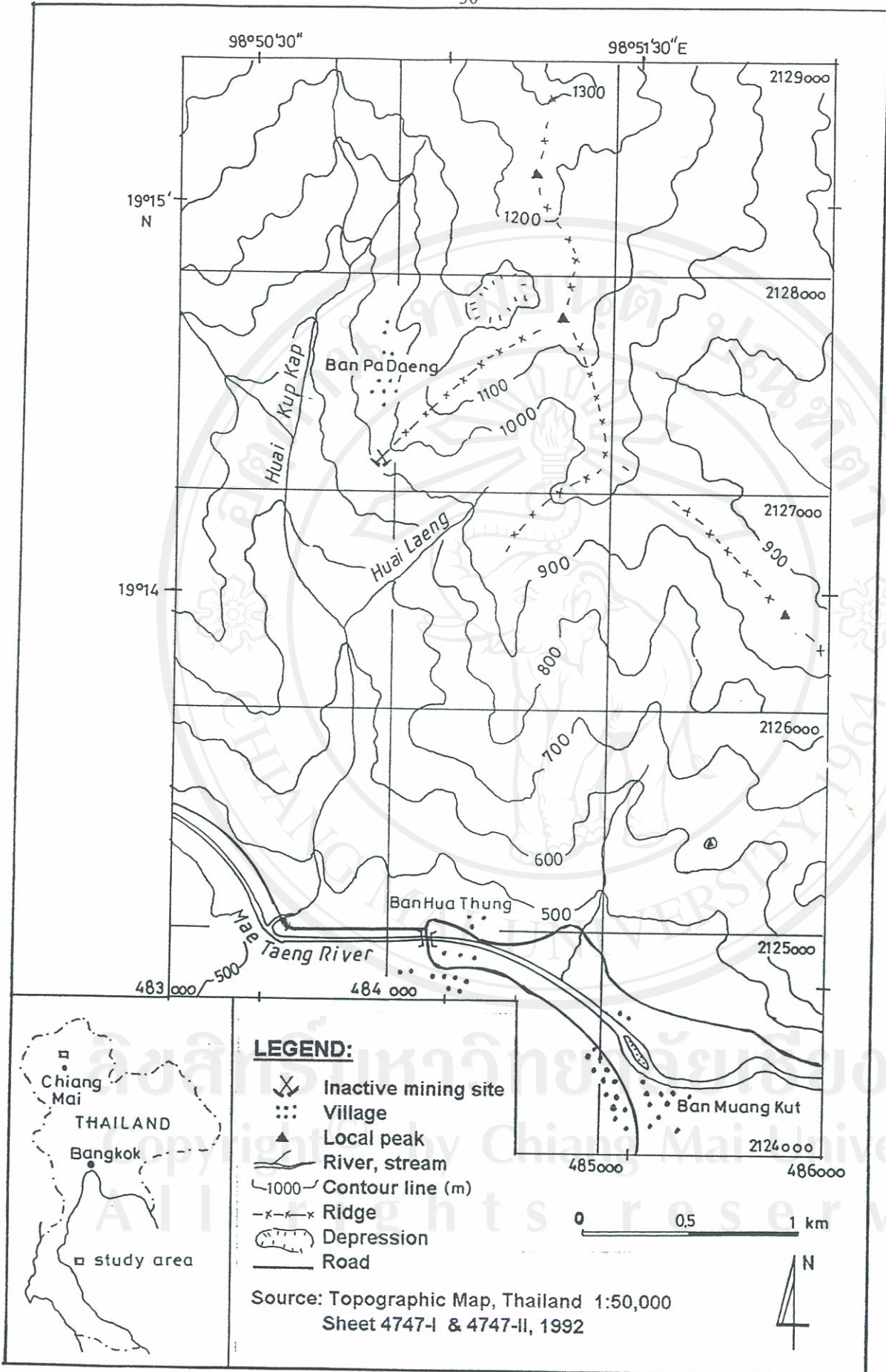


Figure 3.2. Map showing location of abandoned Mae Taeng Pb-Zn mine.

Taking the mine as a center, the study area of this thesis work covers more than 9 square kilometers of the surrounding area. The elevation of the study area ranges from 600 m to 1400 m above mean sea level. The area has mountainous topography with many ridges and gullies. Slopes are very steep, in some cases reaching 45 °. The ore body was situated inside a cave in a limestone mountain at 1,000 m elevation. The cave entrance is about 5m wide and 4 m high. The ore was sorted outside the cave and then transported downhill along zig-zag road to the south-east (SE) of the mine. The zig-zag road and mine waste heaps (Figure 3.4) remaining from ore exploitation can still be observed.

The main rock types are granite and carbonates and metaarenites rocks. The carbonate rocks comprise mainly limestone and marble. The rocks are of Permian age (Yorkart B., 1977).

The main vegetation type in the study area is secondary growth of deciduous forest. The forest in this area is afflicted by serious forest fires in the dry season. Nearby the mine, the vegetation is very poor, bamboo is abundant with ground flora and herbs. A small remaining part of degraded evergreen forest is observed in the north-east site (NE) of the area, 2 km away from the mine.

The investigation of soil profile revealed that in some areas the thickness of the organic matter layer is more than 1m but in some other areas the soil thickness is only 50 cm and the parent rock is present just 50 cm deep from the soil surface.

Agriculture is widely practiced in the study area. Depending on the season of the year, hilltribe people grow highland rice, maize, cassava, cabbages. A permanent lychee orchard is also grown by local people. Even though the area plays a role of

watershed area nevertheless local people, mainly La Hu and H' Mong people, are still practicing slash and burn agriculture. The water that it used for daily consumption comes from springs in the forest. One La Hu village locates in the north of the study area and it is about 500 m far from the mine.

In the study area, the pattern of land use shows considerable variation. Not all parts are overloaded with human activities such as slash and burn agriculture, timber logging and village settlement (Figure 3.5 and 3.6). There are also area with no evidence of human activities. This may be due to hilly topography of specific areas.

The climatic condition in Mae Taeng is similar to that of Chiang Mai. The precipitation averages about 1,200 mm per year, and mainly falls in May to October. Mean rainfall of 5 years from 1991 to 1995 is shown in Figure 3.3.

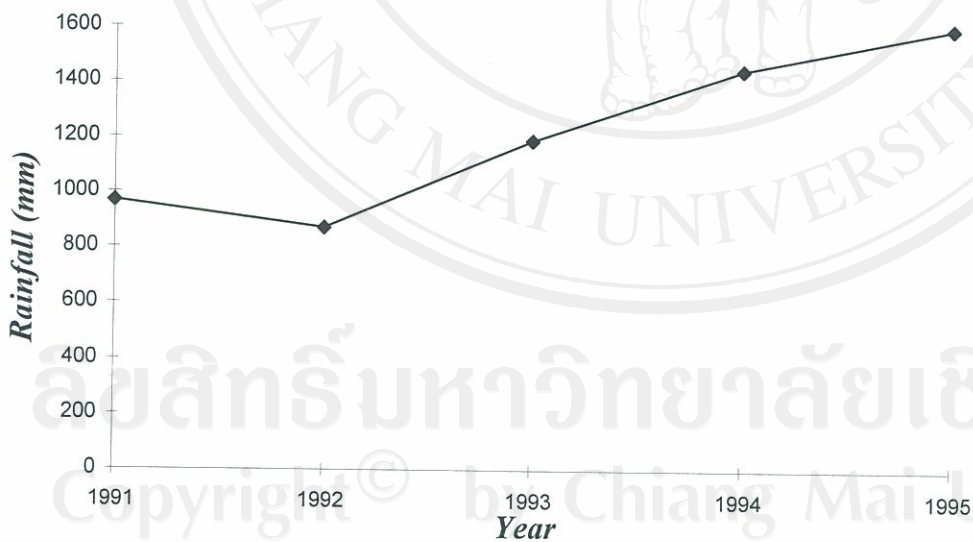


Figure 3.3. Mean rainfall in Mae Teang



Figure 3.4. One of waste heaps of previous mining activities.



Figure 3.5 The Lahu hill tribe village in the study area.



Figure 3.6 One of maize fields located in the study area (8/1997).

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3.2 SAMPLING SITES

Soil samples were taken in 38 sampling sites in land surrounding the mine, which covers about 9 km². The specific description of each sampling site is presented in Table 3.1.

Table 3.1. Sampling site description

Site number	Elevation (m)	Land use pattern	Parent rock
1	1,000	Degraded deciduous forest with bamboo.	Marble with gossan.
2	980	Degraded deciduous forest with bamboo. Bamboo is dominant.	Marble with gossan.
3	1,000	Very degraded deciduous forest. Bamboo and herbs are dominant.	Marble with gossan.
4	1,020	Fallow covered by herbs, maize field	Marble with gossan.
5	1,015	Secondary growth of evergreen forest mixed with bamboo.	Limestone.
6	1,080	Maize field in karst basin. Degraded deciduous forest.	Limestone.
7	1,150	Grass land on ridge. Rice field. Deciduous forest.	Limestone.
8	1,200	Secondary growth of evergreen forest. Upper part of a karst basin.	Granite
9	1,320	Degraded evergreen forest.	Granite
10	1,400	Deciduous forest mixed with pine trees.	Granite
11	1,000	Maize field. Forest is destroyed because of slash and burn practice.	Phyllite.

Table 3.1. Sampling site description (continued)

Site number	Elevation (m)	Land use pattern	Parent rock
12	1,000	Very degraded evergreen forest. Cassava field.	Phyllite.
13	1,080	Very degraded evergreen forest	Phyllite.
14	1,000	Degraded evergreen forest mixed with bamboo.	Quartz-mica schist.
15	980	Degraded evergreen forest, wild banana near stream.	Granite.
16	970	Secondary growth of evergreen forest mixed with bamboo.	Granite.
17	970	Lychee farm. Degraded deciduous forest.	Granite.
18	960	Grassland next to mixed evergreen deciduous forest.	Granite.
19	1,000	Fallow, grassland, degraded mixed deciduous evergreen forest.	Marble.
20	960	Maize field near stream. Deforested area with small amount of bamboo.	Marble with gossan.
21	910	Degraded deciduous forest.	Marble with gossan.
22	910	Deciduous forest	Marble with gossan.
23	980	Degraded deciduous forest mixed with bamboo.	Marble.
24	640	Degraded deciduous forest mixed with bamboo.	Granite.

Table 3.1. Sampling site description (continued)

Site number	Elevation (m)	Land use pattern	Parent rock
25	660	Evergreen forest.	Granite.
26	650	Slightly degraded evergreen forest. (Foot slope below mine).	Granite.
27	660	Slightly degraded evergreen forest.	Granite.
28	640	Maize field. Degraded deciduous forest.	Granite.
29	690	Degraded mixed deciduous evergreen forest.	Sandstone.
30	980	Degraded deciduous forest mixed with bamboo.	Sandstone.
31	1,150	Mixed deciduous evergreen forest. No evidence of human activities.	Granite.
32	1,170	Mixed deciduous evergreen forest. No evidence of human activities.	Granite.
33	1,100	Along stream, wild banana, bamboo.	Granite.
34	1,040	Secondary growth of deciduous forest mixed with bamboo.	Granite.
35	990	Secondary growth of deciduous forest mixed with bamboo.	Granite.
36	850	Secondary growth of deciduous forest mixed with pine trees.	Granite.
37	950	Rice field. Degraded evergreen forest mixed with bamboo.	Limestone.
38	870	Fallow covered by herbs. Maize field.	Mica schist.