

## CHAPTER 5

### CONCLUSION AND RECOMMENDATION

#### 5.1 Conclusion

One of the purposes of this study is to investigate the gypsum potential area at Ban Khao Cha-Ngok and its vicinity by applying gravity survey. The gravity readings and elevation measurements of the gravity survey carried out by the exploration team from Department of Mineral Resources of Thailand were processed and interpreted in the present study. Both qualitative and quantitative interpretation were done using available digital computer applications.

Gravity features on the free-air, bouguer gravity, and enhance gravity maps reflect gravity signatures that are in contrast with low topographic relief of the study area. There are four prominent features on the gravity maps; the broad gradient of decreasing in gravity (NW-SE trending), the gravity high around the north portion of the map, the gravity lows at the center, and finally, the very high magnitude of gravity at the SW corner.

The quantitative interpretation attempted over the study area were modeled by two-and-one-half dimensional interactive forward modeling using GM-SYS program in order to avoid unreasonable assumption of infinite extent of all bodies. Subsurface rock units can be divided into five layers (Table 5.1), based on geology around the study area, and information from core samples.

**Table 5.1** Density of each subsurface rock units used for modeling

No	Density (g/cc)	Formation	Age
1	2.18	Overburden	Quaternary
2	2.74	Andesitic uff	Permo-Triassic?
3	2.92	Andesite	Permo-Triassic?
4	2.64	Limestone	Permo-Carboniferous
5	3.00	Possible granite	Triassic

The first layer which covers most of the study area is Quaternary alluvial deposits composed of sand, silt, and clay. The second layer is andesitic tuff and andesite having varying density. The average of about 2.74 g/cc and 2.92 g/cc of tuff and andesite were used in modeling subsurface geology. From surface geology that andesitic tuff overlies limestone, the third layer is assumed to be limestone which has steep dipping around the central of the area. Finally, the basement in the study area is assumed to be granite whose density is about 3.0 g/cc.

It is apparent from a good agreement of gravity pattern, gravity modeling, and geologic map that the study area is structurally controlled by at least two sets of fault which run in NE-SW direction and NW-SE direction respectively.

## 5.2 Recommendation

The following is considered as significant achievements from the study.

1. Gravity anomalies which once were thought to represent anhydrite were proved to be andesite or andesitic tuff instead by drilling. However, the most prominent anomaly around SW most corner which is the gypsum mining area still demonstrates the potential of using gravity measurement as one of the tools to locate shallow anhydrite mass and the overlying gypsum ores. This result implies that there are differences in geologic setting and rock units between gypsum-producing area and the study area.

2. Extension of the anticipated sequence was terminated abruptly by two fault sets just north of the mines. Relative movements of these fault sets are not determined, and their expression through surface rock exposures are not apparent. Further exploration would require careful studies of fault movement in order to trace the gypsum-bearing blocks from one place to the other.

3. The application of gravity survey to gypsum exploration was not clearly exemplified by this study, but the similar idea and method were shown to be successful in case of the Wang Saphung gypsum deposits in Changwat Loei (Kuttikul and others, 1997). Follow-up drilling found a gypsum body whose depth was in the range of 7 to 15 meters underlain by anhydrite body and a continuous gypsum body of more than 70 meters thick.

4. Density values and the presence of disseminated sulfide minerals in the rocks indicate that the study area may bear potential of sulfide deposits. And because the rocks are associated with sulfide minerals especially around central area, density of them are higher than usual such as the density of 2.92 g/cc of andesite. A considerable extent of disseminated sulfides, is located around the center of the map in Figure 5.1, and further study is recommend in order to verify its potential.

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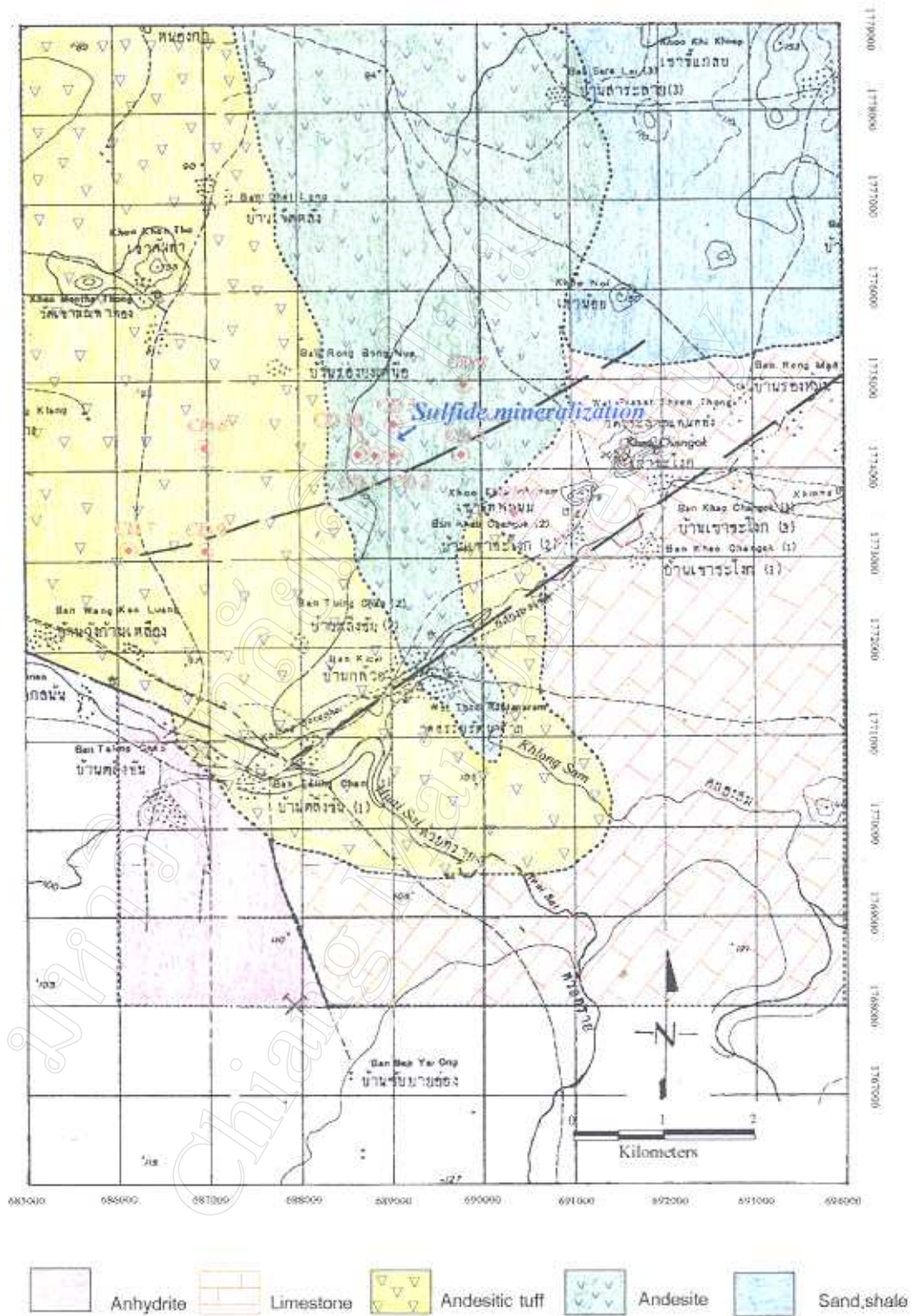


Figure 5.1 Enhanced geologic map of the study area.