

Notable rock geochemical anomaly is high Cu-Mo-As anomaly.

2 - 5 Chacarilla district

For this district, geological map are shown in Figure 2-2-21, schematic geological column in Figure 2-2-22, location of mineral showings in Figure 2-2-23, distribution of alteration minerals in Figure 2-2-24, and rock geochemical anomaly distribution in Figure 2-2-25.

The geology of this district consists of Middle-Upper Jurassic, Upper Jurassic, Lower Cretaceous, Upper Tertiary, and Quaternary Systems.

The Upper Jurassic System is composed of andesitic lava • breccia, limestone, sandstone and conglomerate.

The Lower Cretaceous System is composed of andesitic~rhyolitic lava • pyroclastic rocks and intercalation of sedimentary rocks.

Jurassic and Cretaceous Systems are intruded by Cretaceous and Tertiary intrusive bodies. These intrusive rocks are diorite and granodiorite. Jurassic and Cretaceous Systems, and the intrusive bodies are overlain unconformably by Upper Tertiary System.

The Upper Tertiary System is composed of Miocene • Pliocene rhyolitic~basaltic lava • pyroclastics, ignimbrite, and intercalation of terrigenous sediments.

Quaternary System is composed of river deposits, lacustrine deposits, eolian deposits, colluvium, mudflow deposits, alluvium, and talus deposits.

Alteration zones were extracted on TM images at two localities in this area, one in the eastern part and the other in the western part.

The alteration zone in the eastern part is developed in the diorite intrusive bodies and in the Middle-Upper Jurassic deposits and consists mainly of silicification with sericitization in the periphery. In the diorite bodies, oxidized zones consisting of limonite is developed and also some pyrite remnants are found. In the Jurassic System in the vicinity, weak dissemination of malachite is observed. Quartz veins are less developed in this alteration zone.

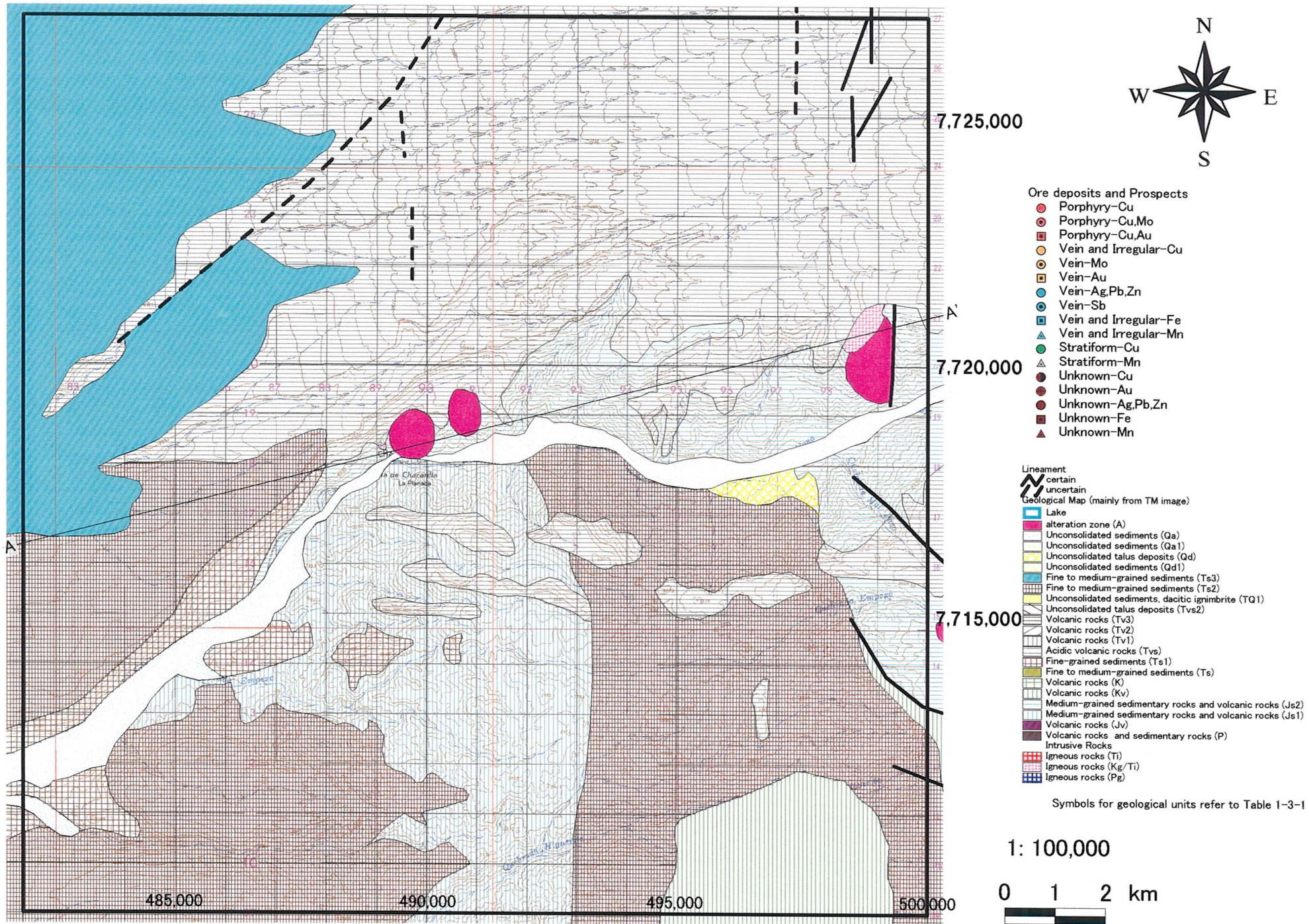
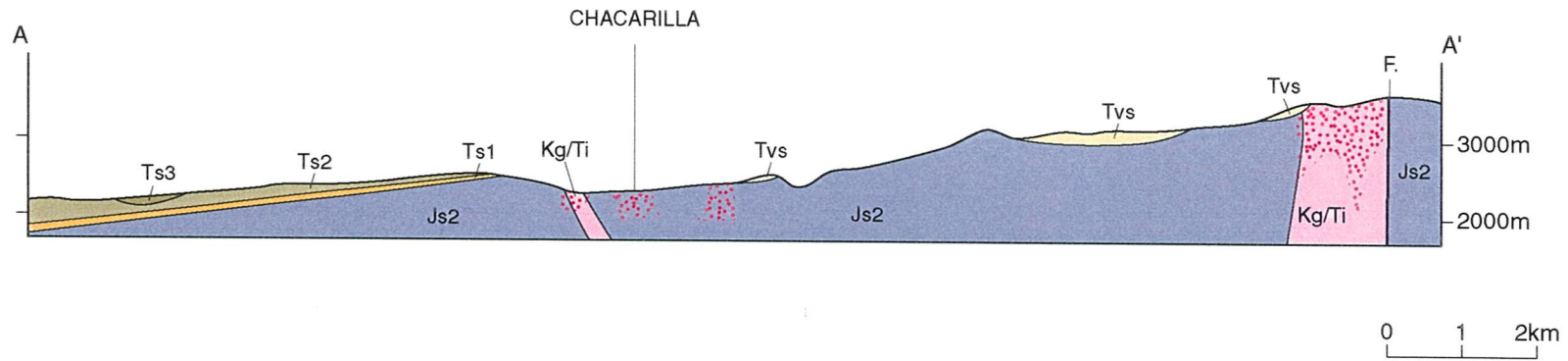


Fig. 2-2-21 Geological Map of the Chacarilla Area



Geologic Time		Columnar Section	Lithology	Intrusives	Mineralization
CENOZOIC	QUATERNARY	Qa, Qap, Qd, Qdl Ts3, Ts2	Fluvial, Lacustrine, Glacial Acolian Alluvial, Colluvial Mud flow, talus	Diorite, Granodiorite porphyry (Kg/Ti)	Epithermal type?
	LATE TERTIARY	Ts1, Tvs	Rhyolitic ~ basaltic flow pyroclastic rock, Ignimbrite intercalation of continental sediments		
	EARLY TERTIARY				
MESOZOIC	LATE CRETACEOUS			Diorite, Granodiorite porphyry (Kg/Ti)	Epithermal type?
	EARLY CRETACEOUS	Kv, Kg/Ti	Andesitic ~ rhyolitic lava/ volcaniclastics with sediments		
	LATE JURASSIC	Js2	Conglomerate, Sandstone, Shale, Limestone, Andesitic lava/breccia		
	LATE-MIDDLE JURASSIC	Js1	Shale, Sandstone		

Fig. 2-2-22 Schematic Stratigraphic Columns and Profiles of the Chacarilla Area

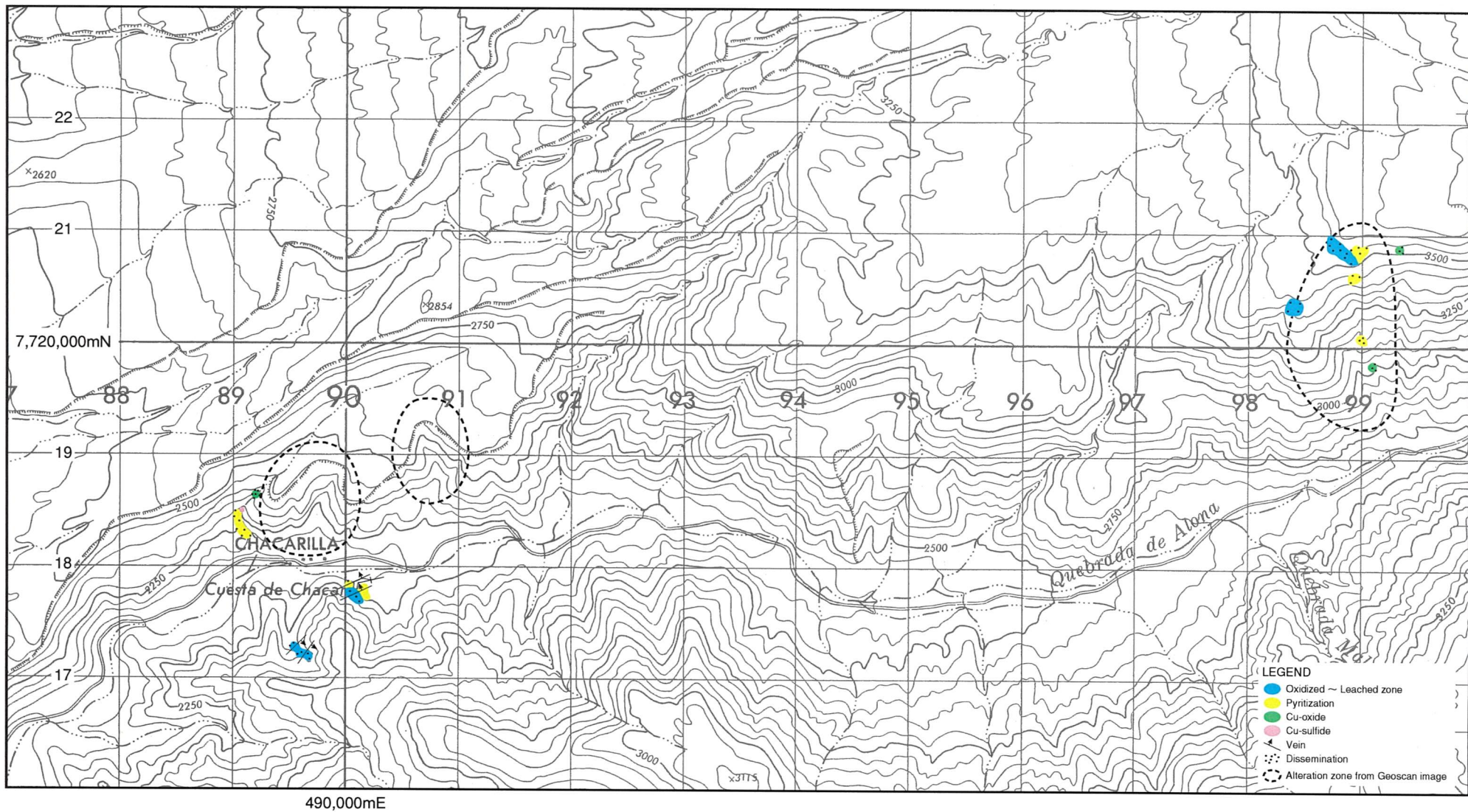


Fig. 2-2-23 Mineralization Map of the Chacarilla Area

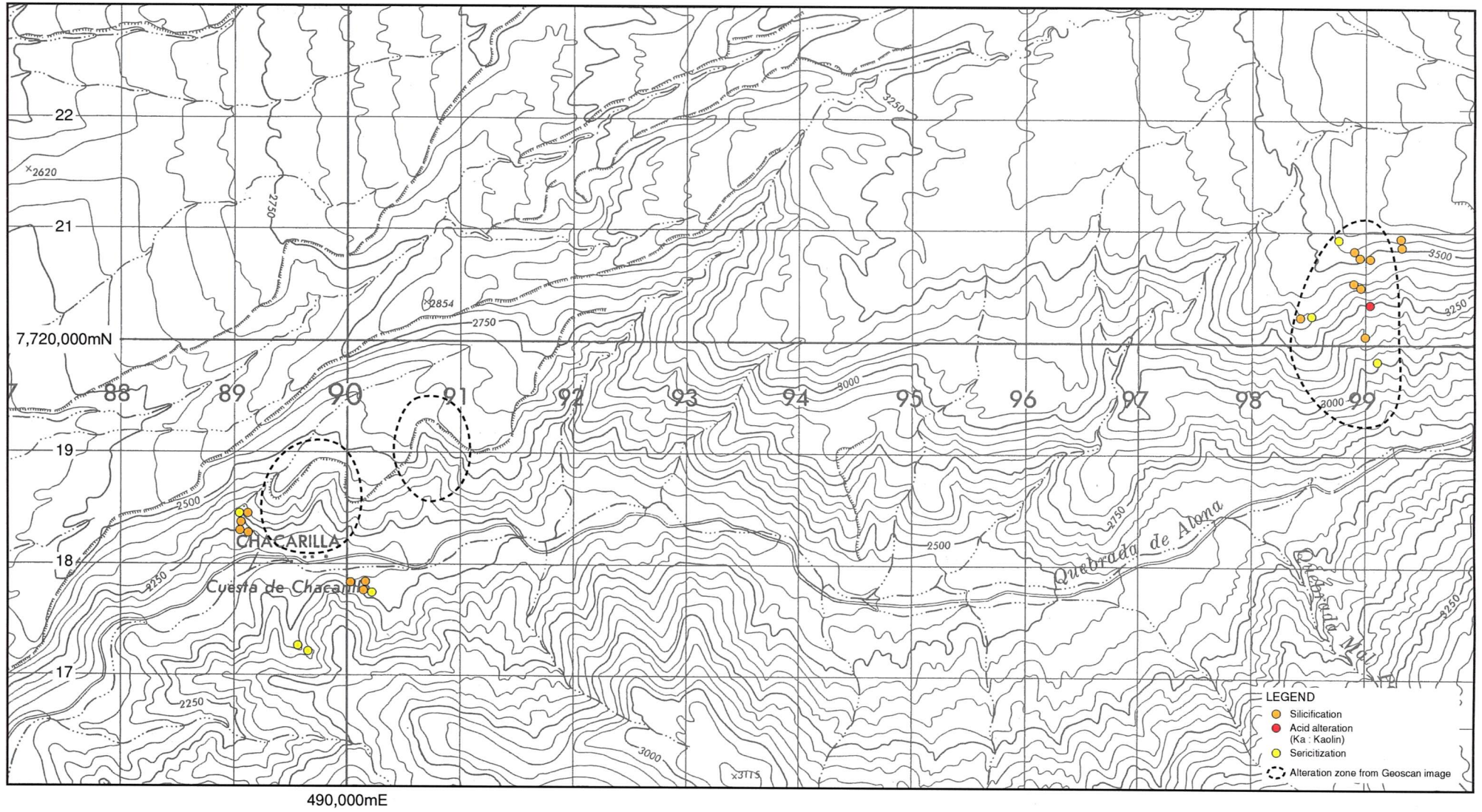


Fig. 2-2-24 Distribution Map of Alteration Minerals at the Chacarilla Area

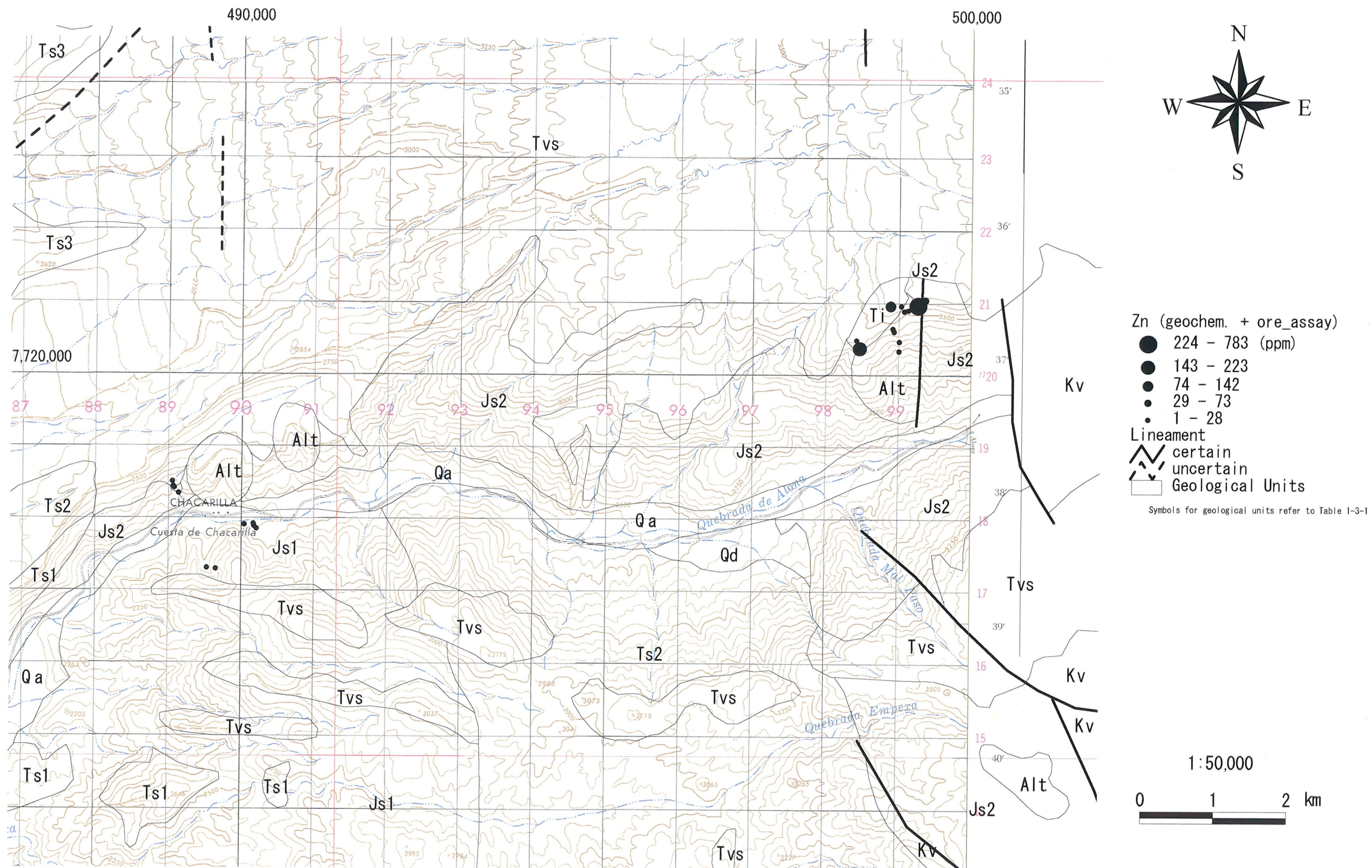


Fig. 2-2-25 (1) Geochemical Anomaly Map in the Chacarilla Area (Zn)

The alteration in the western part is developed in the granodiorite porphyry bodies and the Jurassic System in the vicinity and it consists of sericitization and silicification. Pyrite dissemination is common in this alteration zone and weak chalcopyrite dissemination is found in the granodiorite porphyry. In the Middle and Upper Jurassic System in the southern part, NE-trending silicified veins are developed and boxwork oxidization suggesting pyrite origin is found in the vicinity.

Notable rock geochemical anomaly is high Zn-As anomaly in the eastern alteration zone.

2 - 6 West Queen Elizabeth district

For this district, geological map are shown in Figure 2-2-26, schematic geological column in Figure 2-2-27, location of mineral showings in Figure 2-2-28, distribution of alteration minerals in Figure 2-2-29, and rock geochemical anomaly distribution in Figure 2-2-30.

The geology of this district consists of Middle-Upper Jurassic, Lower Cretaceous, Upper Tertiary, Upper Tertiary-Quaternary, and Quaternary Systems.

The Middle-Upper Jurassic System is composed of chert, conglomerate, shale, marl, limestone, and sandstone.

The Lower Cretaceous System is composed of andesitic~rhyolitic lava • pyroclastic rocks, ignimbrite, and intercalation of terrigenous sedimentary rocks.

The Middle-Upper Jurassic and Lower Cretaceous Systems are intruded by Cretaceous and Tertiary intrusive bodies. These intrusive rocks are diorite, granodiorite, and porphyry. The age of intrusion of these rocks have been indicated in the past geological maps as Cretaceous, but the age of parts of the intrusive rocks have been clarified to be middle Eocene because of the $41.3 \pm 1.0\text{Ma}$ obtained by K-Ar method of the primary biotite from granodiorite in the southeastern part of this area. Lower Cretaceous System and the intrusive bodies are overlain unconformably by Upper Tertiary System.

The Upper Tertiary-Quaternary System is composed of Pliocene-Pleistocene dacitic ignimbrite, tuff, and intercalation of terrigenous sediments.

Quaternary System is composed of alluvium, and talus deposits.

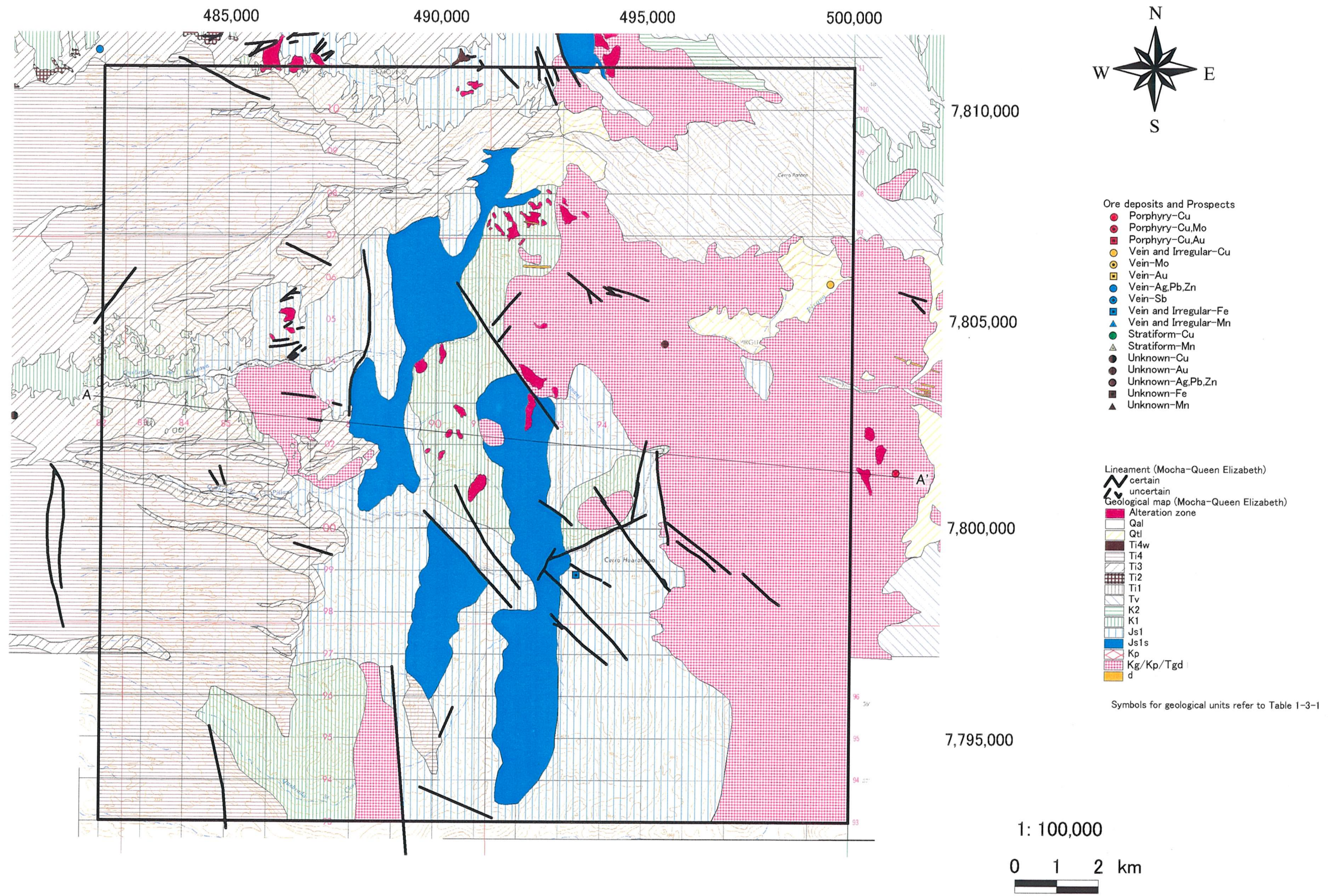
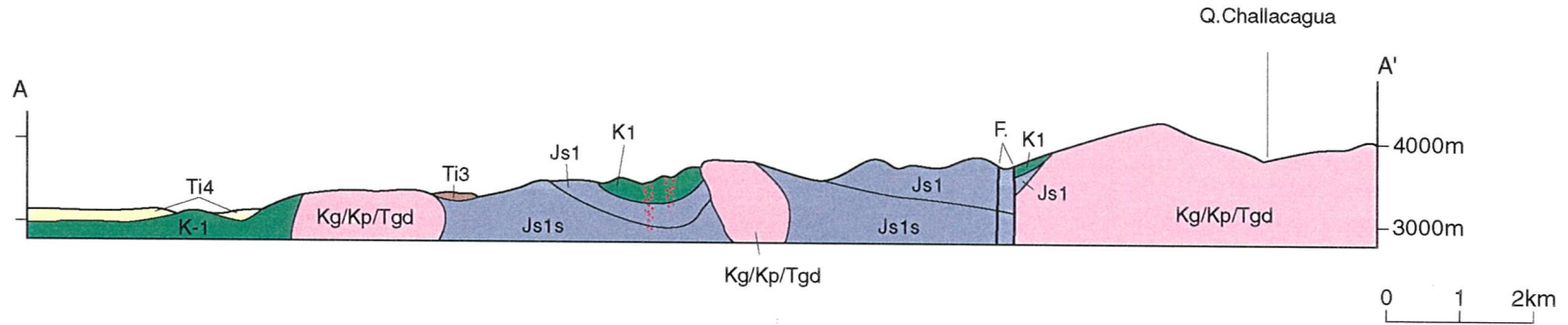


Fig. 2-2-26 Geological Map of the West Queen Elizabeth Area

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West Queen Elizabeth



Geologic Time		Columnar Section	Lithology	Intrusives	Mineralization
CENOZOIC	QUATERNARY	Qal, Qil	Alluvial, Talus	Diorite, Granodiorite porphyry, Granite porphyry (Kg/Kp/Tgd) ↑	Hypo-Mesothermal type ↑ Epithermal type
	LATE TERTIARY	Ti4	Dacitic Ignimbrite, Tuff, Intercalation of continental sediments		
	EARLY TERTIARY	Ti3	Rhyolitic-basaltic flow, Pyroclastic rock, Ignimbrite, Intercalation of continental sediments		
MESOZOIC	LATE CRETACEOUS	(Vertical lines)			
	EARLY CRETACEOUS	K1	Andesitic ~ rhyolitic flow, Pyroclastic rock, Ignimbrite, Intercalated with sediments		
	LATE-MIDDLE JURASSIC	Jsg, Js1, Js1s	Sandstone, Limestone, Marl, Shale Conglomerate, Chert		
		Kg/Kp/Tgd			

Fig. 2-2-27 Schematic Stratigraphic Columns and Profiles of the West Queen Elizabeth Area

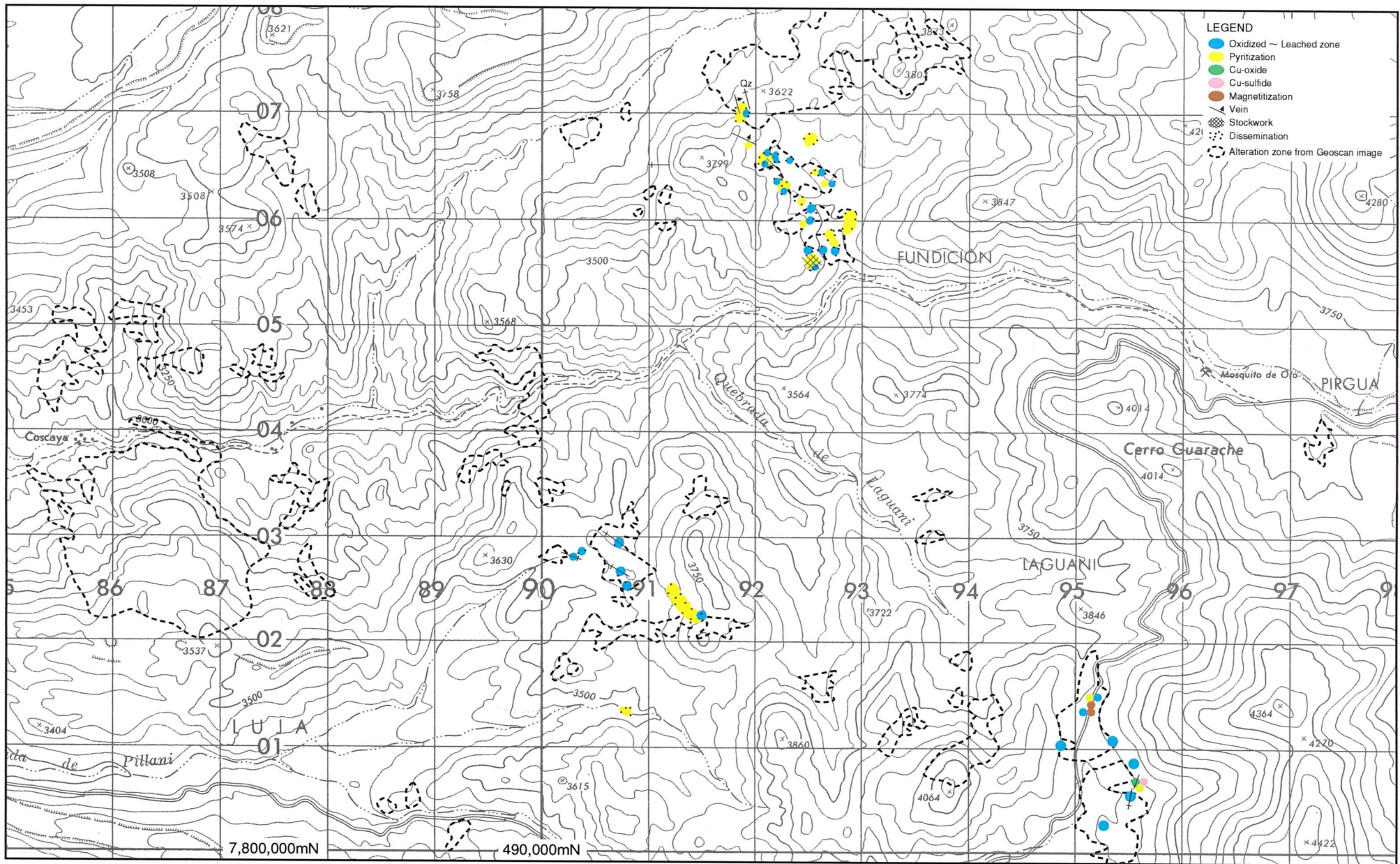


Fig. 2-2-28 Mineralization Map of the West Queen Elizabeth Area

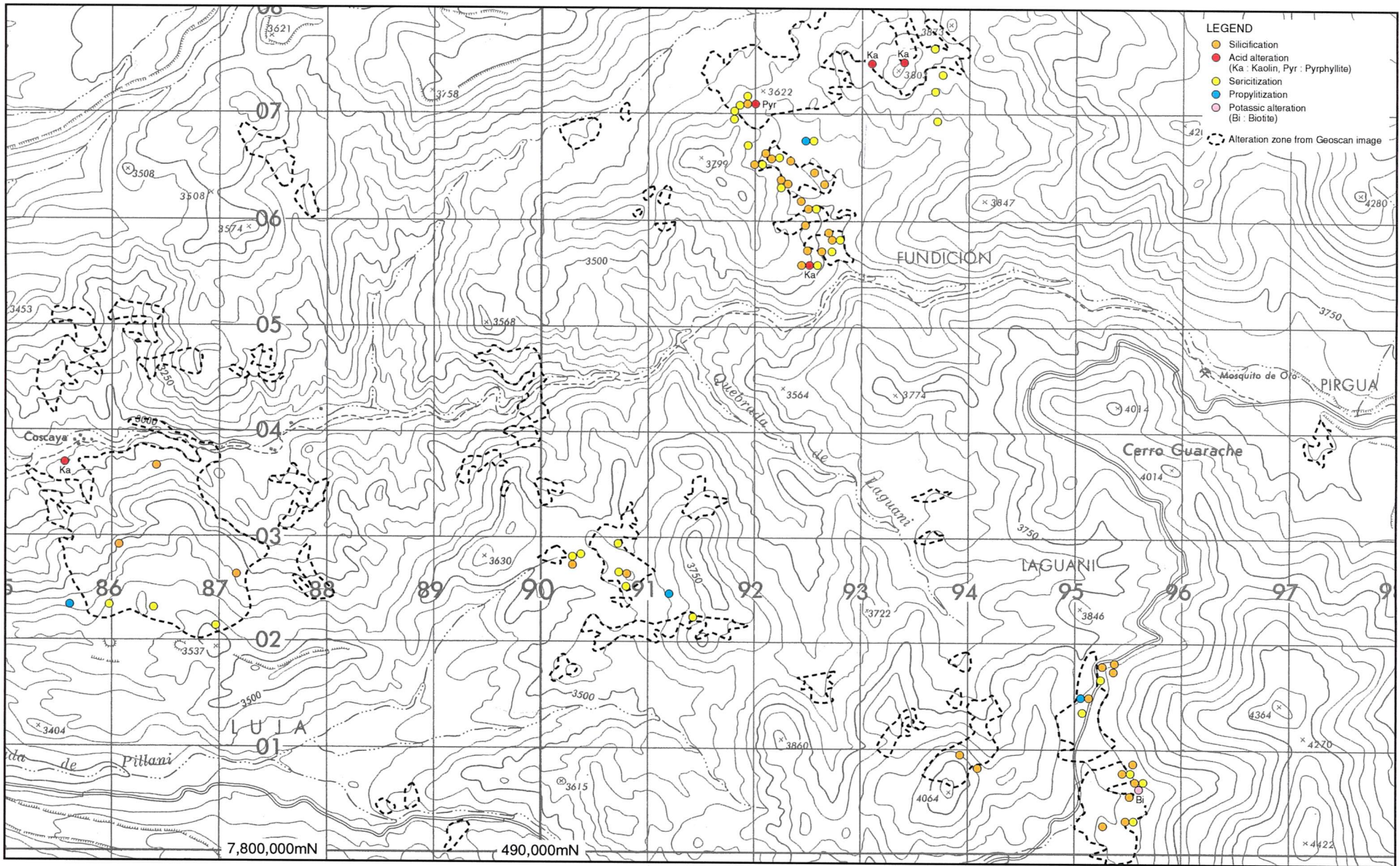


Fig. 2-2-29 Distribution Map of Alteration Minerals at the West Queen Elizabeth Area