NO.

REPORT
ON
THE MINERAL EXPLORATION
IN
THE SAN JOSE AND ARROYO GRANDE AREA
THE ORIENTAL REPUBLIC OF URUGUAY

(PHASE Ⅱ)

MARCH 2002

JAPAN INTERNATIONAL COOPERATION AGENCY
METAL MINING AGENCY OF JAPAN

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PREFACE

In response to the request of the Government of the Oriental Republic of Uruguay, the Japanese Government decided to conduct a Mineral Exploration Project in the San Jose and Arroyo Grande Area and entrusted the project to the Japan International Cooperation Agency (JICA) and the Metal Mining Agency of Japan (MMAJ).

JICA and MMAJ sent to Uruguay a survey team composed of 5 members from October 2001 to December 2001.

The team exchanged views with the officials concerned of the Government of Uruguay and conducted a field survey in the San Jose and Arroyo Grande Area. After the team returned to Japan, further studies were made and the present report has been prepared. This report includes the survey results of geological, geochemical and geophysical surveys carried out during Phase II.

We hope that this report will be useful for the development of the mineral resources in Uruguay and contribute to the promotion of friendly relations between Japan and Uruguay.

We wish to express our deep appreciation to the officials concerned with the Government of Uruguay for their close cooperation extended to the team.

March 2002

Takao Kawakami
President
Japan International Cooperation Agency

Norikazu Matsuda
President
Metal Mining Agency of Japan

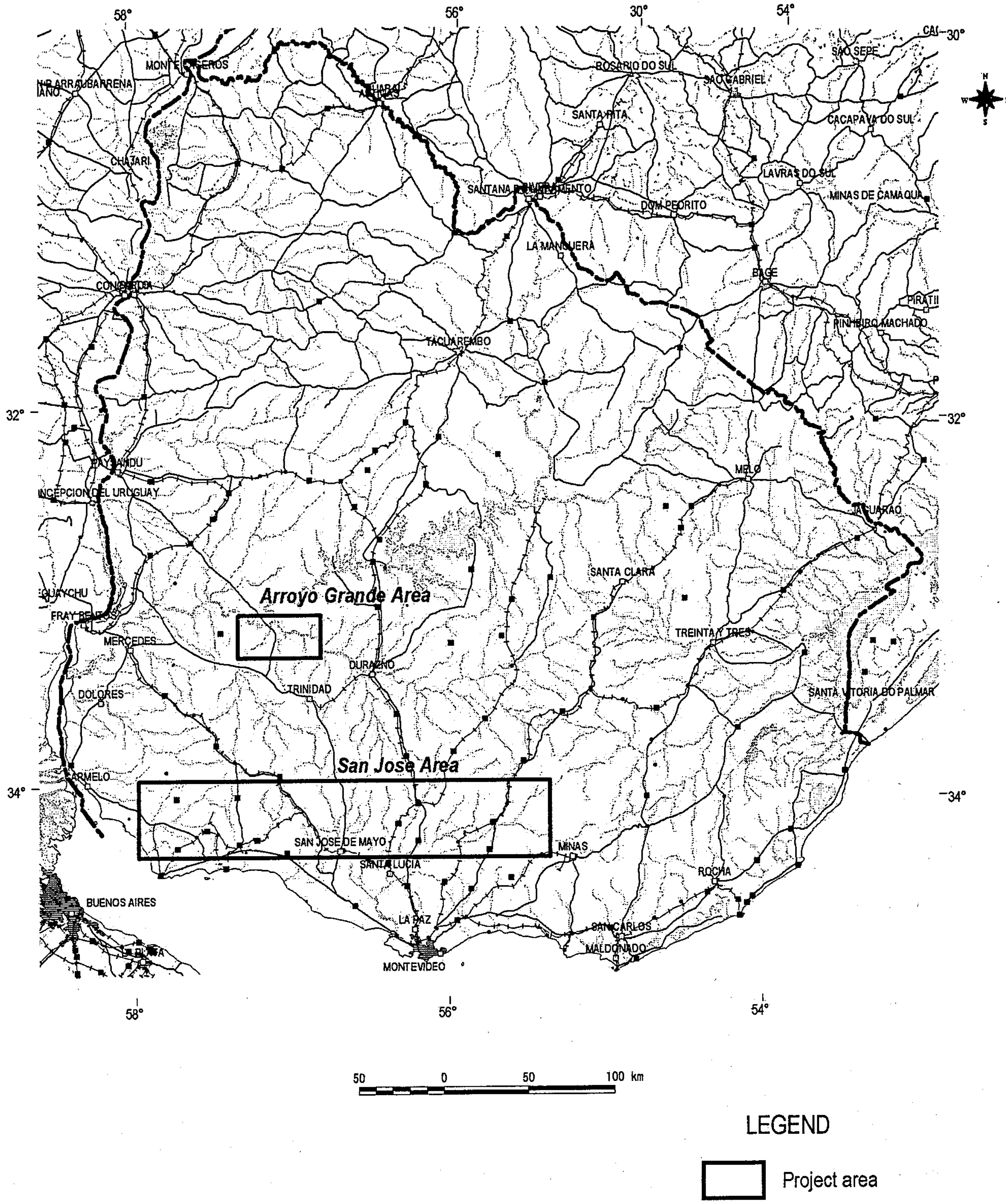

Fig. 1 Location map of the project areas

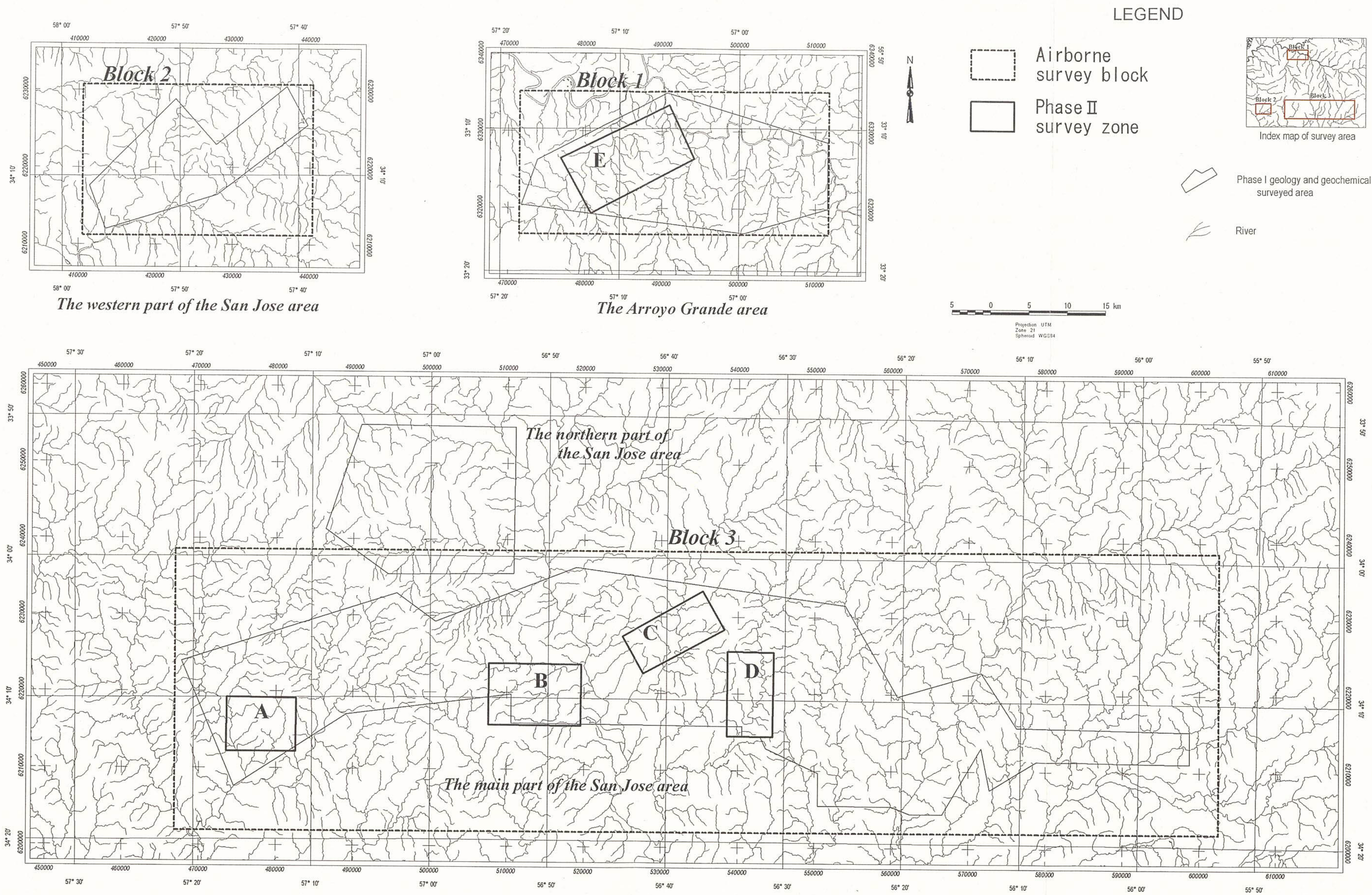

Fig.2 Location map of the PhaseⅡ

ABSTRACT

In according with the Scope of Work signed on 24th November 2000 between the Government of Japan and the Oriental Republic of Uruguay, a mineral exploration project was carried out in San Jose and Arroyo Grande area, Uruguay in order to discover new ore deposits in the survey area.

This project started in 2000 with duration of three years, and the present report describes the survey results of the second year (Phase II).

During Phase I the survey team started with the compilation of existing data and geological interpretation of satellite image. Based on these results, the original area of 12,000 km^2 was reduced to a survey area of 2,500km^2 in order to carry out geological survey and geochemical survey in places where greenstone units were described in the existing data. From the results of the Phase I it was recommended to carry out in Phase II soil geochemical survey and geological survey in 5 gold anomalous zones, and airborne geophysical survey in a wider area that included the above mentioned zones.

During this Phase II survey, geological survey, soil geochemical survey, airborne geophysical survey and several laboratory tests were carried out. The geological and geochemical survey area was reduced from the original area of 2,500km^2 to a survey area of 400km^2 that includes five target zones. Four of them (Zone A to Zone D) were located in San Jose area and another one (Zone E) was located within Arroyo Grande area.

The geological survey was carried out in the above mentioned zones by covering more than 400 linear km. Based on this geological survey, geological distribution of greenstone rocks and several intrusive rock as well as structures as shear zones and faults were clarified. During the geological survey, 17 areas showing large amount of quartz veins were selected. Three of the quartz veins samples showed high gold contents and some others showed low to intermediate gold contents.

Grid soil geochemical survey with a sampling density of 4 or 5 samples/km^2 was carried out within 5 target zones by collecting 1,926 samples. Soil geochemical survey detected 6 gold anomalies zones with gold grades above 30ppb.

The airborne geophysical survey covered an area of about 12,000km^2 with a total coverage of 27,497 Km-lines were carried out during Phase II. Magnetic anomalies related to different geology, shearing zones and basic dikes were confirmed. Younger granite is well detected by the radiometric survey as distributions with high potassium concentrations with no magnetic signature. The approximate N60E trend is by far the most recognizable trending system and one of these trends crosses the Mahoma mine. The intersection of these systems by structures and faults along the second EW trend as well as sites that presented conspicuous magnetic anomalies are thought of particular interest for the existence of gold mineralizations.

As a result of the geological, geochemical and airborne geophysical surveys carried out during Phase II, it is recommended the following sites (Fig.I-5-1) for further survey during the Phase III

1) E-A soil gold anomaly area
2) D-A soil gold anomaly area
3) B-A soil gold anomaly area
4) D-B soil gold anomaly area
5) A-A soil gold anomaly area
6) C-A soil gold anomaly area

During Phase III, it is recommended a previous soil geochemical survey aiming to detect in more detail the distribution of the soil gold anomalies. It should be followed by trench survey to check the location and dips of the mineralized section in fresh rock and by drilling survey to check the gold mineralization at depth.

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PART I GENERALITIES

CHAPTER 1 INTRODUCTION

1-1 Background

The economy of the Oriental Republic of Uruguay is strongly sustained by the agriculture and cattle raising. Starting from the 1980s, mining companies from Canada and U.S.A. started exploration work mostly for gold. During this time, gold mines such as Mahoma and San Carlos at south and San Gregorio at north were consecutively discovered. In order to accelerate its mining development, Uruguay requested the assistance of Japan on 10 February 2000 and as result, a project in Mineral Exploration in San Jose and Arroyo Grande areas was signed between Japan and the Dirección Nacional de Minería y Geología (DINAMIGE) in Uruguay on 24 November 2000.

The purpose of this survey is to clarify the mineral potentiality in San Jose area and Arroyo Grande areas by using several geoscientific survey methods. Phase I survey commenced during the Japanese fiscal year 2000 and the Phase II survey during the 2001 fiscal year.

1-2 Contents and coverage of the Phase I and Phase II surveys

The Phase II surveys were carried out based on the results of the Phase I that was carried out in San Jose and the Arroyo Grande areas, located in the southern part of Uruguay.

Phase I survey covered an area of about 12,000km^2 with the following survey contents: analysis of the existing data, geological interpretation of satellite image, geological survey, soil and rock geochemical survey, as shown in the Tab. I-1-1. The contents of the laboratory tests are shown in the Tab. I-1-2.

Phase I survey results detected five promising areas for gold.

Tab.I-1-1Survey contents and the coverage of Phase I

Contents of Survey	Coverage	
Analysis of existing data	Covered area	12,000 km^2
Geological interpretation of Satellite image	Covered area	12,000 km^2
Geological and geochemical survey	Surveyed area	2,500 km^2
	Route length	630 km

Tab.I-1-2 Number of test samples during Phase I survey

Survey type	Sample types	Number of Samples
Geological survey	Thin section	67
Geochemical survey	Polished section of ore	38
	X-ray diffraction analysis	31
	Whole rock analysis ※1)	61
	Ore chemical analysis (Au, Ag, Cu, Pb, Zn, As, Sb, Hg)	607
	Soil chemical analysis ※2)	2,021
	Fluid inclusion (homogenization temperature and salinity)	14
	Dating (K-Ar)	6

※1) Al_2O_3, CaO, Cr_2O_3, Fe_2O_3, MgO, MnO, P_2O_5, K_2O, SiO_2, Na_2O, TiO_2, LOI

※2) Al, S, As, Ba, Be, Bi, B, Cd, Ca, Co, Cu, Ga, Fe, La, Pb, Mg, Mn, Hg, Mo, Ni, P, K, Sc, Ag, Na, Sr, S, Tl, Ti, W, U, V, Zn, Au

During Phase II, geological and geochemical surveys and airborne geophysical survey were carried out. The Phase II survey contents and its coverage are shown in Tab. I-1-3 and the number of test samples is shown in Tab. I-1-4.

Tab.I-1-3 Survey contents and coverage of Phase II

Contents of Survey	Coverage	
Geological and geochemical surveys	Surveyed area	400 km^2
	Route length	400 km
	Scale	1/20,000
Airborne survey	Surveyed area	12,000 km^2
	Prospect length	27,497 km

Tab. I -1-4 **Number of test sample during Phase II survey**

Survey type	Sample types	Number of samples
Geological survey and Geochemical survey	Thin section	20
	Polished section	20
	X-ray diffraction analysis	20
	Ore chemical analysis (Au, Ag, Cu, Pb, Zn, As, Sb, Hg)	630
	Soil chemical analysis ※1)	1,900
	Fluid inclusion (homogenization temperature and salinity)	30
	Dating (K-Ar)	5
Airborne survey	Remnants magnetization	8

※1) Al, Sb, S, As, Ba, Be, Bi, B, Cd, Ca, Co, Cu, Ga, Fe, La, Pb, Mg, Mn, Hg, Mo, Ni, P, K, Sc, Ag, Na, Sr, S, Tl, Ti, W, U, V, Zn, Au

Phase II geological and geochemical surveys were carried out in five promising survey zones, selected during the Phase I survey. The geological survey length was of 400linear-km and it was surveyed by using a topographical map on a 1:20,000 scale and GPS. The resulting geological map was prepared on a map based on a 1:20,000 scale. In order to understand the relationship between gold mineralization and geological structures attention was given during the geological survey to the following items: lithology of greenstone units, relationship between greenstone and intrusive rocks, type of quartz veins and the association between gold mineralization and faults. Detailed survey including geological sketch and sampling of the ore was performed in order to evaluate the potentiality of each mineral showing. For ore analysis, samples were taken mainly from quartz veins that were scattered within survey zones. Host rock samples were also taken for analysis. Phase II soil samples were taken from B-layer using grid sampling method. Sampling density was 4 or 5 samples/km^2. Airborne survey covered two areas, named San Jose and Arroyo Grande. The airborne survey was flown at a line spacing of 250m. Laboratory tests as, thin sections, polished sections, X-ray diffractive analysis, chemical analysis of ore, fluid inclusions analysis and dating were implemented in order to complement and improve the accuracy of the geological survey data. The measurement of magnetic properties in rock samples was carried out to provide additional ground data for the airborne geophysical analysis.

1-3 Survey members of the Project

The following members participated in the Project.

1-3-1 Field inspection

Mr. Noboru Fujii (Metal Mining Agency of Japan)

1-3-2 Field work

The following members compose the field investigation team.

Japanese counterpart	Uruguay counterpart
Takashi Katano (Team Leader)	Dr. Carlos Soares de Lima (DINAMIGE)
David Escobar (Airborne survey)	Ing. Jorge Spoturno (DINAMIGE)
Takehiro Koseki (Geological and geochemical survey)	Ing. Humberto Pirelli (DINAMIGE)
Masami Otake (Geological and geochemical survey)	Ing. Richard Arrighetti (DINAMIGE)
Kazuyasu Tsuda (Geological and geochemical survey)	Ing. Javier Techera (DINAMIGE)

1-4 Survey Period

The Phase II survey were conducted in Uruguay during the following period:

Field survey: 24th October to 16th December 2001

CHAPTER 2 GEOGRAPHY OF THE SURVEY AREA

2-1 Location and Access

The survey areas, named San Jose and Arroyo Grande, are located in the southern part of Uruguay and to north of capital Montevideo. San Jose area has a rectangular shape with 220km east-west and 50km north-south and it is located approximately 90km to northwest from capital Montevideo. The city of San Jose de Mayo, used as base camp during the field survey, is located about one and a half hour by car from Montevideo.

The other survey area named Arroyo Grande area is located at approximately 140km northwest from the capital, Montevideo. It has a rectangular shape with 50km east-west and about 20km north-south. The area is located at approximately 90km by the National Road No. 3 towards NNW from San Jose de Mayo City. It takes approximately one and a half hours by car.

All national roads are paved. In the survey area, the transportation network is well developed including prefecture and local roads.

2-2 Topography and Drainage system

The maximum altitude in Uruguay is 514m and most of the country has a flat to gently hills. Due to the weathering, the outcrops are rare but the existence of some hills and rock outcrops reflect a more resistant geological unit. Drainage as Santa Lucia river at east, Rosario river at west and the San Juan river at South and the San Jose river at central part are the main rivers in the San Jose area. The most important river in the Arroyo Grande area is the Neguro river that is a branch of the Uruguay river that runs at the western part of the area.

2-3 Climate and Vegetation

According to the world climatic division, Uruguay belongs to the temperate rainy climate. The climate is mild and the annual mean temperature is about 16℃. Even in the winter season from June to September, the mean temperature seldom falls below 10℃. The mean temperature in the summer season from December to March is 23℃. The annual mean precipitation in Montevideo is around 1000mm.

The survey area has a very flat topography with slight inclined hills with many trees along the rivers side. The land was used for pasture since the westerns immigration arrived in Uruguay.

CHAPTER 3 SUMMARY OF PHASE I SURVEY

3-1 Existing Geological data

After the 1980 years, many mining companies from Canada and USA came to Uruguay and start a prospection boom and targeting promising area for gold. In the San Jose area were discovered the Mahoma and the San Carlos gold mines. The San Gregorio gold mine was discovered in the north of Uruguay, and it is being worked nowadays.

3-1-1 General geology of the surrounding Area

As recommended by Mason et al, 1990, the denomination greenstone was adopted in this report to the rocks composing the San Jose belt and Arroyo Grande belt.

The San Jose and the Arroyo Grande areas belong to the Piedra Alta Terrain that is composed by Achaean basement rocks that underlie the southwestern part of Uruguay. Greenstone belt overlay the northern and southern portions of the Piedra Alta Terrain, respectively named Arroyo Grande greenstone belt and San Jose greenstone belt.

Rock greenstone belts are cited on the existing bibliography as composed by volcanic and sedimentary sequence deposited about 2.6 billion years ago and that were subjected to metamorphism during the Trans-Amazonian Orogeny.

The disposition of the greenstone belt presents an E-W configuration, similar to the schistosity and the disposition of the intrusive rocks. Faults and shear zones have two predominant trends of NW and ENE-WSW.

3-1-2 Mineralization

Gold mineralization within survey area is represented by Mahoma and San Carlos gold mines. Bibliographical references cited that both gold mineralizations are closely associated with granodiorite bodies intruded in greenstone belt.

Mahoma and San Carlos gold mines are located within San Jose greenstone belt. The ore type of Mahoma gold mine is auriferous quartz vein and three veins filling E-W faults in granodiorite compose it. The ore body strike is N70° E and it dips 75° to North. Gold potentiality is estimated between 169,000 and 330,000 tons of ore and gold grade between 8.9 and 11.8 g/t. The San Carlos gold mine located at the western extremity of the San Jose greenstone belt is considered similar to the Mahoma type.

3-2 Geologic interpretation of satellite image data

3-2-1 Summary of the geologic interpretation of satellite image data

The targeted survey area for geologic interpretation of the satellite image data covers both the San Jose and the Arroyo Grande areas and the gross area amounts to 12,000km^2. On the geologic interpretation, JERS-1/SAR images and LANDSAT/TM data were used to implement the geologic structure and the lineament analyses. For the analyses of geology and geological structure, geologic interpretation was carried out on the basis of the geologic unit on the geological map of Uruguay on a scale of 1:500,000.

3-2-2 Result of image analysis

The analyses of geology, geological structure and lineament were implemented by the geologic interpretation of satellite image data and the results were summarized in the analytical map.

The geology and the geological structure were analyzed and clarified as follows:

- In the south of the San Jose area, the faults are developed along two predominant trends ENE-WSW and NW-SE.
- Some of the intrusive granites are distributed in association with the ENE-WSW trending faults. The intrusion is estimated at approximately the same age as when the faults were formed.

The following was interpreted by the lineament analysis.

- Generally, the lineament is developed without discriminating predominant trends, while the N-S trending lineaments are developed in the east part of the Arroyo Grande area as well as the San Jose area.
- The lineaments are densely found in the northern part of the Mahoma mine and form a high density zone of ring arrangement.
- Lineament density is higher in the eastern part of the Arroyo Grande area, when compared with the other areas.

3-3 Geological survey

3-3-1 Summary of the geological survey

Phase I geological survey was carried out within three areas of 2,500km^2 named, San Jose main area, western part of San Jose and the Arroyo Grande areas in order to understand the geological features and structure of the survey area.

3-3-2 Result of the geological survey

(1) Geology

The basement rocks, greenstone rocks, intrusive rocks of Pre-Transamazonian age and younger granitic rocks mainly compose the geological formation of this area. Cretaceous, Neogene and Quaternary sediments overlay the above geological units.

The greenstone rocks is composed of San Jose formation that was subjected to a relatively high grade metamorphism and Paso Severino, Cerros de San Juan and the Arroyo Grande formations that were subjected to a weak metamorphism.

The common lithofacies of these four formations, which are constituent of greenstone, are schists as (green schist, mica schist and quartz schist) and metamorphic volcanic rocks.

The representatives intrusive are ancient granitic rocks and younger granitic rocks.

(2) Geological structure

The geological structure of the survey area is characterized by faults with general trends of E-W and NW-SE.

The E-W fault forms the boundary between the San Jose formation at south side and the Paso Severino formation at north. In the Arroyo Grande area, the E-W fault forms the boundary between the complex rocks of the basement at south and the Arroyo Grande formation in the north.

At western part of the San Jose main area, the schistosity at the proximity of the fault is controlled by NW-SE direction and mylonitization are observed within younger granitic rocks.

(3) Quartz veins zone

The quartz veins are located within ancient granitic rocks and within greenstone rocks. The survey showed the following 13 quartz vein zones.

① Main part of the San Jose area (10 zones)

② Western part of the San Jose area (1 zone)

③ Arroyo Grande area (2 zones)

Host rock alteration near the quartz vein show silicification at the proximity of quartz veins at the Mahoma mine. The quartz veins were classified into three types: milky sacharoidal quartz, semi-transparent quartz and transparent quartz.

3-4 Geochemical prospecting

Soil geochemical survey was carried out in the same area of the geological survey. Samples of soil sediment were taken in places that forms the ancient riverbeds. Sampling points were selected using aerial photographs and topographical maps with locations confirmed by GPS. The sampling density was of 1 sample/km^2 and the number of soil samples was 2,021.

Chemical analysis was carried out for 34 elements that included the elements Au, Ag, Cu, Fe, Pb, Zn, As and Hg.

3-5 Overall result from the Phase I survey

Geological survey, geochemical survey, analysis of existing data and geologic interpretation of satellite image were carried out during Phase I. A total of 13 zones with quartz veins were extracted from geological survey within the Phase I survey area. Others anomalies zones with gold above 5ppb were selected by geochemical survey. Airborne survey, geological survey and soil geochemical survey were recommended to carry out in five potential survey areas. Phase I survey results are shown in Fig. I-3-1 and the quartz veins zones are summarized in Tab.I-3-1.

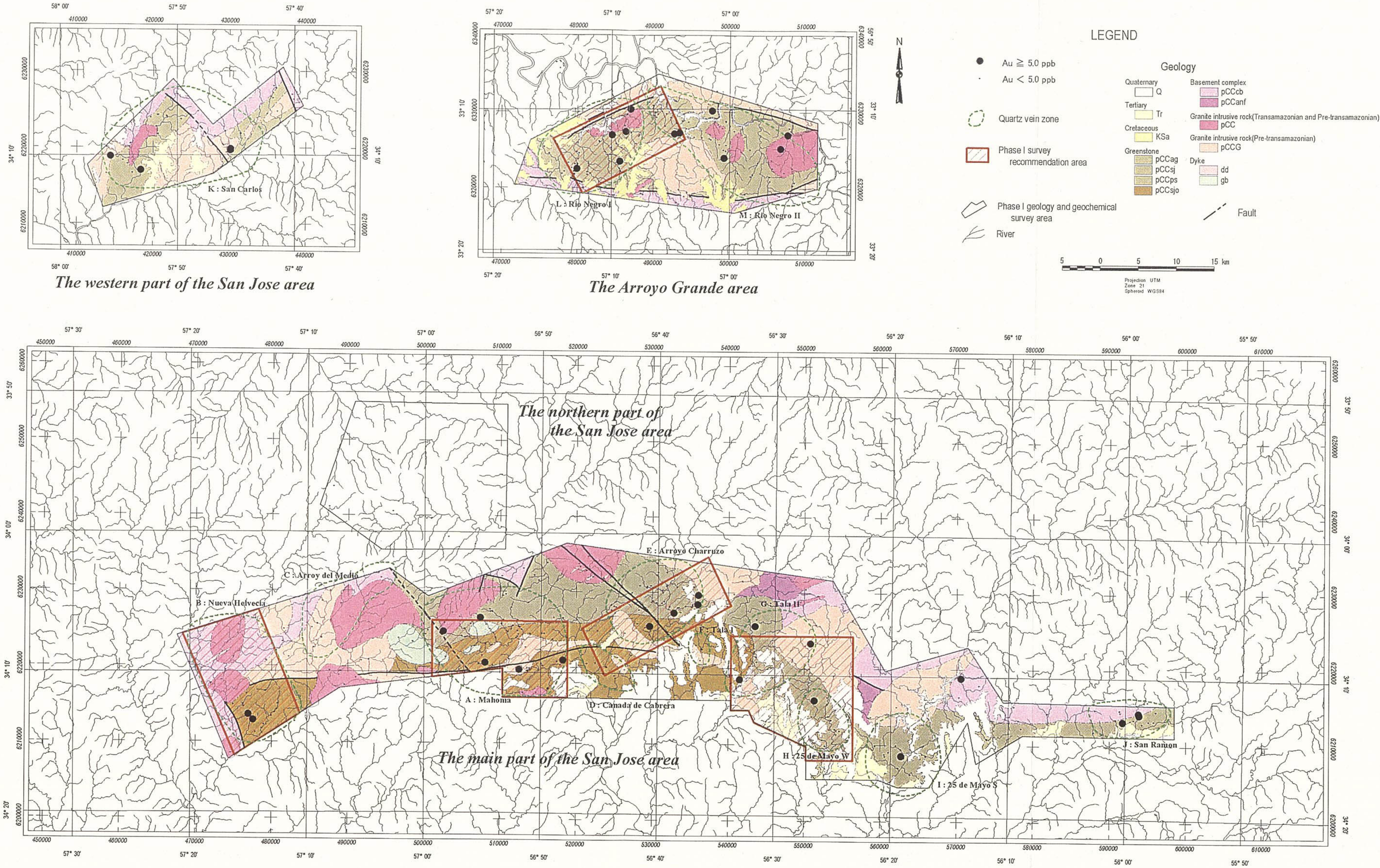

Fig. I-3-1 Composite map of results of the Phase I survey

Tab. I-3-1 Composite table of results of the Phase I survey

	Mineral showings	Location	Occurrence	Length, width	Host rock	Alteration minerals	Ore minerals	Gangue minerals	Results of soil analysis	Results of analysis	Evaluation
A	Mahoma	Paso del Rey	quartz vein (NW,E-W,NE) >> floats of quartz	20km×15km	green schist, metabasalt, quartz schist, granodiorite (pCCG)	quartz-(sericite)-(pyrite), chlorite-(epidote)-(albite)	pyrite, limonite	quartz,clay	Au:23-79ppb, Cu,Pb,Zn, Factor2,Factor3, Factor4	quartz:1520-19890ppb, rock:5-354ppb	A (rock and soil geochem.)
B	Nueva Helvecia	Colla-Nueva Helvecia	floats of quartz	10km×18km	green schist> quartz schist,	quartz-(sericite)-(pyrite), chlorite-(epidote)-(albite)	limonite, (pyrite)	quartz	Au:14-23ppb, As,Cu,Pb,Zn, Factor1,Factor4	rock:32-37ppb	B (soil geochem.)
C	Arroy del Medio	Mal Abrigo	quartz vein (NE,E-W) = floats of quartz	6km×15km	granodiorite (pCCG)	quartz-(sericite)-(pyrite), chlorite-(epidote)-(albite)	limonite	quartz	Cu,Pb,Zn, Factor2,Factor3	-	D
D	Canada de Cabrera	Paso del Rey	floats of quartz	8km× 4km	green schist	quartz-(sericite)-(pyrite), chlorite-(epidote)-(albite)	limonite	quartz	Au:6ppb,Pb,Zn, Factor2	-	C
E	Arroyo Charruzo	Paso del Rey	quartz vein (E-W,N-S) = floats of quartz	10km×12km	green schist> metabasalt, quartz schist	quartz-(sericite)-(pyrite), chlorite-(epidote)-(albite)	limonite	quartz,clay	Au:14-51ppb, As,Cu,Pb, Factor4	quartz:37-1680ppb, rock:5-23ppb	B (soil geochem.)
F	Tala I	Paso del Rey	quartz vein (NE,NW)	3km× 4km	green schist	quartz-(sericite)-(pyrite), chlorite-(epidote)-(albite)	limonite	quartz	Au:32ppb	-	D
G	Tala II	Florida	quartz vein (NE) = floats of quartz	9km× 14km	green schist, granodiorite (pCC-V)	quartz-(sericite)-(pyrite), chlorite-(epidote)-(albite)	limonite, (pyrite)	quartz	As,Factor2, Factor3,Factor4	quartz:18-125ppb	B (soil geochem.)
H	West of 25 de Mayo	Florida-Cardal	floats of quartz	6km× 8km	green schist	quartz-(sericite)-(pyrite), chlorite-(epidote)-(albite)	limonite	quartz	Au:9-111ppb, As,Cu, Factor4	quartz:32ppb	A (rock and soil geochem.)
I	South of 25 de Mayo	Cardal	floats of quartz >> quartz vein (NW)	10km×10km	green schist> quartz schist	quartz-(sericite)-(pyrite), chlorite-(epidote)-(albite)	limonite	quartz	As, Factor4	quartz:23ppb	C
J	San Ramon	San Ramon	floats of quartz	10km× 5km	green schist	quartz-(sericite)-(pyrite), chlorite-(epidote)-(albite)	limonite	quartz	Cu,Pb,Factor3	quartz:5ppb, rock:9-41ppb	C
K	San Carlos	Miguelete	quartz vein (NE) > floats of quartz	21km×13km	green schist> quartz schist	quartz-(sericite)-(pyrite), chlorite-(epidote)-(albite)	limonite	quartz	Au:9-37ppb, Cu,Pb,Zn	quartz:37-1548ppb, rock:115ppb	C
L	Rio Negro I	Paso del Puerto	quartz vein (NW,E-W)	10km×15km	green schist, quartz schist	quartz-(sericite)-(pyrite), chlorite-(epidote)-(albite)	limonite, (pyrite)	quartz,sericite	Au:14-97ppb, As,Cu,Pb,Zn, Factor3,Factor4	quartz:245-5370ppb, rock:19ppb	A (rock and soil geochem.)
M	Rio Negro II	Paso del Puerto	quartz vein (NW) = floats of quartz	25km×10km	green schist, metabasalt, granodiorite (pCCG)	quartz-(sericite)-(pyrite), chlorite-(epidote)-(albite)	limonite	quartz	Au:9-97ppb, As,Cu,Pb,Zn, Factor1, Factor2,Factor3	quartz:32-826ppb, rock:9-562ppb	C

Evaluation: A > B > C > D

CHAPTER 4 CONCLUSIONS AND RECOMMENDATIONS OF PHASE II SURVEY

4-1 Conclusions

4-1-1 Geological Structures and Quartz veins

Geological survey showed 17 quartz veins zones within the 5 surveyed zones. Survey results confirmed that most of these quartz veins fill geological structures as shear zones, boundaries between geological units and faults within intrusive rocks or within greenstone rocks.

The quartz veins zones are distributed as follows:

1) Quartz veins in faults within ancient granite, as exemplified by B-c and B-d zones.
2) Quartz veins in faults within greenstone units, as exemplified by B-a, B-b, C-a and C-b zones.
3) Quartz veins in meta-sediment, as exemplified by A-b, D-a, E-a, E-b, E-c, E-e and E-f zones.
4) Quartz veins in meta-volcanic, as exemplified by A-a zone.
5) Quartz veins in ancient granite (C-c), dolerite (D-b) and younger granite (E-d).

A total of 531 chip samples from quartz vein showing different characteristics were taken during Phase II. 152 more samples were also taken from the host rock of quartz veins. Geochemical Analysis indicated that 3 samples have gold content above Au5ppm and 12 samples have gold content between Au5ppm and Au0.5ppm. All analytical results of the host rock indicated gold contents below Au0.5ppm.

Most of the quartz veins with gold grade above Au0.5ppm were present within A-a, D-a, E-a and E-b quartz veins zones. However, these gold mineralizations were considered of low potentiality for further survey due to the small size and short extension of gold rich quartz veins.

4-1-2 Geological Structures and Soil Geochemical results

Six soil gold anomaly zones were detected during the geochemical survey of Phase II. The location and sizes of these anomalies are as follow:

1) Soil gold anomaly A-A: This soil gold anomaly is located at the southern part of the Zone A and covers an area of 2Km by 2Km.
2) Soil gold anomaly B-A: This soil gold anomaly has an elongated form and it covers an area of approximately 2Km by 4Km, extending from the central part to the southern part of the Zone B. Most of the gold anomalies were located within San Jose greenstone unit and between ancient granite at north and younger granite at south. The soil anomaly is also located at the southern

intersection of two shear zones along ENE-WSW and E-W trends.

3) Soil gold anomaly C-A: This soil gold anomaly is located at the southwestern part of the Zone C. It is elongated along E-W direction and covers an area of 2Km by 6Km. The anomaly overlaps an outcrop of ancient granite and it is semi-overlapped by quartz veins zone C-c.
4) Soil gold anomaly D-A: This soil gold anomaly presents an elongated form along E-W direction within an area of approximately 3Km by 6Km, extending from the central eastern part to the central western part of the Zone D. The gold anomalies overlap both, ancient granite unit and the San Jose greenstone unit.
5) Soil gold anomaly D-B: This soil gold anomaly covers an area of approximately 4Km by 5Km, extending from central southern part to the southeastern part of the Zone D. Most of the gold anomaly is located within ancient granite unit.
6) Soil gold anomaly E-A: This soil gold anomaly has an elongated disposition along NE-SW direction within an area of approximately 2Km by 4Km at the northeastern part of the Zone E. Most of the gold anomalies are located in the boundary between younger granite and the Arroyo Grande greenstone unit. Others gold anomalies are located bordering the shear zone along northeast direction.

Most of the soil gold anomalies were detected in sites where outcrop of rock or quartz veins are not present. Only the anomalies E-A and D-A overlap zones with quartz veins, however clear relation between soil gold anomalies and specific geological structures or alteration minerals zones could not be confirmed.

4-1-3 Geophysical survey and Soil Geochemical results

Aeromagnetic maps have provided good complementary information for use in geological interpretations. The aero magnetic survey was able to detect several trends and features characteristic of the structural setting of the area such as three main trends associated with faults and/or geological contacts observed in the survey area.

The approximate N60E trend is by far the most recognizable trending system and one of these trends crosses the zone B where Mahoma mine is located. The intersection of these systems by structures and faults along the second EW trend and the sites with magnetic disturbance are thought of particular interest for the existence of gold mineralizations.

Younger granite is well detected by the radiometric survey as distributions with high potassium concentrations with no magnetic signature. Using the radiometric data, it was possible to observe that some anomalous potassium revealed lineaments that coincide with magnetic lineaments.

From the combination of geophysical data with geochemical results it was concluded the following:

1) Soil gold anomalies B-A, C-A, D-A and D-B are located at the intersection zone of N60E and E-W aeromagnetic lineaments.
2) Soil gold anomalies A-A and E-A are located at the intersection zone of N60E and NW-SE aeromagnetic lineaments.

4-1-4 Preliminary Evaluation of Mineral Potentiality

Results from Phase II indicated 6 soil gold anomalies and 17 zones with large outcrops of quartz veins. Zones with large amounts of quartz veins fragments are preferentially located at the proximity of shear zones and faults that cut greenstone or granitic rocks. Part of the soil gold anomalies are overlapping the quartz veins zones, but a majority of the soil anomalies were detected in sites where outcrop of rock or quartz veins are not present.

Fluid inclusion data indicated that the gold mineralization in Uruguay show characteristic of shallow crustal level emplacement and therefore it is inferred that gold mineralization has been generated during or immediately after compressive deformation and regional metamorphism.

Information on geological structures provided by aerial geophysical survey indicates that the gold soil anomalies are more frequently present at the sites with linear magnetic anomalies with ENE-WSW trend.

4-2 Recommendations

Phase II survey results are summarized in Fig.I-4-1 and Tab.I-4-1.

As a result of geological survey, geochemical survey and airborne geophysical survey it is recommended the following sites for further survey during the Phase III.

1) E-A soil gold anomaly area
2) D-A soil gold anomaly area
3) B-A soil gold anomaly area
4) D-B soil gold anomaly area
5) A-A soil gold anomaly area
6) C-A soil gold anomaly area

During Phase III, it is recommended a previous soil geochemical survey aiming to detect in more detail the distribution of the soil gold anomalies. It should be followed by trench survey to check the location and dips of the mineralized section in fresh rock and by drilling survey to check the gold mineralization at depth.

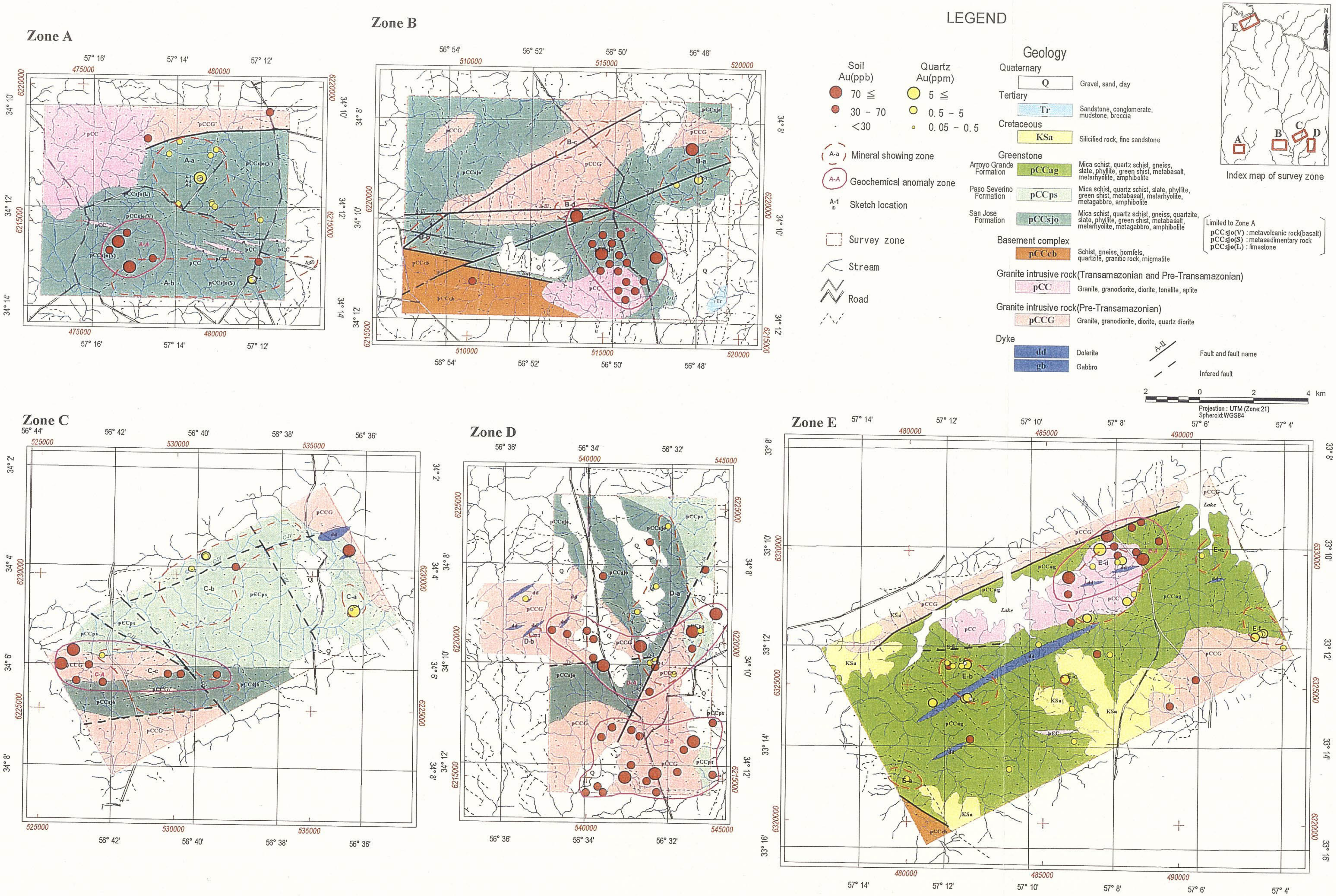

Fig. I -4-1 Composite map of results of the Phase II survey

Tab. I -4-1 (1) Evaluation of the results by geological survey and geochemical survey

Zone	Geological Survey							Geochemical Survey						Total Evaluation*2
	Quartz Veins Zone	Location	Width	Geological Situation	Main Quartz Veins (Mineralization)	Assay of Veins*1 (One Part)	Evaluation*2 (Comments)	Anomalies Areas	Location	Width	Geological Situation	Results of Soil Au Assay	Evaluation*2 (Comments)	
Zone A	A−a	North	4km× 2.5km	Among fracture zone (pCCsjo)	wide1-2m、 3-4veins, strike:N-S	176、129、52.5	◎ (High assay)	No						
	A−b		7km× 1.5km	Among fracturezone? (pCCsjo)	wide20cm strike:N80W	1.23	○	A−A	South	2km× 2km	E*3	2*4 :>70ppb) 3(>30ppb)	○	○
Zone B	B−a	East	1.5km× 3km =4.5km²	Along Fault B −II (pCCsjo)	①80m×80m> ②20m×100m> ③15m×80m > ④ 7m×20m>	× × 0.4 0.83、0.77	◎ (Big many quarts veins)	No						
	B−b	West	0.5km× 2km =1km²	Along Fault B −II (pCCsjo)	① 4m×12m> ② 5m×10m> ③ 4m×15m >	0.03 × ×	△	No						
	B−c	North	0.5km× 2km = 1 km²	Along Fault B − I (pCCG)	①15m×40m> ② 4m×20m>	× ×	△	No						
	B−d	Center	0.5km× 2km = 1 km²	Along Fault B −III (pCCG)	①20m×50m> ② 5m×25m>	× ×	△	B−A	South east	2km× 4km	Near pCC, B−II, B−III,main part in pCCsjo	3 (:>70ppb) 14(>30ppb)	◎ Strong clear anomaly area	◎
Zone C	C−a	East	0.5km × 1km = 0.5km²	Along the Foult C− I, pCCps	① 5m×600m ② 5m×30m>	0.03 5.51	○	No						
	C−b	North	3km × 4km =6km²	Along the Foult C−IV,pCCp	①20m×30m ②0.5m×4m ③30m×50m	× 1.19 0.025	○	No				1 (>30ppb)		
	C−c	South East	2km × 5km =8km²	Along the Foult C− V, pCCG PCCsjo, pCCG	①0.1m×10m ②10m×20m ③10m×50m ④0.5m×10m	0.22 × × ×	△	C−A	South east	2km× 4km	Along and boundary pCCG,Fault C −I	2 (:>70ppb) 6 (>30ppb	◎	○

*1 Au results of rock assay : ppm
*2 Evaluation : Very Good : ◎, ○ : Good, △ : Not so Good
*3 Equal geological situation to [Geological Survey] column
*4 Nunber of Au soil anomaly

Tab. I -4-1 (2) Evaluation of the results by geological survey and geochemical survey

Zone	Geological Survey							Geochemical Survey						Total Evaluation*2
	Quartz Veins Zone	Location	Width	Geological Situation	Main Quartz Veins (Mineralization)	Assay of Veins*1 (One Part)	Evaluation*2 (Comments)	Anomalies Areas	Location	Width	Geological Situation	Results of Au Soil Assay	Evaluation*2 (Comments)	
Zone D	D－a	Center-North	3km × 5km ＝ 7km^2	Along the Arroyo uemada pCCsjo Green schist	①4m×65m>	0.17、0.07	△	D－A	Center (East to West)	3km × 6km	E*3	4*4 (>70ppb) 8(>30ppb)	◎ Strong large anomaly area	◎
					②3m×20m>	0.04								
					③3m×10m>	0.04								
	D－b	West	0.2km × 0.5km ＝ 0.1km^2	Along the dd, pCCG Granodiorite	① 2m×20m>	×	△	No						
					② 2m×20m>	×								
					③ 3m×60m>	×								
					④ 12m×20m>	×								
								D－B	South	4km × 5km	On pCCG	3 (>70ppb) 14(>30ppb	◎ Strong large anomaly area	◎
ZoneE	E－a	South-west	0.6km × 1.5km	pCCag	①2m×20m	×	△	No						
					②2m×10m	0.10								
					③2m×40m	0.03								
	E－b	Central West	2.5km × 1.5km	pCCag	①2m×10m	2.18、1.98	◎	No						
					②2m×10m	2.13								
					③3m×20m	3.21								
					④2m×30～50m×8	0.34								
	E - c	Center	0.5km × 0.2km	pCCag	wide:1m wide:a few 10cm?	4.29	△	No						
	E - d	Center～North	3km × 2.5km	PCCag	wide:1m	9.32	◎	E－A	Center～North	2km × 4km	Boundary of pCCQ. Along Fault B—I	4 (>70ppb) 7(>30ppb	◎ Strong large anomaly area	◎
					wide:a few 10cm?	2.74								
	E－e	North-east	1.5km × 1km	PCCag	①3m×7m	0.03	○	No						
					②3m×5m	0.43								
					③2m×7m	0.05								
					④1m×3m	0.03								
	E－f	South-east	1km × 2km	pCCag	①1.5m×7m	4.42	○	No						
					②1.5m×30m	0.10								
					③1.5m×20m	0.09								
					④3m×40m	0.75								

*1 Au results of rock assay : ppm
*2 Evaluation : Very Good : ◎, ○ : Good, △ : Not so Good
*3 Equal geological situation to [Geological Survey] column
*4 Nunber of Au soil anomaly