

## AIM & PLUS: MARL

October 7<sup>th</sup> 2009.

## Mariana commences drilling IOCG targets, Northern Chile

### Highlights

- **3,300m 9-hole drill programme has started at Buenaventura and Perro Chico.**
- **Eight IOCG targets defined by gravity surveying, geological mapping and geochemistry.**
- **Primary target: A large residual gravity anomaly beneath known IOCG copper mineralization at Cerro Brecha (Buenaventura).**
- **Projects all located in Chile's world class IOCG belt.**

Mariana has commenced a drilling programme to test IOCG targets at Buenaventura and Perro Chico projects in Northern Chile. There are three targets to be drilled at Buenaventura and five at Perro Chico.

### Buenaventura

Buenaventura is located at a maximum altitude of 1200m ASL, 50 km NNE of Copiapó, between Freeport's Candelaria and Anglo American's Manto Verde copper mines in Northern Chile. The 44km<sup>2</sup> project area is situated along the Atacama Fault Complex, which hosts all major Chilean iron oxide-copper-gold (IOCG) deposits. Previous drilling (2002, 2005) intersected several zones of IOCG mineralisation, including six holes ranging from 22m to 90m @ 0.40% to 0.49 % Cu (copper) with up to 0.13 g/t Au (gold).

In April 2008, Mariana and Minotaur Exploration Ltd (Minotaur) announced a joint venture with Sociedad Minera Contractual Buenaventura whereby they could jointly earn 51% by spending US\$3M over three years and 80% by completing a bankable feasibility study with additional rights to bring in a funding partner and first refusal over the remaining 20%.

In 2008, Mariana and Minotaur expanded and infilled a 2004 gravity survey to locate dense bodies of iron oxides. Data sets were merged and reprocessed with four main residual gravity anomalies highlighted. An anomaly stood out in the NE corner of the survey coinciding with the **Cerro Brecha Copper-Gold Prospect**, a 2km<sup>2</sup> area of hydrothermal breccias, extensive hematite (specularite), copper oxides and strong faulting, all key IOCG characteristics. Moreover, past drilling intersected up to 28m @ 0.43% Cu, 0.13 g/t Au. Three dimensional inversion modeling of the Cerro Brecha gravity anomaly by Minotaur indicated a significant dense mass at depth, below previous drilling, indicating a possible iron oxide body. A deep drill hole was planned for the first quarter of 2009 but was not drilled after Minotaur withdrew from the joint venture owing to its

reduced exploration budget. Mariana subsequently reviewed the 3D modeling, which confirmed the major drill target at Cerro Brecha.

Mariana will test this priority target with a 600-700m pre-collared diamond drill hole located 250m SW of two previous drill holes, both of which intersected encouraging copper mineralisation and alteration. In Hole B7, drilled to 400m, IOCG type alteration in andesites, was intensifying with depth with abundant stockworks, hydrothermal breccias and ten intersections ranging from 2m to 10m @ 0.1% to 0.4% Cu. In SB 3, two 28m intersections @ 0.43% Cu were made from 8m and 173m, associated with hematite alteration.

Other IOCG targets at **Cerro Berta Norte** and **Cerro Berta Sur** will be drill tested in the current programme. The combined 4km<sup>2</sup> Cerro Berta area is the largest of the mineralized centres at Buenaventura and comprises altered intrusives and volcanics, which may represent upper levels of an IOCG system. Two RC percussion holes at Cerro Berta Norte will test coincident magnetic highs, extensive alteration, brecciation, hematite, strong fracturing and anomalous Cu, Au and Co in soils over a 1.5 x 1km area. One hole at Cerro Berta Sur will test intense alteration and hydrothermal breccias.

## **Perro Chico**

Perro Chico is located at a maximum altitude of 1000m ASL, about 67 km SSW of Copiapó. Copper and gold iron oxides have been mined by artisans in the area for many years but there has been no previous systematic exploration or drilling on the property. Several styles of IOCG type mineralization are recognized in the form of mantos, veins, stockworks and breccia zones.

Mariana can acquire a 100% interest in the 549 Ha Perro Chico property by making progress option payments totaling US\$205,000, with a final buyout of US\$600,000 at the end of a 39 months option period. Mariana has a surrounding 6,600 Ha area under application.

Mariana completed geological mapping and a gravity survey on a 500m x 500m grid over 7km x 10km, followed by an infill gravity of five anomalies on a 200m x 200m grid. This confirmed and enhanced the residual gravity anomalies. Three dimensional inversion modeling was recently carried out and indicated dense bodies at drillable depths at Anomalies A, B and C, which may represent iron oxide zones under gravel cover. These will be tested by four RC and/or diamond drill holes. Two RC holes will test the Belleza copper-gold bearing manto.

## **IOCG Background**

IOCG's are economically important complex copper deposits hosted within hydrothermal systems with associated iron oxides and can be enriched in gold, silver, uranium and rare earths. They display strong hydrothermal alteration, brecciation, important regional and local structures and geophysical expressions in the form of prominent magnetic or gravity anomalies. The major IOCG mines are located in South Australia, Queensland, NE Brazil and N Chile. The Atacama Fault Complex of Northern Chile is considered one of the world's most prominent IOCG belts, hosting Freeport's world class Candelaria copper deposit.

*Commenting today, Managing Director, John Sutcliffe said "We now have an exciting drill programme commencing which will test two multi-target projects located in the heart of this pre-eminent IOCG belt. Minotaur's early withdrawal from Buenaventura was understandable but their input to the Buenaventura project, as discoverers of the new Prominent Hill copper-gold mine in*

*South Australia using gravity surveying, was significant.”*

For diagrams of the projects and drilling targets go to the website [www.marianaresources.com](http://www.marianaresources.com)

## **ON BEHALF OF THE BOARD**

John Sutcliffe  
Managing Director

*For more information:*

<b>Mariana Resources Limited</b>		<b>RFC Corporate Finance Limited (Nomad)</b>	
John Horsburgh (Chairman)	+61 2 9437 4588	Rob Adamson	+61 2 9250 0041
John Sutcliffe (MD)	+59 3 99808080	Will Souter	+61 2 9250 0050
<b>FinnCap (Broker)</b>			
Joe Lunn (Analyst)	+44 20 7600 1658		
Matthew Robinson	+44 20 7600 1658		

Or visit website at [www.marianaresources.com](http://www.marianaresources.com)

## **ADDITIONAL INFORMATION**

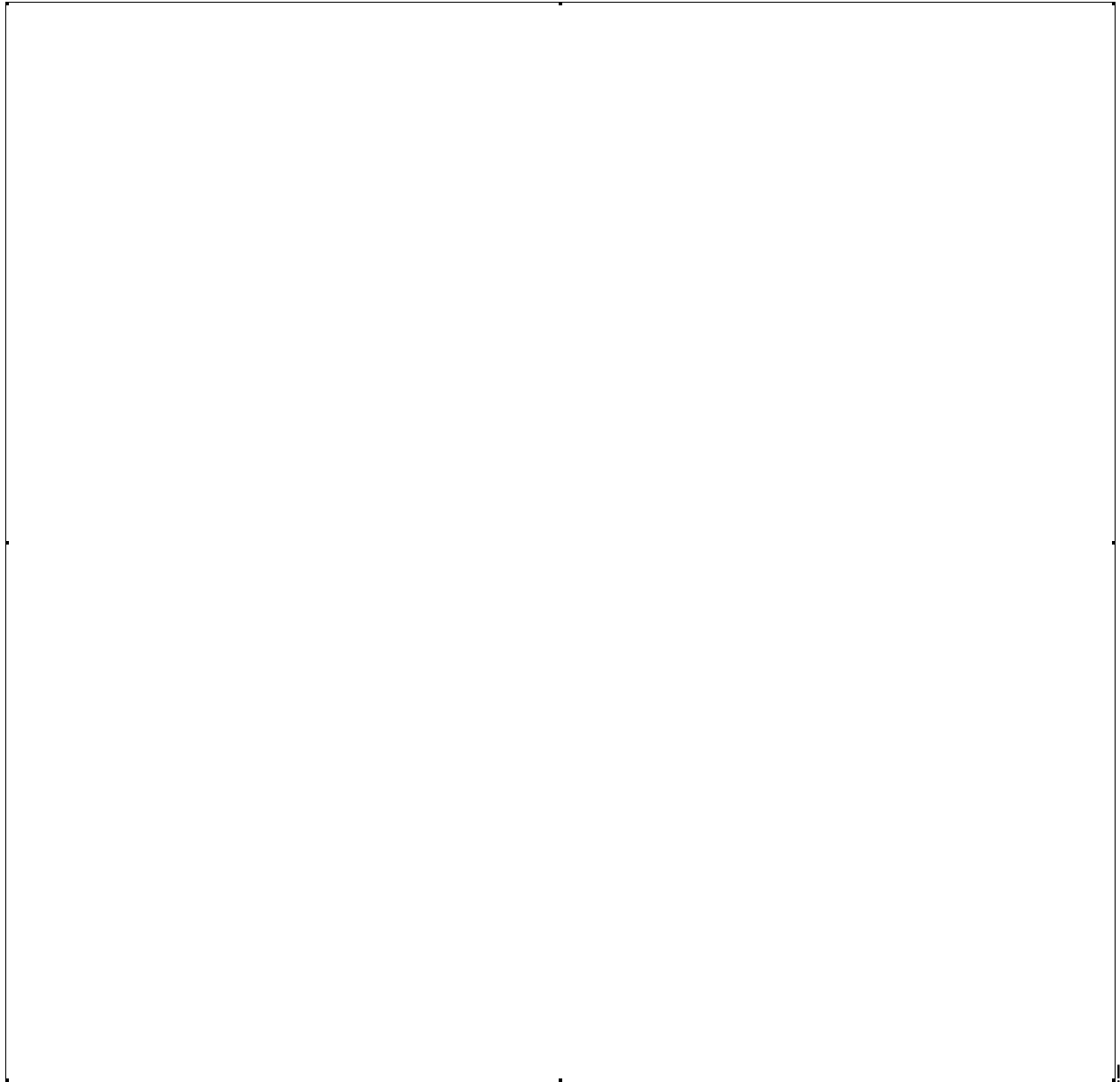
*The exploration programme is being directed by the Chile Exploration Manager, Mr Walter Espinosa under supervision of Managing Director Mr John Sutcliffe. Exploration information in this announcement has been compiled by John Sutcliffe who is a Fellow of the Geological Society of London, a Chartered Engineer and a Member of the Institute of Mining and Metallurgy. Mr Sutcliffe has sufficient experience relevant to the style of mineralization and types of gold deposit under consideration and to the activity that he is undertaking to qualify as a Competent Person as defined in the JORC Code.*

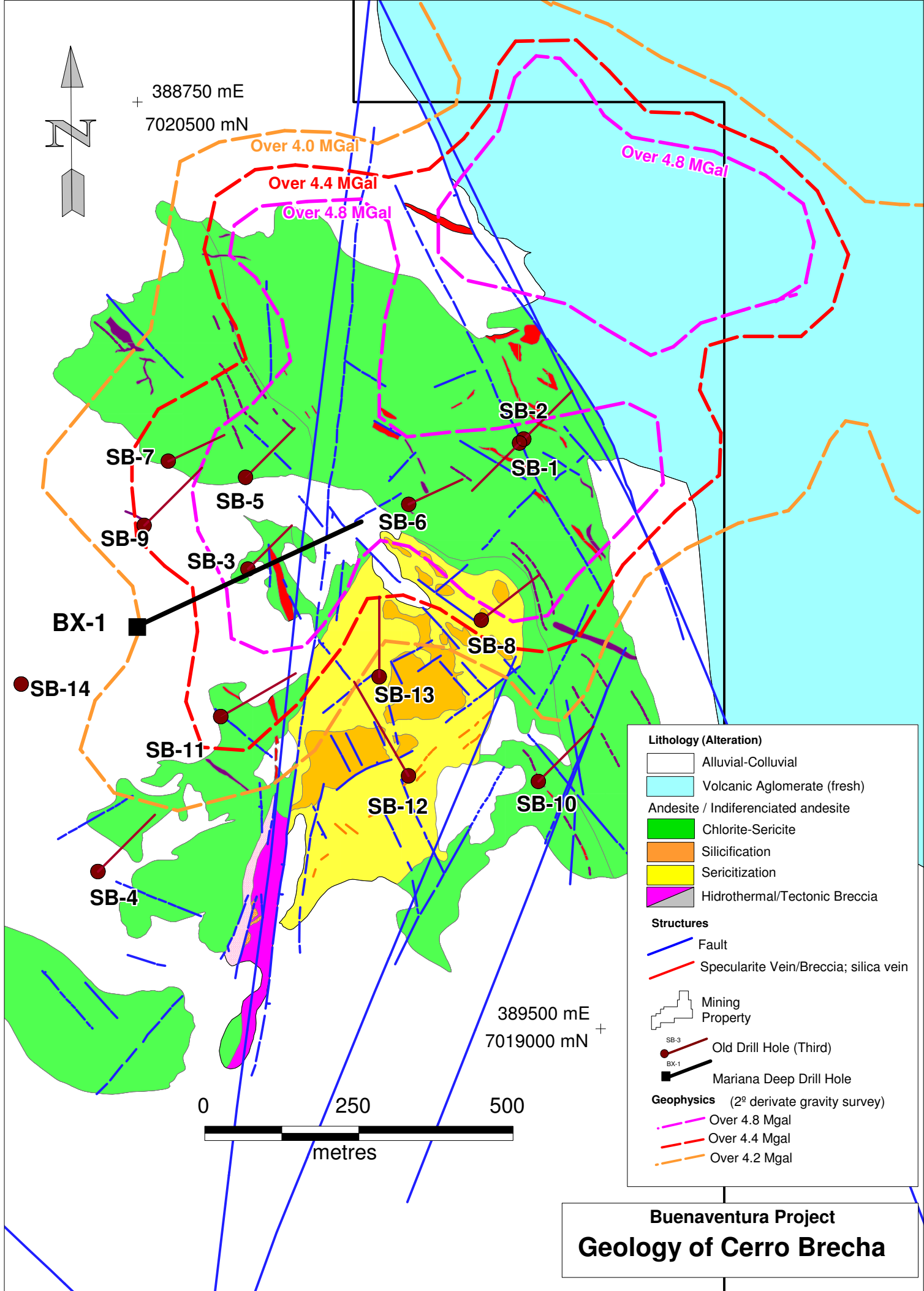
### ***Quality Assurance/Quality Control***

*All technical information for the Company's Chile projects is obtained and reported under a quality assurance and quality control (QA/QC) program. All samples are collected under the supervision of the Company geologists and dispatched via commercial transport to ALS Chemex laboratories in Santiago de Chile. ALS Chemex's quality system complies with the requirements for the International Standards ISO 9001:2000 and ISO 17025: 1999. Samples returning greater than 10 g/t gold and/or greater than 100 g/t silver are assayed using gravimetric analyses.*

*Systematic assaying of sample duplicates and commercially prepared standards and blanks is performed for analytical reliability.*







**Lithology (Alteration)**

- Alluvial-Colluvial
- Volcanic Agglomerate (fresh)
- Andesite / Indifferentiated andesite
- Chlorite-Sericite
- Silicification
- Sericitization
- Hydrothermal/Tectonic Breccia

**Structures**

- Fault
- Specularite Vein/Breccia; silica vein

**Mining Property**

- Mining Property

**Drill Holes**

- Old Drill Hole (Third)
- Mariana Deep Drill Hole

**Geophysics (2<sup>nd</sup> derivate gravity survey)**

- Over 4.8 MGal
- Over 4.4 MGal
- Over 4.2 MGal

**Buenaventura Project  
Geology of Cerro Brecha**

382000 mE  
+ 7018000 mN



**C° AMADA**

**R1 (260°/-60)**

**BERTA NORTE**

**R3 (0°/-80°)**



384000 mE  
+ 7016000 mN

**BERTA SUR**

**R2 (210° /-80°)**

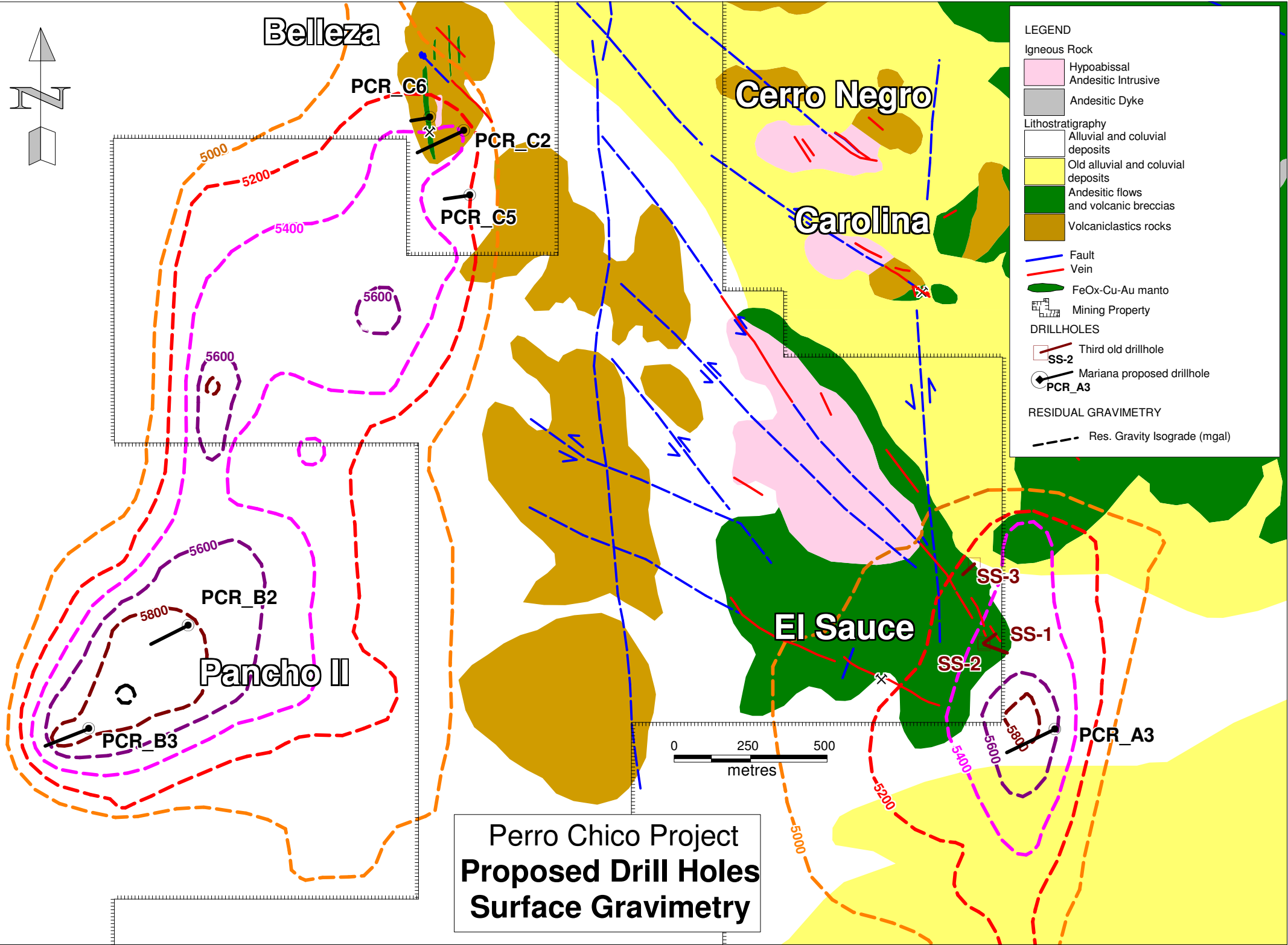
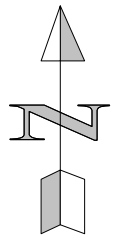
ALTERATION			
	Argillic		Silica-albite with/without superg. argillic
	Argillic-Chloritic, Chloritic		Silica-tourmaline, pervasive hematite
	Silicic, Silica-Argillic		Unaltered rock
	Quarz-Sericite		

MINING PROPERTY	DRILL HOLES
Third	Drill Target Mariana Ltd. with (azimuth/dip)
C.M. Mariana	Old Drillhole (Third)

Buenaventura Project

# Cerro Berta and Cerro Amada ALTERATION



**LEGEND**

**Igneous Rock**

- Hypobassal Andesitic Intrusive
- Andesitic Dyke

**Lithostratigraphy**

- Alluvial and coluvial deposits
- Old alluvial and coluvial deposits
- Andesitic flows and volcanic breccias
- Volcaniclastics rocks

**Structural Features**

- Fault
- Vein
- FeOx-Cu-Au manto

**Mining Property**

- Mining Property

**DRILLHOLES**

- Third old drillhole (SS-2)
- Mariana proposed drillhole (PCR\_A3)

**RESIDUAL GRAVIMETRY**

- Res. Gravity Isograde (mgal)

**Perro Chico Project  
Proposed Drill Holes  
Surface Gravimetry**