

# COMPAÑÍA MINERA CRUZ DE ORO S.A.

## MARAYCASA MINE

### TECHINICAL – ECONOMIC PROFILE OF MARAYCASA MINE



**DISTRICT: QUICACHA  
PROVINCE: CARAVELI  
REGION: AREQUIPA**

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# TECHNICAL- ECONOMIC PROFILE OF MARAYCASA MINE

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## TECHNICAL – ECONOMIC PROFILE OF MARAYCASA MINE

### 1.0 LOCATION AND ACCESS

The Maraycasa deposit is, politically located in Quicacha district, province of Caravelí, region of Arequipa, at 3,500 m, 30-o, IGN Sheet Coracora.

Accessible all year, by dirt road 143 km from Chala town. While it is far 613 km from the Lima City

### 2.0 BACKGROUND AND WORK COMPLETED

Compañía Minera Cruz de Oro S.A., holds the Maraycasa concession of 753.59 hectares., including UTM coordinates, Datum Prov-56 South

VERTICE	NORTH	EAST
1	8' 293,598.63	643,000
2	8' 292,000.00	643,000
3	8' 292,000.00	644,000
4	8' 289,715.34	644,000
5	8' 289,190.07	642,428.59
6	8' 292,983.73	641,160.48

As historical background we mention that the Maraycasa deposit was worked at craft in the late '60s and '70s for its high content of copper, having openings to three levels of exploration and development

In recent years since the 80's many studies have been carried out geological, geochemical and geophysical studies, as summarized in the following:

At the top of the outcrops, oxidized copper minerals have been explored by 6 trenches with systematically every 2 to 3 m, sampling, which were analyzed for Cu and Ag by Mac Millan Gold and Cia Minera Cruz de Oro S.A. between 1987 and 1996.:

In the years 1988 to 1989, the mine was worked by handmade, in the San Lorenzo vein, higher level, through which selected the mineral hand pick, and the production was sold to Ex -Mimpeco

At that time, in the area of mine workings, Mineral Reserves were estimated using the criteria of scaling used by the Ex - Banco Minero for their investment projects. based on systematic sampling carried out in galleries, chimneys and sub-levels, Cia Minera Cruz de Oro S.A. who prepared a feasibility study for mineral processing plant 50 MT / day, to be financed by the Banco Minero del Peru. This process is truncated and that by the year 1991 was dissolved the Banco Minero.

In 1997, systematic geochemical sampling rocks and soil was made by Mitsui Mining & Smelting Co. Ltd. (Cia Minera Santa Luisa), in most of the outcrops and soil areas, and analyzed for Cu and Au in ppm

In June of 2,005, on behalf of Sheridan Platinum Group Peru SAC, Val D'or (VDG) Geophysical Company, conducted geophysical prospecting work in the area of Maraycasa using two methods: Electromagnetic (EM) and Horizontal Loop Electromagnetic Method (HLEM).

Having detected 2 major parallel structures systems, with about 2,800 m in length

### 3.0 CURRENT STATUS

Minera Promocion SAC, the former assignee of Cia Minera Cruz de Oro S.A, has conducting exploration and development work from the higher level, having made a total additional 1129 meters of mining works (galleries, sublevels and fireplaces) which stemmed from the ore sent to Nazca and Acari at flotation plant. The mining work before Minera Promocion SAC, was the order of 333 m, which, added to the previous reach 1462 m. Currently, the contract is resolved and returned to the owner and registered in the Public Register since 09 March this year.

Between 2007 and mid 2008 the company extracted from the of exploration, development and preparation work, ore by two dump trucks sent to the flotation plant located in Nazca and Acari, 250km and 200 km respectively.

During this period, seven campaigns were processed ore treatment in Nazca (2) and Acari (5), in the following table, shows the tonnage of ore treated and concentrate tonnage and grade obtained.

#### METALLURGICAL BALANCE FOR THE TREATMENT OF MINERAL FROM MARAYCASA MINE

7 AVERAGE TREATMENT CAMPAIGNS	HMT	TMS			LEY % Cu			RECUP.%	RATIO
		HED	CONCENTRATE	RELAVE	HED	CONCENTRATE	RELAVE	DISTRIBUTION	
	6541.02	<b>6358.499</b>	625.512	5732.99	<b>3.28</b>	<b>28.89</b>	0.37	<b>89.45</b>	10.02

Using the previous sampling by the transferee and historical sampling by Cruz de Oro, in the underground mining works carried out at present, it is estimated ore reserves, according to the width of channel sampling over mineralized structures, using conservative criteria evaluation. Reserves were differentiated in sulfides and oxides.

For the calculations of laws and tonnage, mineralized structures were differentiated by level, sub-levels and chimneys, then the grade was grouped in sections sampled, and mineral blocks built according to its category (proved and probable) Accessible by its accessibility, in Accessible, Eventually accessible and Inaccessible, depending on the location of the blocks with respect to the main work of extraction, and its value in high grade ore (Cu greater than or equal to 3%), media grade (Cu 3% to 2%), low grade (less than 2% Cu).

In calculating the tonnage of ore vein block, we applied a dilution of 0.20m, which represents 0.10 m both vein walls. Total tonnages calculated in terms of its area and width average of sample, and then calculate the ore dilution (barren), depending on the width of dilution, finally obtained with the sum of both the total tonnage of the block.

The average grade was applied to a penalty of 10% of analysis and sampling error, this grade is applied penalty by dilution factor of blocks obtained by dividing the tonnage of grain between the total tonnage of the block, this factor multiplied by penalized grade of block, finally obtaining the grade of the block.

The total tonnage obtained is applied correction in concordance with its category, for proved blocks the factor is 1.0, and for probable blocks applies a penalty of 0.80.

The following table shows the summary of the mineral inventory

**INVENTORY OF ORE RESERVES OF MARAYCASA MINE**

VEIN	LEVEL	TYPE	BY CERTAINTY	DMT	WIDTH m	%Cu	Au gr/MT
PRINCIPAL	SUPERIOR	SULFIDES	PROVEN	47153.92	1.62	2.80	0.37
PRINCIPAL	SUPERIOR	SULFIDES	PROBABLE	44719.30	1.64	3.21	0.67
			<b>SULFIDES</b>	<b>91873.23</b>	<b>1.63</b>	<b>3.00</b>	<b>0.52</b>
PRINCIPAL	SUPERIOR	OXIDES	PROVEN	7070.24	1.12	3.75	1.41
PRINCIPAL	SUPERIOR	OXIDES	PROBABLE	12432.90	1.45	3.01	0.42
			<b>OXIDES</b>	<b>19503.15</b>	<b>1.33</b>	<b>3.28</b>	<b>0.58</b>
			<b>PRINCIPAL VEIN</b>	<b>111,376.37</b>	<b>1.57</b>	<b>3.05</b>	<b>0.53</b>
RAMAL	SUPERIOR	SULFIDES	PROVEN	40993.91	1.82	3.12	0.40
RAMAL	SUPERIOR	SULFIDES	PROBABLE	7204.94	1.54	1.94	
			<b>RAMAL SULFIDES</b>	<b>48198.85</b>	<b>1.78</b>	<b>2.94</b>	<b>0.40</b>
			<b>ORE INVENTORY MARAYCASA</b>	<b>159,575.22</b>	<b>1.64</b>	<b>3.02</b>	<b>0.47</b>
		SULFIDES	PRINCIPAL VEIN	91873.22	1.63	3.00	0.52
		SULFIDES	RAMAL VEIN	48198.85	1.78	2.94	0.40
				<b>140,072.08</b>	<b>1.68</b>	<b>2.98</b>	<b>0.46</b>

Mineable ore reserves are those which bring together the blocks of proven and probable ore, accessible by its value are high and Media Grade and only sulfide, which can be exploited immediately, in the following table lists the grade and tonnage:

<b>MINABLES RESERVES OF MARAYCASA MINE</b>								
VEIN	LEVELL	BLOCK	BY CERTAINTY	BY VALUE	DMT	WIDTH m	%Cu	Au gr/MT
<b>SULFUROS</b>								
PRINCIPAL	SUPERIOR	PA-1 S	PROVEN -ACCESS	High Grade	5313.27	1.63	3.38	0.42
PRINCIPAL	SUPERIOR	PA-2 S	PROVEN -ACCESS	High Grade	3027.74	2.10	3.04	0.30
PRINCIPAL	SUPERIOR	PA-3 S	PROVEN -ACCESS	High Grade	1709.40	1.01	4.12	
PRINCIPAL	SUPERIOR	PA-4 S	PROVEN -ACCESS	Media Grade	3282.55	1.21	2.33	
PRINCIPAL	SUPERIOR	PA-5 S	PROVEN -ACCESS	Media Grade	2813.34	1.06	3.62	
					<b>16146.30</b>	<b>1.47</b>	<b>3.22</b>	<b>0.38</b>
PRINCIPAL	SUPERIOR	PB-1 S	PROVEN -ACCESS	Media Grade	3335.41	1.80	3.89	
PRINCIPAL	SUPERIOR	PB-3 S	PROVEN -ACCESS	Media Grade	2215.98	1.06	3.62	
					<b>5551.39</b>	<b>1.50</b>	<b>3.78</b>	
			<b>TOTAL PRINCIPAL VEIN</b>		<b>21697.69</b>	<b>1.48</b>	<b>3.37</b>	<b>0.38</b>
RAMAL	SUPERIOR	RA-1 S	PROVEN -ACCESS	Media Grade	3685.0	1.13	3.36	0.40
RAMAL	SUPERIOR	RA-2 S	PROVEN -ACCESS	Media Grade	4058.1	1.61	2.28	
RAMAL	SUPERIOR	RA-3 S	PROVEN -ACCESS	Media Grade	2849.4	1.25	1.91	
			<b>TOTAL RAMAL VEIN</b>		<b>10592.5</b>	<b>1.35</b>	<b>2.56</b>	<b>0.40</b>
			<b>TOTAL RESERVAS MINABLES</b>		<b>32,290.15</b>	<b>1.43</b>	<b>3.10</b>	<b>0.38</b>

## 4.0 GEOLOGY

### 4.1 Geology and Minerals Alteration

In the area of Maraycasa Mine, outcrop inter-stratified volcanic and sedimentary rocks of Guanero Formation at upper Jurassic, composed by andesites, sandstones, shale interspersed.

In central and east part of the area, outcrops a granodiorite stock, without hydrothermal alteration, corresponding to coastal batholiths.

The ore deposits site is part of a strong shear zone, having parallel and sub parallel structures arranged in Echelon, along the strip ranging from 150 m to about 400 m wide, over 4 km long. Adjacent to this stretch of more fracturing both sides emerge another strip of alteration characterized by the occurrence of abundant epidote and quartz associated with volcanic rocks of medium to fine grained andesitic with aggregates of grains of magnetite, similar shows in the sedimentary shale and sandy series with aggregates of epidote and chlorite, where small pockets of garnet. Represent a wide swath of alteration that has variable widths from 400 m to over 800 m along the mining property from southeast to northwest.

The shear zone direction is N 40° W and dipping 70 ° to 80 ° SW, the southern part of the concession, the "San Lorenzo" vein system was explored whit underground work.

In detail, along the mining property, by more than 3.5 km in the preferential direction of N 30° W, run a alteration and shearing strip characterized by the occurrence of many forms of discontinuous and sub parallel vein, this strip in the southern part has more than 150 m wide, is increasing its width to the north where it reaches about 400 m, this band is the core of most intense alteration formed by large eyes of epidote, chlorite and magnetite and garnet brown legs and milky quartz veins; on both sides continued propylitic alteration less intense but clearly persistent reaching widths of over 400 m, to the west side is more intense and extensive than to the east side.

Within the shear band, mineralization is located in structures of vein filled with quartz, chalcopryrite and bornite, the individual widths ranging from less than 1 m to over 1.5 m. Following fracturing zone the swarms form multiple sigmoid arcs of veins, generating stress fractures that are stockwork of quartz veinlets with copper, which are lenticular bodies over 150 m long by over 20 meters wide in the central parts. These bodies dip to the west.

The dominant mineralogy in the oxidation zone is chrysocolla (90%), malachite and cuprites, brocantita with sporadic patches and disseminations of bornite and chalcocite in magnetite and quartz gangue. The analysis shows interesting values of gold and silver.

In the primary zone dominated by chalcopryrite and bornite, which are often massively covering the entire front of a horizontal or vertical work, pyrite is very low; the gangue is quartz and silicified volcanic rock with the presence of magnetite.

Through the mining work is evident that the mixed and oxidation zone reached a depth of 20 m from the surface following the profile of the hill.

According to the features described can be classified Maraycasa deposit into the genetic model type "Iron Oxide Deposits Cooper Gold (IOCG) similar to numerous known deposits in Chile (Candelaria, Lo Aguirre), some in Peru (Marcona (Minas Justa) and Panpa del Pongo-Nazca ) and elsewhere Finland (Olimpic Damp). Brazil (Serra Pelada, Carajas Province)

## 4.2 Ore Resources

Mineral resources were estimated in the vein system "San Lorenzo", located at the bottom of the concession (on the creek Maraycasa).

For a better description of the deposit we separated the area into two parts known as Sector South from the line L00 of geophysics to the line L1100 and the Northern Sector, from line to line L1100 L3500.

In the Southern Sector has identified two mineralized bodies called Body A (North) and Body B (south) from north to south.

The ore body A (North), located between the L500N line and called Widow fault, located south of the line L200N, is 329 m long and 33 m wide that contain an area of 10,982 m<sup>2</sup>. Where mining operations are located

The ore body B (South), located between the Widow fault at north of L100N line and Maraycasa ravine south of the line L00, has 170 m long and 20 m average wide that, enclosing an area of 3,339 m<sup>2</sup>

Both ore bodies have been recognized, explored and exploited by hand for over a decade in the past through searches and socks and barrettes from surface tunnels up to 3 different levels, at present these are accessible mine workings. Which were mapped and sampled systematically by earlier assignee, having used all sampling.

For the calculations of grade, have been used throughout the sampling by different authors, so we made systematic sampling at higher level (135 m), Intermediate (64 m.), operating sublevel on the Nv. Superior (60 m.), in addition to surface sampling of Cia Minera Cruz de Oro, Trenches by Mac Millan, check sampling conducted by Sheridan, etc.

With the recent work of Cia Minera Promotion (1263 m of additional work) made in the main Level, operation sublevel (sublevel-1), Sublevel-2 and-3, and 5 chimneys, over the last three years, it has verified the occurrence of ore bodies and grade mentioned above, updated with new information, mineral resources estimated in categories of "Measured," Indicated "and" Inferred "according to standards applied by the Lima Stock Exchange for the evaluation of mining projects.

For the estimation of mineral resources have been used the following criteria and methodology for reserve calculation.

### 4.2.1 Tonnage Calculation

- As mentioned previously only been estimated resources in the two ore bodies, previously mineralized surface was defined by geology and mining activities, determining the mineralized area for each body in AutoCAD.
- The volume was defined according to the type of mineral, oxides or sulfides to oxides and mixed area limit, was measured in the longitudinal section of mining works. And sulphides up to 128 m, ore recognized by underground workings below the oxides.
- The tonnage is the product of volume by the specific gravity (PE), which in this case was 2.8 m<sup>3</sup> / tm, for oxides and 2.9 m<sup>3</sup> / tm, for the sulphide. Tonnage obtained is then applied a safety factor in the following order:
  - For mineral measured: 0.80
  - For mineral Indicated: 0.50
  - For mineral Inferred: 0.25



#### 4.2.2 Grade Calculation

- The calculation of grade involving all historical samples taken by different authors and which are included in each of the ore bodies
- We proceeded to average the grade by authors and location, separating surface mining and underground operations.
- Then proceeded to calculate the average grade for bodies.
- By the same criterion for estimated mineral resources were assigned the category of resources "Measured" mostly in the Body (A), because was recognized mineral by mining works, on the main level (Block A -2). Resources "Indicated" for the estimated ore below measured. (Block A-3) and use "Inferred" (Block A-4) for the mineral resource located below the Indicated block.
- A final averages of calculated grade by type of ore was given the penalization of 10% for analysis and sampling error.

#### 4.2.3 Summary Table of Mineral Resources

The following table shows the tonnage and grade of the two ore bodies

##### SUMMARY OF MINERAL RESOURCES

##### OXIDES

ORE BODY No	BLOCK N°	AREA m2	HEIGHT m	VOLUME m3	P.E.	F.S	TM	Cu %	Au gr/T	Ag gr/T	Category
NORTH(A)	A - 1	10982	18	197676	2.8	0.80	553493	3.01	0.79	1.14	Measured
SOUTH(B)	B - 1	3339	30	100170	2.8	0.50	280476	3.78	1.65	17.73	Indicated
TOTAL							<b>833,969</b>	<b>3.27</b>	<b>1.08</b>	<b>6.72</b>	
Less than – 10% Of grade								<b>2.94</b>	<b>0.97</b>	<b>6.05</b>	

##### SULFIDES

ORE BODY No	BLOCK N°	AREA m2	HEIGHT m	VOLUME m3	P.E.		MT	Cu %	Au gr/T	Ag gr/T	Category	
NORTH(A)	A - 2	10120	38	384560	2.9	0.80	892179	3.20	0.80	11.59	Measured	
NORTH(A)	A - 3	10120	30	303600	2.9	0.50	440220	3.20	0.80	11.59	Indicated	
NORTH(A)	A - 4	10120	30	303600	2.9	0.25	220110	3.20	0.80	11.59	Inferred	
SUB-TOTAL							<b>1'552,509</b>	<b>3.20</b>	<b>0.80</b>	<b>11.59</b>		
SOUTH(B)												
	B - 2	3339	30	100170	2.9	0.25	<b>72,623</b>	<b>3.79</b>	<b>1.65</b>	<b>17.73</b>	Inferred	

TOTAL	<b>1'625,132</b>	<b>3.22</b>	<b>0.84</b>	<b>11.86</b>
Less than – 10% Of grade		<b>2.90</b>	<b>0.75</b>	<b>10.68</b>

#### 4.3 Ore Geological Potential

Geological potential is defined along two conductive axes determined by the geophysics and geological observation recognized in surface as in the trenches.

Western conductive axis

Length: 2750 m

Average width of the anomaly: 50 m

Depth: 200 m

Potential:  $2750 \times 50 \times 200 \times 2.9 = 79\,750.000\text{ MT}$

Eastern conductive axis:

Length: 2600 m

Average width of the anomaly: 25 m

Depth: 200 m

Potential:  $2600 \times 25 \times 200 \times 2.9 = 37\,700.000\text{ MT}$

### Summary

Conductive axis - W: 79' 750, 000 MT

Conductive axis - E: 37' 700, 000 MT

Total 117' 450, 000 MT

Safety Factor (FS):  $0.5 = 117\,450.000 \times 0.5 = 58\,725,000\text{ MT}$

With similar grade to those estimated for the geological resources.

## 5.0 METALLURGY

With minerals from Maraycasa mine, metallurgical tests have been made for sulphides and oxides.

### 5.1 Sulphides Metallurgy

In 1989, metallurgical tests were conducted in the former - Banco Minero del Peru, sampling the main gallery, composed of bornite, chalcopryrite, covellite and large amounts of oxides and silicates of copper, in bargain low pyrite and abundant country rock and moderate quartz, which gave the following results:

#### METALLURGICAL TESTING - BANCO MINERO

PRODUCT	Cu %	Au gr/MT	DISTRIBUCIÓN %	
			Cu	Au
Calculated Mineral head	5.70	0.893 (0287 Oz)	100.00	100.00
Concentrate	<b>41.82</b>	<b>6.622</b> <b>(0.2129 Oz)</b>	<b>94.54</b>	<b>99.05</b>
Tailing	0.36	0.01	5.46	0.95

Concentration ratio: 7.34 / 1

High head grade of ore is mainly due to the presence of bornite and chalcocite as the samples corresponded to the mixed zone.

The projection of ore expected to be produced in typical sulphide zone, would be:

#### MINERAL PLANT EXPECTED OR PROJECTED

PRODUCT	Cu %	Au gr/MT
Head ore	3.00 – 3.64	0.7 – 1.20
Concentrate	30.00 - 35.00	6.8 – 10.0
Concentration ratio	10.00/1 – 9.62/1	

### 5.2 Oxide metallurgy

Were carried out up to two tests with samples of field oxides, with similar results as described below:

- Location:

Tajo "Corral" Trench No. 3 South Side of outcrop Oxide Material: Cu oxides, quickly "chosen."

- Mineral Type:  
Copper oxide is 75% of Chrysocolla ( $\text{CuSiO}_3 \cdot \text{H}_2\text{O}$ ), 20% of Malachite ( $\text{CuCO}_3 \cdot \text{CuOH}_2$ ) and 5% of sulfate and hydrated oxides of Fe, accompanied by traces of bornite, covellite, magnetite and quartz.
- Results:  
Grade obtained: 4.02% Soluble Copper, copper sulfate, in granules.
- Sample Size:  
Mineral crushed to 3 / 8"
- Leaching Time  
First attack at 12 days  
Second attack up to 24 days.
- Sulfuric acid consumption:  
3.5 to 4.5 kg acid / MT of mineral
- Metallurgical Recovery:  
At 200 hours of leaching, is removed above 80% Cu, predominant Cu silicate, whose leaching takes a longer time than the Cu carbonates.

In the metallurgical process for oxide ores, there is an alternative to produce cement copper precipitated with iron scrap, this product is ready for marketed by the high copper content, but you can get the copper sulfate to crystallize in pads and then cleaned in water purification plants for use in insecticides, flotation of zinc, etc. in local and international market, is an industrial mineral that has better value than as copper ore.

The alternative to produce cement copper or copper sulfate, as defined by the market, although the dirty copper sulfates produced in the pads get to have up to 22% of Cu, to reach 25 to 26% of Cu, which is industrial grade purification requires considering additional investments, which is not the subject of this report.

## 6.0 VALUATION OF ORE RESERVES IN SULFIDES

Using the data provided by Minera Promotion SAC (operating costs) in their monthly reports, conservatively, we value the proven-probable reserves of the deposit whereas sulfur ore transport head for processing a plant located in Acari, 200 km distant mine.

Activation of the mine can be supported financially with the ore that is ready and available for exploitation.

### 6.1 Head grade

Considering the mineable ore reserves estimated in sulfide mineral.

Cu 3.00%, Au 0.38gr/MT, Ag11.20 gr/MT

### 6.2 Metallurgical and Economic Recovery (maquila and deductions)

91.00%,      90.00% = 81.9%

### 6.3 Metals Prices

Cu = 2.90 \$/Lb, Au= 1100 \$/oz, Ag= 17.00 \$/oz

### 6.4 Head mineral value

Cu = 3.00 x 22.04 x 2.90 x 0.819 =	157.08 \$
Au = 0.38/31.1 x 1000 x 0.819 =	11.01 \$
Ag = 11.20/31.1 x 15.00 x 0.819 =	<u>5.01 \$</u>
Total	173.10 \$

### 6.5 Operating Costs sulfides

Considering that the ore will be transported to Acari

	US\$
Mine Costs (contractor)	21.66
Transportation (Mineral to Acari)	32.98
Concentrator ( treatment costs)	36.09
Administrative expenses	7.90
Contingencies 10%	<u>3.95</u>
TOTAL	102.58

### 6.6 Gross margin useful of sulfides

**6.6.1 Head Mineral value** - Operating costs considering only copper value =

$173.10 - 102.58 = 70.52 \text{ \$/MT}$

#### 6.6.2 Value of Sulfide Mineral Reserves

$32,290 \text{ TM} \times 70.52 \text{ \$} = \mathbf{2'277,090.80 \text{ US \$}}$

The financial resources needed to start production, includes the initial investment in materials and mining equipment mostly as infrastructure to carry out the mining operation through a contractor.

Also is required working capital for continuous operation during 2 months, the attached table summarizes the estimated financial resources required:

- 1- Mine equipment and supplies, including compressor, drillers, mining trucks, rails, air and water piping, and safety equipment about the order of 90,000 US.
- 2- Equipment and materials for use in surface, including 4x4 pickup, 12KW generator, computer, camping utensils, initially will be rented homes of villagers, in the order of 45.000 US.
- 3- Investment in research and procedures for authorization of the Ministry of Energy and Mines Central and Regional social investment to update the agreements with local communities, owners of the land surface, etc.. Approximately 30.000 US.
- 4- Working capital equal to three months of operation, it is expected that the first month will be able to install rails and allow access to the mineral operation and commencement of work and to begin the extraction of mineral and plant release from the second month initially at a rate of 1000 tons per month and then to 1500 MT / month production capacity is expected from the third month, this represents an average of approximately provision:

Operating Cost = 102.58 X 30000 MT (equivalent to 3 months production) = 307,700 US

See detail in the following table:

<b>INVESTMENT FOR SCALE EXPLOITATION OF SMALL MINING WITH MINERAL TRANSPORT TO ACARI CONCENTRATOR</b>			
<b>ITEMS</b>	<b>CANTIDAD</b>	<b>Unit Price US</b>	<b>INVESTMENT US</b>
<b>MINE INVESTMENT</b>			
Compressor 375 PCM, 140 HP, new	1	41055.00	41055.00
Jackleg drill	3	5000.00	15000.00
Stoper drill	2	3000.00	6000.00
Mining cars	4	1500.00	6000.00
Rails m (25 lbs /yard x 6 mts.)	1302	18.45	24015.39
Air pipe 3'	200	3.95	790.00
Air pipe 2'	500	1.94	972.00
Water pipe 1'	600	0.51	306.60
Rubber boots	10	15.96	159.57
Leather Gloves	10	3.83	38.30
Reflective vest	10	1.74	17.38
Safety glasses	5	2.66	13.30
Safety Helmets	10	2.13	21.28
			<b>94,388.81</b>
<b>INVESTMENT AREA</b>			
Pick up 4x4	1	30000.00	30000.00
Generator 12 KW	1	7691.13	7691.13
Lap Top pc	1	1000.00	1000.00
Kitchen & utensils	diverse		2000.00
Beds & bedding	diverse		1500.00
tables	diverse		500.00
chairs	diverse		300.00
			<b>42,991.13</b>
<b>INVESTMENT IN EDUCATION AND COMMUNITY</b>			
Environmental Impact Study (EIS)	hires		15000.00
	direct		15000.00
			<b>30,000.00</b>
<b>TOTAL INITIAL INVESTMENT (A)</b>			
			<b>167,379.94</b>
<b>WORKING CAPITAL</b>			
<b>Operating Costs</b>			
Mina (contractor)	21.66		64980.00
Ground Transportation Acari (hires 2 dump trucks)	32.98		98940.00
Plant (Treatment, vol.)	36.09		108270.00
General Expenses	7.90		23692.50
Sales Expense (. concentrate. transport)	3.95		11850.00

<b>TOTAL WORKING CAPITAL FOR THREE MONTHS (\$102.58 x 3000MT) (B)</b>	102.58		<b>307,732.50</b>
<b>FINAL TOTAL</b>			<b>475,112.44</b>
<b>PROFIT IN 3 MONTHS</b>	<b>MINERAL VALUE \$/MT</b>	<b>Margen Bruto x TM</b>	<b>PRODUCCION TM x MES</b>
Acarí Plant / Price 3.00 \$/Lb	176.44	73.81	1,000.00
Acarí Plant / Price 2.90 \$/Lb	173.11	70.53	1,000.00
Acarí Plant / Price 2.50 \$/Lb	149.54	46.96	1,000.00
	<b>GROSS MARGIN SALES TOOL \$</b>	<b>Investment Recovery month</b>	<b>Ratio: Income / Investment %</b>
Acarí Plant / Price 3.00 \$/Lb	73,861.37	6.43	0.16
Acarí Plant / Price 2.90 \$/Lb	70,528.72	6.74	0.15
Acarí Plant / Price 2.50 \$/Lb	46,960.00	10.12	0.10

## 7.0 VALUATION OF GEOLOGICAL RESOURCES IN SULFIDES

For the development of geological resources of the deposit is initially planned to install a plant of 200 MT in situ, within the small mining category (360 MT/ day) from there expanded to 500 MT/day.

Under these parameters, geological resources are estimated as follows:

### 7.1 Head Grade

Considering the total geological resources estimated in sulfides  
2.90% Cu    0.75 gr/MT Au    10.68 gr/MT Ag

### 7.2 Metallurgical and economic recovery (machinery and deductions)

91.0%    90.0%    = 81.9%

### 7.3 Metals Prices (conservative)

Cu = 2.50 \$/Lb    Au = 1000 \$/oz    Ag = 15.0 \$/oz

### 7.4 Head Mineral Value

Cu = 2.90 x 22.04 x 2.50 x 0.819 = 130.90 \$  
Au = 0.75/31.1 x 1000 x 0.819 = 21.73 \$  
Ag = 10.68/31.1 x 15.0 x 0.819 = 4.22 \$  
TOTAL = **156.85** \$

### 7.5 Sulfides Operating Costs

Estimated by an initially 200 MT plant to a 500 MT in the second stage (where costs must decrease at higher tonnage of treatment).

	<b>US\$</b>
Mine costs (contractor)	30.00
Plant costs (in situ service)	30.00
Administrative expenses	10.00
Contingency 10%	<u>7.00</u>
<b>Total</b>	<b>77.00</b>

## 7.6 Useful gross margin of sulphide

### 7.6.1 Head mineral value - Operation costs

$$156.85 - 77.0 = 79.85 \text{ \$/MT}$$

### 7.6.2 Value of sulphide mineral resources

$$1'625,132 \text{ MT} \times 79.85\$ = 129'766,790 \text{ US\$}$$

## 8.0 VALUATION OF GEOLOGIC RESOURCES IN OXIDES

The valuation of oxides is performed, from which will be obtain copper cement, the alternative to produce copper sulfate will be determined by market demand.

### 8.1 Head Grade

In the case of oxide ores, copper is the only one to be recover, but the reserve grades are as shown below:

$$2.94\% \text{ Cu}$$

### 8.2 Metallurgical and economic recovery (maquila and deductions)

$$80.00\% \times 90.00\% = 72.00\%$$

### 8.3 Metal Price

$$\text{Cu} = 3.00 \text{ \$/Lb}$$

### 8.4 Head Mineral Value

$$\text{Cu} = 2.94 \times 22.04 \times 3.00 \times 0.72 = 140.00\$$$

### 8.5 Oxides operating costs

Estimated for an initially plant of 50 to 100 MT / day, to be expanded at 500 MT in the second stage (where costs must decrease at higher tonnage of treatment).

	<b>US\$</b>
Mine costs (salaries)	5.00
Plant costs (salaries)	5.00
Materials	15.00
Administrative expenses	2.00
Contingency 15%	<u>4.05</u>
Total	<b>31.05</b>

### 8.6 Oxides useful gross margin

$$140.00 - 31.05 = 108.95 \text{ \$/MT}$$

### 8.7 Value of mineral resources in oxides

$$833,969 \text{ MT} \times 108.95 \$ = 90'861,000 \text{ US}$$

## 9.0 INVESTMENT IN SULFIDES

The exploitation of ore reserves today have the headings and access built mostly accessible mineral and ready to be exploited, so in mine are only necessary the reinstatement of rails, water and cleaning because mining operations was paralyzed since august, 2008.

The investments required for the installation of a plant of 200 MT/day, for flotation of sulphides, are justified by current knowledge of the mine.

In a second stage in the short term will be necessary to expand the plant to capacity of 500 MT / day.

### 9.1 First stage

Includes the treatment of accessible mineral cubed in the Acari plant (the nearest) to generate cash and from it start the necessary investments to bring electric power to the mine and also benefit the surrounding communities.

### 9.2 Second Stage

Installation of a 200 MT/day plant considering the infrastructure for a further expansion to 500 MT/day or more.

The plant should be installed where it is located enough water and environmental protection to mitigate conflicts with communities.

### 9.3 Sulfides, Summary Investment

	<b>US\$</b>
<b>First stage:</b> Mining Headings (declines)	121,830
200 MT/day plant	918,800
Tailings dam	200,000
Electric power*	<u>120,000</u>
<b>Total</b>	<b>1'360,630</b>

\* The electricity is being managed by the authorities of the surrounding districts, but will require the collaboration of the mining companies that will also benefit, one of them is Maraycasa mine, to connect the three phase line that is 30 km from the mine. Currently installed line poles Incuyo - Chaparra sponsored by the mayor of Quicacha and artisanal miners in Chaparra, the line passed by a few km from the mine

<b>Second Stage:</b> Mining operations (ramps)	1'600,000
Expansion to a 500 TM/day plant	<u>1'500,000</u>
<b>Total</b>	<b>3'100,000</b>

## 10.0 EXPLORATIONS

Investment in exploration will be aimed at increasing mineral resources which are then transformed into mineable ore reserves.

After the installation plant of 200 MT / day, in parallel shall be initiated exploration work on the continuity of the mineralized structures to the north, for which we propose a exploration program of diamond drilling.

The objective of the drilling is:

- Check continuity of the structures and grades in the ore bodies, where mineral resources were estimated.
- Check the presence of sulfides related to geophysical anomalies which have estimated the geological potential of the site, we have selected the best locations recommended by the geophysical survey.



A tentative program of drilling along the deposit is exposed, for which 11 sections were prepared for the same number of drill holes with a total of 2680 m of which are prioritized 7 drills with 1730 m.

The following table shows a breakdown of the drill program

**MARAYCASA PROJECT DRILLING PROGRAM**

Platform	Geophysical Line	DDH N°	Est	North	Azimuth	Inclination	Long. M	Objectives	Priority
1	L 100 N	MA-01	643338	8290477	N 45° E	- 60°	230	Body B	230
1	L 100 N	MA-02	643338	8290477	N 60° E	- 55°	250	Body B	
1	L 100 N	MA-03	643338	8290477	N 28° E	- 55°	230	Body B	
2	L 300 N	MA-04	643357	8290639	N 45° E	- 60°	250	Body A	250
2	L 300 N	MA-05	643357	8290639	N 65° E	- 55°	220	Body A	
3	L 400 N	MA-06	643309	8290732	N 45° E	- 60°	250	Body A	250
3	L 400 N	MA-07	643309	8290732	N 64° E	- 50°	250	Body A	
4	L 1000 N	MA-08	642729	8291001	N 45° E	- 50°	300	Outcrop-BC-2	300
5	L 1700 N	MA-09	642432	8291693	N 45° E	- 50°	300	BC-1	300
6	L 2200 N	MA-10	642159	8292129	N 45° E	- 60°	250	BC-1	250
7	L 2200 N	MA-11	642340	8292310	N 45° E	- 60°	150	BC-6	150
							<b>2680</b>		<b>1730</b>

The estimated cost for this program is in the following order:

DDH/m cost (supervision included)	1730m x 150\$/m = 259,500 US\$
Samples	865m x 20 \$ = 17,300
Dirt road access (valued)	= 5,570
Miscellaneous supplies, boxes	=5,500
Vehicle, two months rent 70\$/day x 60 days	=4,200
Fuel vehicles 60 days x 0.1584 \$/km x 100 km/day	1,900
Manual sample cuttings	<u>2,500</u>
<b>Total</b>	<b>306,470 US\$</b>

**11.0 SALES VALUE AND RETURN ON INVESTMENT, SULFIDES WITH OWN PLANT**

11.1 Plant sales	200 MT/day	500MT/day
200 (500) MT/day x 79.85 \$/MT =	15,969	38,924 daily
200(500) MT/day x 25 days x 79.85 \$/MT =	399,241	998,103 monthly
200(500) MT/day x 300 days x 79.85\$/MT =	4'790,897	11'977,243 annual

All investments including explorations:

First stage	1'360,630
Second Stage	3'100,000
Explorations	<u>306,470</u>
<b>Total</b>	<b>4'767,100</b>

**11.2 Inversion recovery time in years**

	200MT/day	500MT/day
4'767,100/4'790,897	<b>0.995 (11.94 months)</b>	
4'767,100/11'680,500		<b>0.398 (4.78 months)</b>

## 12.0 CONCLUSIONS

According to technical and economic analysis made of the deposit, in view of the information, we conclude the following:

1.- Maraycasa deposit has the characteristics of the type of site called "Iron oxide copper gold deposit" (IOCG) characterized by the occurrence of Cu mineralization (Au Ag), associated with the presence of magnetite and epidote-quartz alteration (garnet) in faulting shears type structural environment along the direction of the mineralized belt. They generate a series of vein-type structures with dissemination in the country rock become persistent until the next structure in the transverse and vertical direction, forming ore bodies with economic value.

2.- Currently the mining operation carried out in Maraycasa is the type of small ore by conventional mined methods (galleries, sublevels and chimney) that are confirming the occurrence of ore bodies associated with structures that require a faster mining operation to transform the estimated geological resources in proven minable ore.

3.- The inventory of proven and probable mineral reserves estimated in mineralized structures reach the following tonnages and grades:

VEIN	TYPE	TMS	Pot. m	Cu%	Au g / MT
Principal	sulfide	91,873	1.63	3.00	0.52
Ramal	sulfide	<u>48,199</u>	<u>1.78</u>	<u>2.94</u>	<u>0.40</u>
Total Sulfide		<b>140,072</b>	<b>1.68</b>	<b>2.98</b>	<b>0.46</b>
Principal	oxides	19,503	1.78	2.94	0.40

The value of proven and probable reserves in sulfur, using operating costs of \$ 102.58 / MT (with transport to Acari plants) and metal prices of 2.90 \$ / lb for copper, \$ 1000 / oz for gold, and 15 \$/oz for silver, metallurgical recovery and economic combined is 81.9%, is the following order:

Mineral	TMS	\$/TM	US\$
Sulfides	140,072	x 70.52 =	<b>9'879,098</b>

This is the mineral for immediately exploitation after installation of rails and investment in mining equipment, by contract.

4.- Geological resources are estimated at the date of this order:

Mineral	Body	TMS	Cu%	Au Oz/MT	Ag Oz/MT
Sulfide	A+B	1'625,132	2.90	0.75	10.68
Oxides	A+B	<u>833,969</u>	<u>2.94</u>	<u>0.97</u>	<u>6.05</u>
		<b>2'459,101</b>	<b>2.91</b>	<b>0.83</b>	<b>9.11</b>

5.- The value of mineral resources estimated at current prices of minerals, metallurgical and economic recovery are estimated at:

Mineral	TMS		\$/TM	US\$
Sulfides	1'625,132	x	79.85	126'766,000
oxides	<u>833,969</u>	x	118.95	<u>90'861,000</u>
	<b>2'459,101</b>			<b>217'627,000</b>

The geological potential estimated for geology along the geophysical anomaly and safety factor of 0.50 is the following order:

**58'725,000 MT**

Figure could be increased as displayed on the upper level where widespread mineral notes in the wall rocks of the structures, which in turn extends the mineralized bands and therefore the mineral potential of the site. The criteria should be confirmed with the exploration and development programs proposed.

6.- The initial investment for a flotation plant of 200 MT / day, including mining work, tailings disposal and electric transmission is: US **1'360,630**.

For the second stage, which includes mining operations and plant expansion to 500TM/día, is: \$ **3 '100.000**.

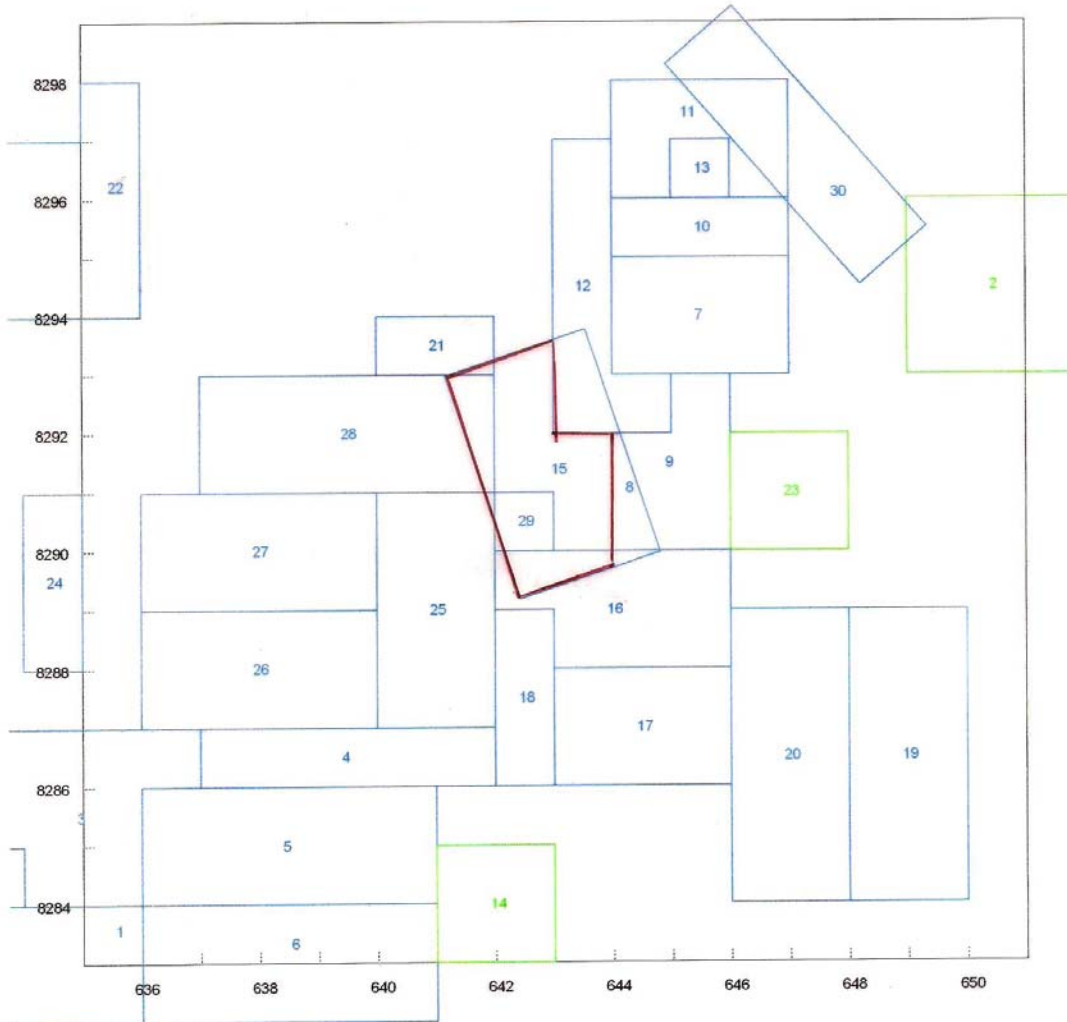
7 - Summing up the investment required to start operation stages of sulfides is as follows





First Stage	1, 360,630
Second Stage	3, 100,000
Explorations	<u>306,470</u>
Total	US\$ <b>4' 767,100</b>

8 - The return on investment in the Maraycasa mine get very short term

	Years	Months
With 200TM/día plant in:	<b>1.02</b>	<b>12.24</b>
With 500TM/día plant in:	<b>0.408</b>	<b>4.90</b>

**Carlos Neyra Zuzunaga**  
**Mining Geologist**  
**October - 2010**



LEYENDA	
	DERECHOS MINEROS EN TRAMITE
	DERECHOS MINEROS TITULADOS
	DERECHOS MINEROS EXTINGUIDOS
	PLANTAS DE BENEFICIO, CANTERAS, OTROS

ESCALA 1 : 100000



CLÁUSULA DE SALVAGUARDAS: La información sobre Áreas Restringidas a la Actividad Minera (Áreas Naturales, Zonas Urbanas y de Expansión Urbana, Zonas Arqueológicas, Proyectos Especiales, Reserva Turística y otros) que grafican en el plano catastral, tienen CARÁCTER REFERENCIAL, toda vez que su actualización corresponde a otras entidades. Su actualización se efectúa de acuerdo a la información que dichas Entidades envíen al INGEEMET.

 SECTOR ENERGÍA Y MINAS INSTITUTO GEOLÓGICO MINERO Y METALÚRGICO DIRECCIÓN DE CATASTRO MINERO			
PLANO : INVENTARIO DE DERECHOS MINEROS			
HOJA : CORACORA	DATUM : PSAD 56		
COORD : 31-O	ZONA : IB		
TAMAÑO : A-4	ZONA CATASTRAL : IIB-C-VI	Ing. CESAR SALAS LÓPEZ Director de Catastro Minero y Metalúrgico	
FECHA : 14 September 2009	ELABORADO POR : GUIDO VALDIVIA PONCE		

**MINING CATRASTO SHEET 31 – O, COCACORA  
MINING CLAIMS: MARAYCASA**

# MARAYCASA MINE LOCATION MAP

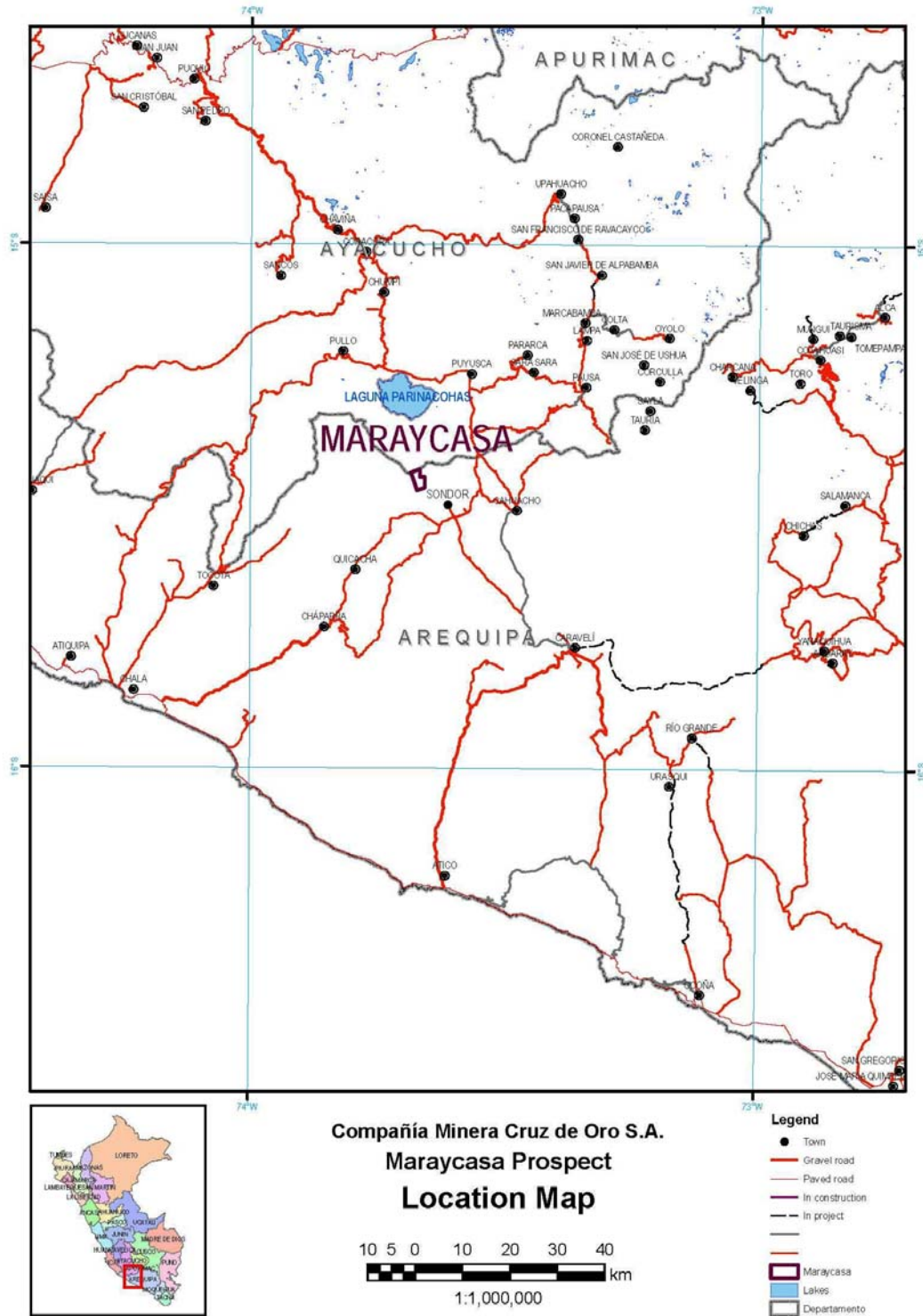
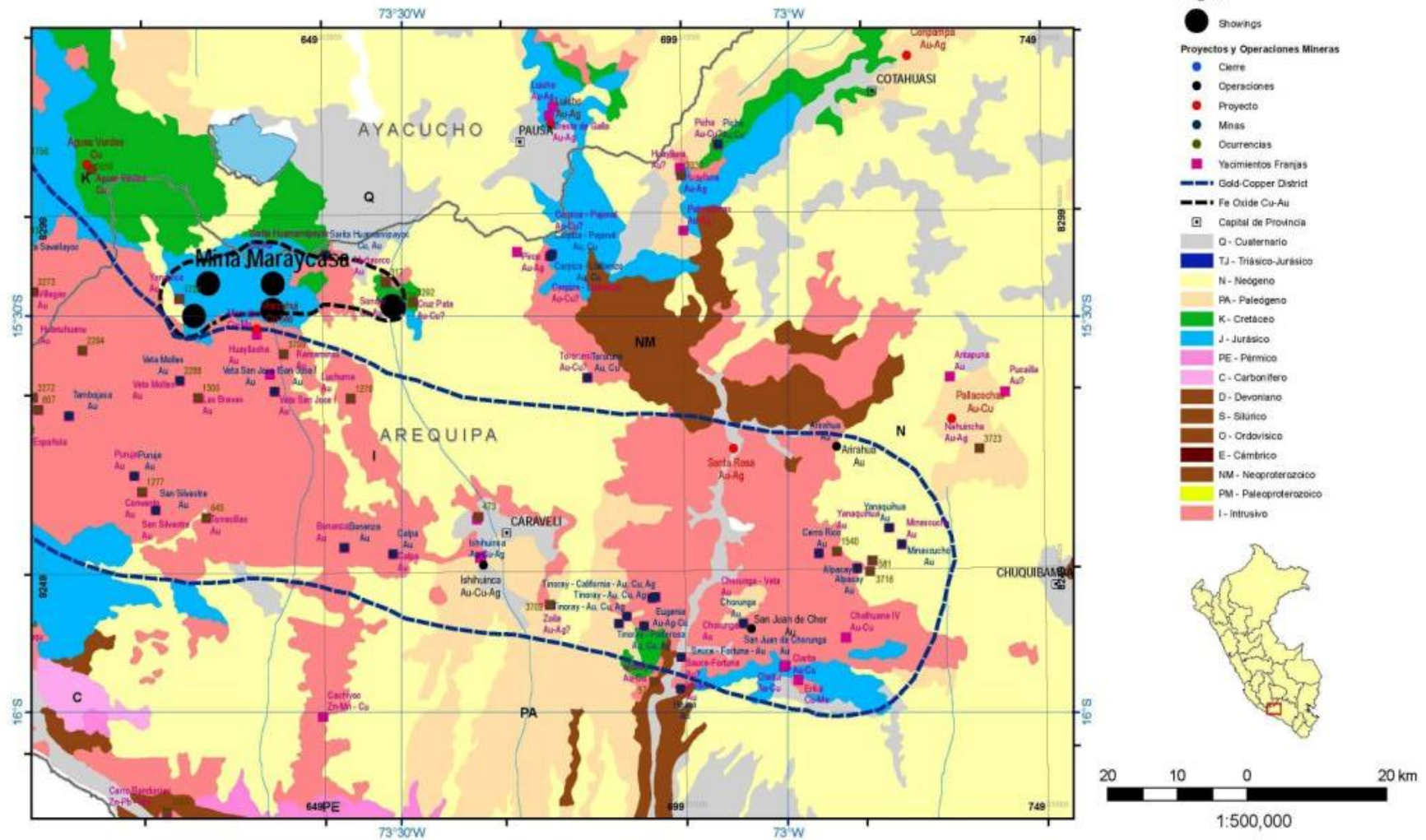


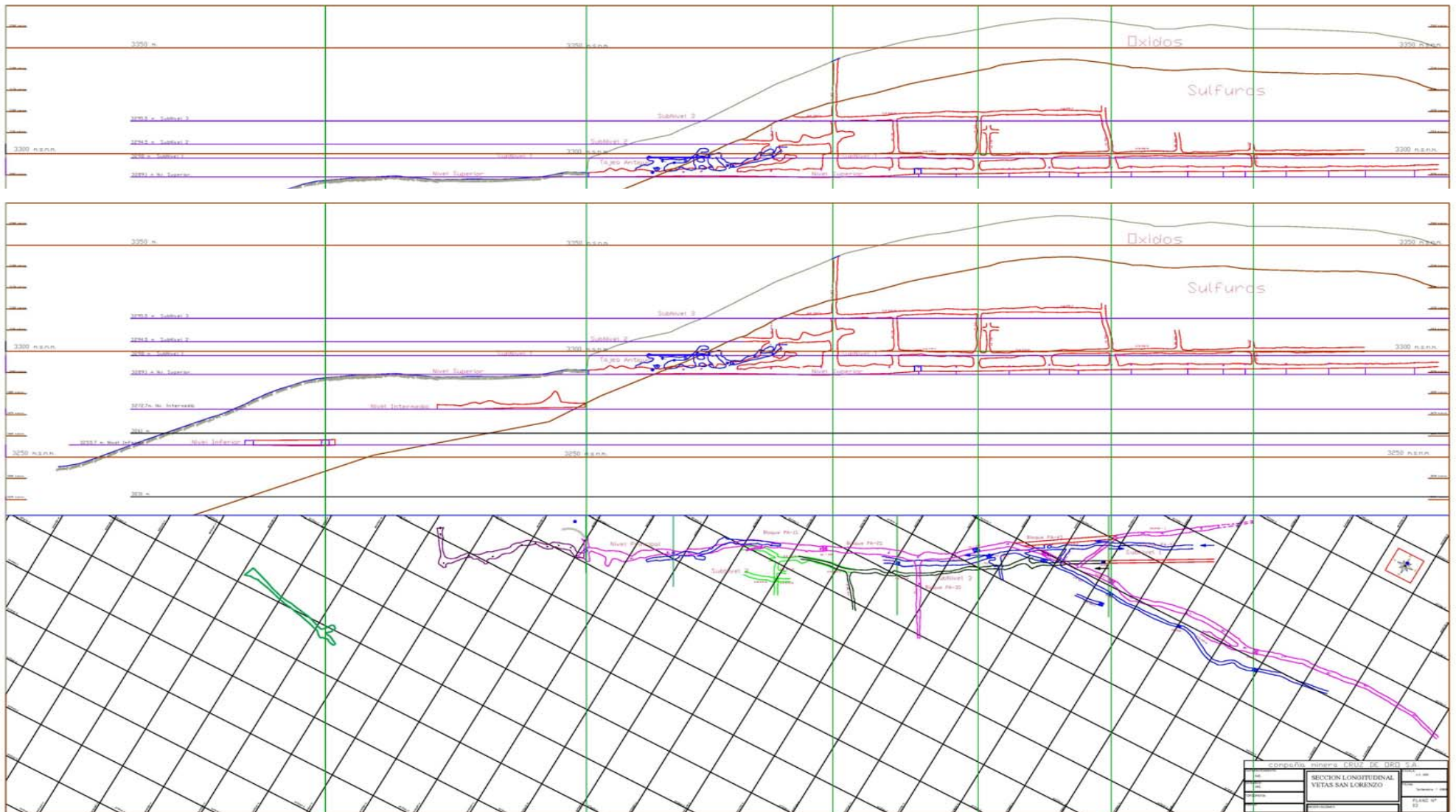
Fig. 1



**Maraycasa Property**  
**Figure 2 Regional Geological Map**



# LONGITUDINAL SECTION MINING WORKING



**INVENTARIO DE RESERVAS MINERALES DE LA MINA MARAYCASA  
VETA PRINCIPAL**

VETA	NIVEL	BLOQUE	SEGÚN CERTEZA	SEGÚN VALOR	TMS	Pot m	%Cu	Au gr/TM
<b>SULFUROS</b>								
PRINCIPAL	SUPERIOR	PA-1 S	PROBADO -ACCESIBLE	Alta Ley	5313.27	1.63	3.38	0.42
PRINCIPAL	SUPERIOR	PA-2 S	PROBADO -ACCESIBLE	Alta Ley	3027.74	2.10	3.04	0.30
PRINCIPAL	SUPERIOR	PA-3 S	PROBADO -ACCESIBLE	Alta Ley	1709.40	1.01	4.12	
PRINCIPAL	SUPERIOR	PA-4 S	PROBADO -ACCESIBLE	Media Ley	3282.55	1.21	2.33	
PRINCIPAL	SUPERIOR	PA-5 S	PROBADO -ACCESIBLE	Alta Ley	2813.34	1.06	3.62	
PRINCIPAL	3261	PA-6 S	PROBADO EVENT-ACCESIBLE	Alta Ley	10431.55	1.90	4.14	0.43
PRINCIPAL	3261	PA-7 S	PROBADO EVENT-ACCESIBLE	Media Ley	7274.49	1.41	2.31	0.29
PRINCIPAL	3261	PA-8 S	PROBADO EVENT-ACCESIBLE	Media Ley	5227.96	1.10	2.65	
PRINCIPAL	3261	PA-9 S	PROBADO EVENT-ACCESIBLE	Baja Ley	8073.62	2.06	0.77	
					<b>47,153.92</b>	<b>1.62</b>	<b>2.80</b>	<b>0.37</b>
PRINCIPAL	SUPERIOR	PB-1 S	PROBADO -ACCESIBLE	Alta Ley	3335.41	1.80	3.89	
PRINCIPAL	SUPERIOR	PB-2 S	PROBADO -ACCESIBLE	Baja Ley	4124.70	1.48	1.69	
PRINCIPAL	SUPERIOR	PB-3 S	PROBADO -ACCESIBLE	Alta Ley	2215.98	1.06	3.62	
PRINCIPAL	SUPERIOR	PB-4 S	PROBADO EVENT-ACCESIBLE	Alta Ley	7170.47	1.14	3.94	1.40
PRINCIPAL	SUPERIOR	PB-5 S	PROBADO EVENT-ACCESIBLE	Alta Ley	8950.90	1.90	4.14	0.43
PRINCIPAL	SUPERIOR	PB-6 S	PROBADO EVENT-ACCESIBLE	Alta Ley	8287.26	1.90	4.14	0.30
PRINCIPAL	SUPERIOR	PB-7 S	PROBADO EVENT-ACCESIBLE	Media Ley	4213.31	1.10	2.65	
PRINCIPAL	SUPERIOR	PB-8 S	PROBADO EVENT-ACCESIBLE		6421.27	2.06	0.77	
					<b>44,719.30</b>	<b>1.64</b>	<b>3.21</b>	<b>0.67</b>
			<b>TOTAL PROBADO + PROBABLE SULFUROS</b>		<b>91,873.23</b>	<b>1.63</b>	<b>3.00</b>	<b>0.52</b>
<b>OXIDOS</b>								
PRINCIPAL	SUPERIOR	PA-1 ox	PROBADO ACCESIBLE	Alta Ley	1807.88	1.14	3.70	0.90
PRINCIPAL	SUPERIOR	PA-2 ox	PROBADO EVENT-ACCESIBLE	Alta Ley	877.55	1.24	4.39	0.92
PRINCIPAL	SUPERIOR	PA-3 ox	PROBADO EVENT-ACCESIBLE	Alta Ley	4384.81	1.08	3.64	1.72
					<b>7,070.24</b>	<b>1.12</b>	<b>3.75</b>	<b>1.41</b>
PRINCIPAL	SUPERIOR	PB-4 ox	PROBABLE EVENT- ACCESIBLE	Alta Ley	3273.44	1.63	3.39	0.42
PRINCIPAL	SUPERIOR	PB-5 ox	PROBABLE EVENT- ACCESIBLE	Baja Ley	3800.37	1.48	1.69	
PRINCIPAL	SUPERIOR	PB-6 ox	PROBABLE EVENT- ACCESIBLE	Alta Ley	3204.68	1.48	3.78	
PRINCIPAL	SUPERIOR	PB-7 ox	PROBABLE EVENT- ACCESIBLE	Alta Ley	2154.41	1.06	3.62	
					<b>12,432.90</b>	<b>1.45</b>	<b>3.01</b>	<b>0.42</b>
			<b>TOTAL PROBADO + PROBABLE OXIDOS</b>		<b>19,503.15</b>	<b>1.33</b>	<b>3.28</b>	<b>1.10</b>
			<b>TOTAL INVENTARIO VETA PRINCIPAL</b>		<b>111,376.37</b>	<b>1.57</b>	<b>3.05</b>	<b>0.62</b>



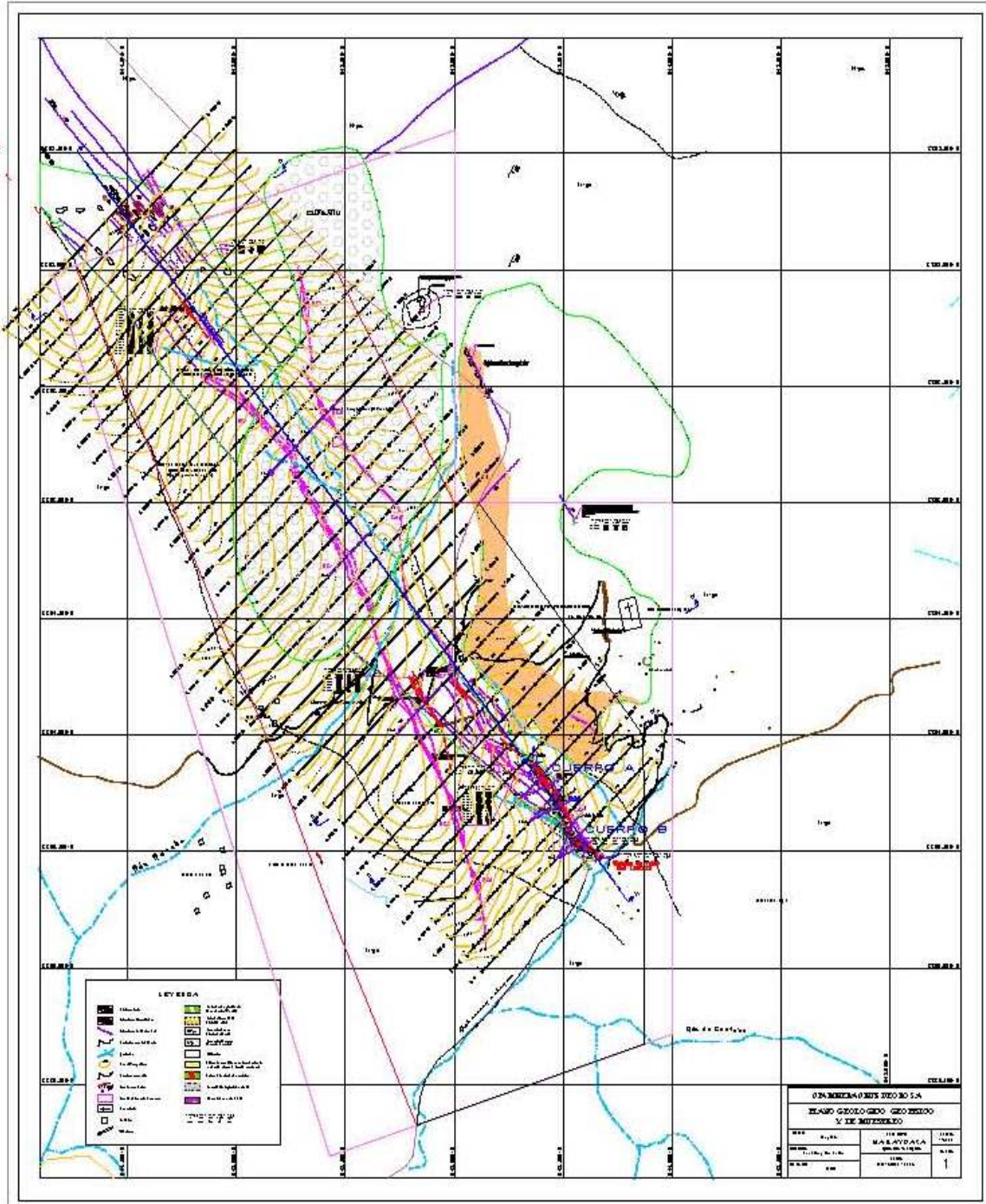
**INVENTARIO DE RESERVAS MINERALES DE LA MINA MARAYCASA**  
**VETA RAMAL**

VETA	NIVEL	BLOQUE	SEGÚN CERTEZA	SEGÚN VALOR	TMS	Pot m	%Cu	Au gr/TM
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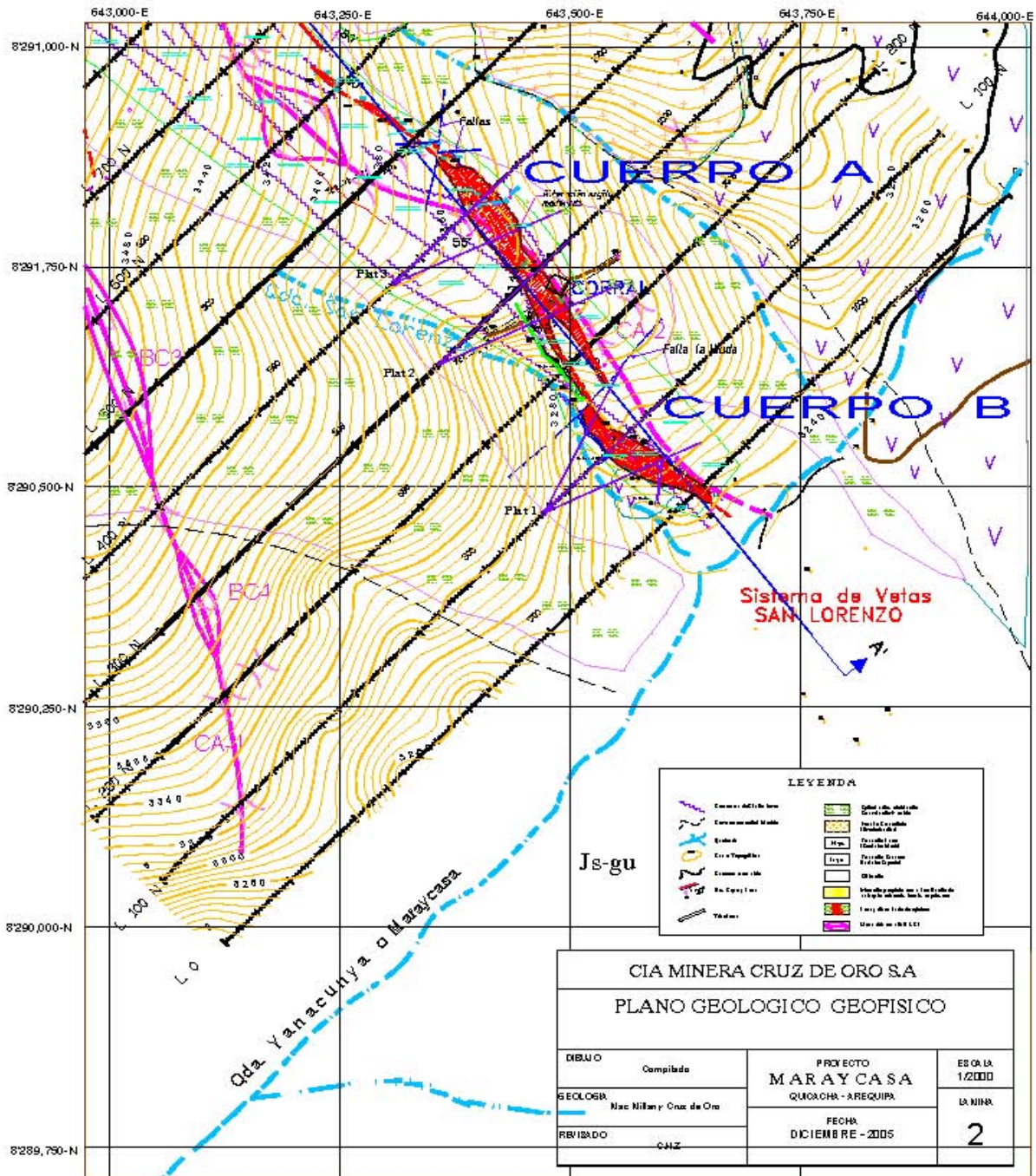
**SULFUROS**

RAMAL	SUPERIOR	RA-1 S	PROBADO -ACCESIBLE	Alta Ley	3685.0	1.13	3.36	0.40
RAMAL	SUPERIOR	RA-2 S	PROBADO -ACCESIBLE	Media Ley	4058.1	1.61	2.28	
RAMAL	SUPERIOR	RA-3 S	PROBADO -ACCESIBLE	Media Ley	2849.4	1.25	1.91	
RAMAL	3250	RA-4 S	PROBADO EVENT - ACCESIBLE	Alta Ley	9557.6	1.88	3.23	
RAMAL	3250	RA-5 S	PROBADO EVENT - ACCESIBLE	Media Ley	10622.5	2.00	2.68	
RAMAL	3250	RA-6 S	PROBADO EVENT - ACCESIBLE	Alta Ley	10221.4	2.07	4.05	
					<b>40993.9</b>	<b>1.82</b>	<b>3.12</b>	<b>0.40</b>
RAMAL	SUPERIOR	RB-1 S	PROBABLE EVENT-ACCESIBLE	Media Ley	3080.2	1.61	2.28	
RAMAL	SUPERIOR	RB-2 S	PROBABLE EVENT-ACCESIBLE	Media Ley	4124.7	1.48	1.69	
					<b>7204.9</b>	<b>1.54</b>	<b>1.94</b>	
			<b>TOTAL PROBADO PROBABLE SULFUROS</b>	<b>+</b>	<b>48198.9</b>	<b>1.78</b>	<b>2.94</b>	<b>0.40</b>

# GENERAL GEOLOGICAL MAP MARYCASA MINA



# GEOLOGICAL MAP SOUTHERN, MINING WORK AREA, SHOWING ORE BODIES



**LEYENDA**

	Contorno del terreno		Suelo de cultivo
	Contorno de nivel		Suelo de pastoreo
	Estructura		Suelo de siembra
	Estructura de tipo		Suelo de cultivo de tipo
	Estructura de tipo		Suelo de cultivo de tipo
	Estructura de tipo		Suelo de cultivo de tipo
	Estructura de tipo		Suelo de cultivo de tipo
	Estructura de tipo		Suelo de cultivo de tipo
	Estructura de tipo		Suelo de cultivo de tipo
	Estructura de tipo		Suelo de cultivo de tipo

CIA MINERA CRUZ DE ORO S.A		
PLANO GEOLOGICO GEOPISICO		
DIBUJO	Compilado	PROYECTO
GEOLOGIA	Mac Millan y Cruz de Oro	MARAYCASA
REVISADO	CHZ	QUICACHA - AREQUIPA
		FECHA
		DICIEMBRE - 2005
		ESCALA
		1:2000
		LA MINA
		2



## LATEST PHOTOS OF MARAYCASA MINE



Foto1- Panoramic View of Maraycasa Mine



Foto 2- Panoramic view of the current mining operations





Foto 3- View from the top of upper level. volcanic andesitic whit massive Chalcopyrite patches

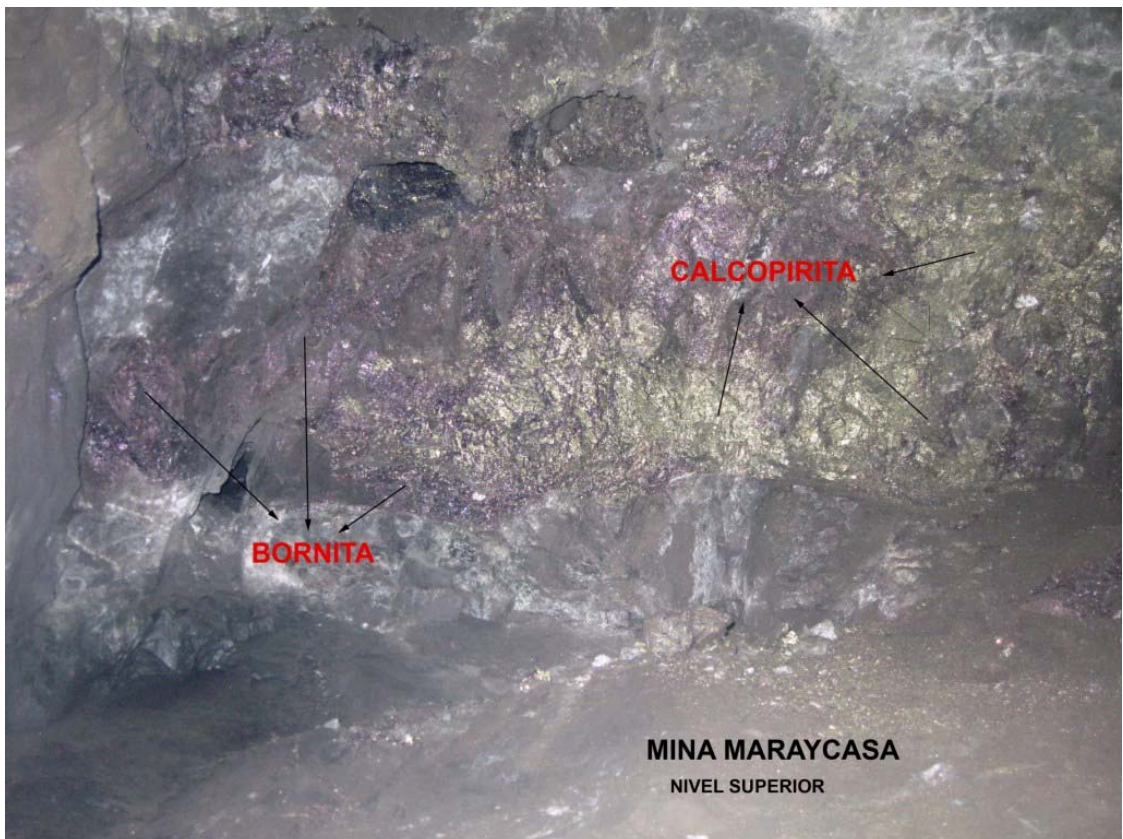


Foto 4- Upper level, Chimney with massive patches of bornite and chalcopyrite