

National Instrument 43-101F1

**TECHNICAL REPORT**  
**on the**  
**AGUA AMARGA SILVER PROJECT**  
**ATACAMA REGION, CHILE**

Prepared for  
**CASCADA SILVER CORP.**  
Toronto, Ontario

Effective Date:

January 23, 2021

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## List of Abbreviations and Acronyms

\$	US dollars
%	percent
°C	degrees Celsius
AA	atomic absorption
Ag	silver
Atacama Silver	Atacama Silver SpA
Aragonita	Aragonita Asesorias Limitada
Au	gold
Barrick	Barrick Gold Corp.
Cascada	Cascada Silver Corp.
C\$	Canadian dollar
Ch\$	Chilean peso
Company	Cascada Silver Corp.
cpy	chalcopyrite
Cu	copper
DD	diamond drilling
DDH	diamond drill hole
DTH	down the hole
E	east
g/t	grams per tonne
ha	hectare
IP	induced polarization
kg	kilogram
km	kilometres
Lac Minerals	Lac Minerals Ltd.
lb	pound
masl	metres above sea level
Minera San José	Compañía Minera San José
m	metres
m <sup>3</sup>	cubic metres
mm	millimetres
Mo	molybdenum
Mt	million tonnes
N	north
NE	northeast
NI 43-101	National Instrument 43-101
NS	north south
NSR	net smelter royalty
NW	northwest
oz	troy ounces
Pb	lead
ppm	parts per million
Project	Agua Amarga Property
Property	Agua Amarga Property
US\$	United State of America dollar
Zn	zinc

## CERTIFICATE OF QUALIFIED PERSON

Martin Pérez Villagrán  
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I, **Martin Pérez Villagrán**, do hereby certify:

- I am an independent consultant and resident in Santiago, Chile.
- This certificate applies to the technical report “National Instrument 43-101F1 TECHNICAL REPORT on the AGUA AMARGA SILVER PROJECT, ATACAMA REGION, CHILE” (the “Technical Report”) dated January 23, 2021, which relates to the Agua Amarga Property (the “Property”) located in Chile’s Atacama Region.
- I graduated in 1985 with a Degree in Geology from Universidad de Chile.
- I am a Professional Geologist (a “Persona Competente”) registered with the Chilean Comisión Calificadora de Competencias en Recursos y Reservas Mineras under No. 347. The Comisión is a recognized association as defined by National Instrument 43-101 (“NI 43-101”).
- I have worked as a geologist continuously for 44 years and throughout those years, I have been directly involved in mineral exploration for porphyry copper and epithermal gold deposits in numerous geologic settings.
- I have read the definition of “qualified person” set out in NI 43-101 – Standards of Disclosure for Minerals Projects and confirm that by reason of my education, affiliation with a professional association, as defined by NI 43-101, and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.
- I am responsible for all sections of the Technical Report.
- I am independent of Cascada Silver Corp. as described in Section 1.5 of NI 43-101
- I am independent of the vendors of the Agua Amarga Property as described in Section 1.5 of NI 43-101.
- I last visited the Property on October 22<sup>nd</sup>, 2020.
- I have read NI 43-101 and the Technical Report.
- The Technical Report has been prepared in compliance with NI 43-101
- As of the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Date at Santiago, Chile this 23<sup>rd</sup> day of January, 2021.

(signed) "*Martin Pérez Villagrán*"

Martin Pérez Villagrán

## **1.0 SUMMARY**

The Agua Amarga Property (the “Project”, “Property” or “Agua Amarga”) hosted high grade epithermal silver veins which were the focus of mining activities from 1811 to 1881. The Property also hosts narrow stratabound lead zinc silver mineralization which was exploited during the 1920’s and 1950’s. The epithermal silver veins, which are the focus of Cascada Silver Corp.’s (“Cascada”) planned exploration program, have not seen significant exploration activities having only been explored over a couple of years (1982-1983) by Compañía Minera San Jose, then a subsidiary of Lac Minerals Ltd. In November 2020, a magnetometer survey was completed over the majority of the Property on behalf of Cascada. There is little information related to exploration activities of the stratabound base metal mineralization on the southern portion of the Property and it is believed that no drilling targeted this mineralization.

The following Report, prepared for Cascada., summarizes the Agua Amarga property and exploration activities and results.

### **1.1 Property Summary**

The Agua Amarga Property comprises 1,465 hectares, in five groups of exploitation mining tenements, located approximately 30 km south of the City of Vallenar and 80 km by road from the Huasco seaport, in the Atacama Region of northern Chile. The Property is centered on latitude and longitude 28°48’S and 70°43’W respectively.

The Property is registered to Aragonita Asesorias Limitada (“Aragonita”). Aragonita is a private Chilean exploration company. All the claims are in good standing and the annual 2020 holding fees have been paid. As more fully described in Section 4.4, the Property is subject to a 1.0% net smelter royalty on any precious metals production, a 1% NSR on any metals production and a 5% net profit interest on any base metals production on 4 of the 5 tenements and a 2.0% net smelter royalty any metals production from 1 of the 5 tenements.

On September 30, 2020, Aragonita and Atacama Silver SpA (“Atacama Silver”), Cascada’s Chilean subsidiary, entered into an option agreement under which Atacama Silver can earn a 100% interest in the Agua Amarga Property by paying a total of US\$ 2,500,000 in cash and undertaking work commitments comprising \$250,000 in expenditures and 12,500 m of drilling.

### **1.2 Geology and Mineralization Summary**

The regional geological setting comprises a volcanic arc sequence represented by the volcanic-sedimentary rocks of Punta del Cobre Formation (Upper Jurassic-Hauterivian), which underly to a trans-arc (or intra-arc) sequence of marine limestones with intercalated volcanics and volcanoclastic rocks of the Chañarcillo Group (Upper Hauterivian-Aptian). Easterly, the Chañarcillo Group is overlain in small angular discordance by continental clastic sedimentary and volcanic rocks of Cerrillos Formation from Upper Cretaceous. All these sequences are intruded by plutonic to hypabyssal intrusives of various compositions along progressively younger belts towards the east. The age of the intrusives vary from Lower Cretaceous to Paleocene-Eocene.

At district-local scale, mineralization in Agua Amarga is hosted by a homoclinal sequence composed by the volcanic andesites of Punta del Cobre Fm. in the NW area and the overlying limestones, with intercalated volcanics of the lower unit (Nantoco Formation) of the Chañarcillo Group, over most of the rest of the property. Intrusives of dioritic to granodioritic composition have been recognized in the area, with the granodiorite batholith outcropping to the NW of the property the most significant (Complejo Plutónico Camarones). At the proximity of intrusive granodiorites or diorites, contact metamorphic rocks are developed. Protoliths may be sedimentary, volcanic and also intrusive. They are characterized by recrystallization, with epidote, calcite, garnet and variable silicification. Some marble units are observed in the eastern portion of the area with occasionally disseminated garnet.

It is reported that the high-grade shoots of silver-bearing mineralization in the zone of oxidation and enrichment consisted of silver halides (chlorargyrite, bromargyrite, iodargyrite). Acanthite, stephanite and dyscrasite, possibly from a secondary enrichment zone, have also been reported.

Adjacent to the eastern boundary of the Property is the Cortadera Property where Hot Chili Limited is drilling the Cortadera copper gold deposit which is hosted by tonalitic porphyries intruding along a NW-trending fault corridor. Drilling into the porphyries has returned significant intersections of copper, gold, molybdenum +/- silver from surface to vertical depths of approximately 900 m. The Cortadera deposits host indicated resources of 183 million tonnes grading 0.40% Cu, 0.15 g/t Au, 0.7 g/t Ag and 43 ppm Mo. Inferred resources stand at 267 million tonnes grading 0.35% Cu, 0.12 g/t Au, 0.7 g/t Ag and 73 ppm Mo. Note: the author of this Report has not been able to verify the technical information on the Cortadera Property and mineralization noted on the Cortadera property is not necessarily indicative of mineralization on Agua Amarga.

Stratabound lead zinc silver mineralization outcrops at Cerro Caña Norte hill in the central-southern portion of Maipú concession and has been exploited at the Fortuna-2, Caña Norte, San Bartolo and other small "mines" in the eastern part of the hill where the mineralization is repeated by normal faults. It is represented by at least three lead zinc silver rich layers, 0.20 to 0.35 m thick, intercalated concordantly in the calcareous units. The layers were exploited during two periods from 1920-1923 and 1950-1953. Grades of 25% lead, 4.7% zinc and 76 g/t silver are reported. There are few records related the exploitation of this base metals mineralization which has seen limited exploration and no reported drilling. Potential feeders along with the down-dip extension of the mantos may represent exploration targets.

### **1.3 Summary of Historical Exploration Activities**

Information regarding the details the historical exploration activities in the Property is limited. Reports state that silver veins were discovered on the Agua Amarga Property during 1811 with exploitation of the silver veins continuing from 1811 sporadically through to 1881. After the reported termination of mining activities in 1881, there are no records of exploration activities on the Property until Compañía Minera San José initiated exploration in 1982. Table 1.1 summarizes the activities on the Property.



Table 1.1 Summary of the Agua Amarga Exploration History

<b>Date</b>	<b>Company</b>	<b>Activities</b>
1811	Guasco Party	Discovery of high grade silver veins
1811-1881	Various	Mining activities occurred sporadically
1920-1923	Unknown	Mining stratabound Pb-Zn-Ag at the Fortuna-2, San Bartolo and Cañas Norte mines
1950-1953		
1982-2016	Compañía Minera San José <sup>1</sup>	Mapping, sampling, geophysics and 4 drill holes
2009	Aragonita	QuickBird interpretation and magnetics re-interpretation
2016-2020	Aragonita	Prospecting
2020	Cascada	Geophysics

1. From 1987 to 1994, various corporate transactions resulted in Compañía Minera San José<sup>1</sup> having a number of owners culminating in Barrick owning the Agua Amarga Property in 1994

#### 1.4 Conclusions and Recommendation

Based on the available data which the author has reviewed, it is the author's opinion that the Agua Amarga Property warrants exploration. Geological mapping and sampling should be the first steps in exploring the property. Following upon the results of these first steps, a program of 2,000 m of reverse circulation drilling should be undertaken to test for high grade epithermal silver veining and examine the potential for a bulk tonnage silver deposit. In particular, Cascada should target the epithermal veins both in the area of historic mining and within the area of magnetic lows south of and adjacent to the mining area.

In addition, the porphyry Cu-Au potential of Agua Amarga should be examined. The magnetics survey should assist in outlining areas of potential mineralization around the periphery of a porphyry body.

Cascada has prepared a preliminary budget for a Phase I exploration program totaling US\$856,800 as summarized in Table 18.1.

## **2.0 INTRODUCTION**

By request of Mr. Carl Hansen, President and CEO of Cascada Silver Corp. (“Cascada” or the “Company”), Martín Pérez Villagrán was retained to prepare a Technical Report, compliant the requirements of National Instrument 43-101 Standard for Disclosure for Mineral Projects (“NI 43-101”), on the Agua Amarga property located in the Atacama region, Chile. Mr. Perez is a Qualified Person as defined by NI 43-101, is independent of Cascada and Aragonita, and has no direct or indirect interests in the property. Mr. Pérez is a resident of Santiago, Chile, and has over 40 years of relevant experience in the exploration of various types of mineral deposits, including epithermal/porphyry systems in a variety of geological environments. This report is effective as at January 23, 2021.

Cascada is a mineral exploration company with a corporate head office and principle place of business located at 25 Adelaide Street East, Suite 1900, Toronto, Canada M5C 3A1. Cascada was incorporated under the laws of the Province of Ontario on August 25, 2020. On October 2, 2020, the Company continued its incorporation to the Province of British Columbia.

The Company has a 100%-owned subsidiary, Atacama Silver SpA (“Atacama Silver”), incorporated in Chile. The option agreement for the Agua Amarga Property was signed between Aragonita, the property vendor, and Atacama Silver.

The information contained within this report comes from activities conducted during exploration programs undertaken by different companies, but mainly from Compañía Minera San José, who actively explored the Property in 1982 and 1983, as well as from various reports, memorandums, letters, presentations, scientific papers, figures and maps, of both internal company and public domain character as listed at the end of this report in “Section 19 - References”.

Martín Pérez Villagrán, the author of the Report, is an independent Qualified Person (or “Persona Competente”) registered at the Chilean Comisión Calificadora de Competencias en Recursos y Reservas Mineras under N° 347 and in such condition is recognized as Qualified Person under NI 43-101.

Sergio Díaz (consulting geologist) assisted Mr. Pérez with the preparation of this report. Mr. Díaz is a Chilean Registered Professional Geologist who has previously performed various scientific and operational geological for the managemen of Cascada.

The author has read NI 43-101 and this Report. The Report has been prepared in compliance with NI 43-101.

### **2.1 Scope of Site Inspection**

The author of this report carried out a Property site visit on October 22, 2020 examining the area of the historical silver mining on the northern portion of the property as well as the area of historical lead zinc silver mines located on the southern portion of the property. The following day, October 23, 2020, the author examined diamond drill core from Agua Amarga which is stored in the City of Vallenar.

### **3.0 RELIANCE ON OTHER EXPERTS**

The author has relied upon information provided by Cascada that describes: the terms of the purchase option agreement under which Cascada has optioned the Agua Amarga Property; documents that describes the legal status, rights, obligations, dimensions and coordinates of the mineral claims; and, the need for and status of agreements and/or permits required to access and undertake activities on the property.

#### **3.1 Mining Property Tenure**

The author is not competent to comment on the ownership rights of the Agua Amarga Property concessions but has relied on a “Title Opinion”, dated October 15, 2020, prepared by Antonio Ortúzar V. of Baker McKenzie, Cascada’s legal counsel in Santiago, Chile which noted that all the Mining Tenements comprising the Agua Amarga Property, as listed in Table 4.1, are in good standing and that the Mining Tenements mining license fees have been paid for the year 2020.

The author has been informed by Cascada that, to the best of its knowledge, there are no current or pending litigations, easements or other encumbrances that may be material to the exploration and development of the Agua Amarga assets. Carl Hansen, President and CEO of Cascada assumes full responsibility for statements on mineral title and ownership as disclosed in Section 4 of this report. The author does not accept responsibility for errors pertaining to this information.

## 4.0 PROPERTY DESCRIPTION AND LOCATION

### 4.1 Property Location

The Agua Amarga property comprises 1,465 hectares located approximately 30 km south of the City of Vallenar and 80 km by road to the Huasco seaport, in the Atacama Region of northern Chile. Figure 4.1 shows the location of the Property along with significant mines / deposits in the immediately region. Topography is undulating with elevations less than 1,500 masl.

Approximate UTM coordinates of the center of the Property are 333,000 E and 6,813,000 N (Datum PSAD 56, UTM zone 19S) which corresponds to latitude and longitude 28°48'S and 70°43'W respectively.

### 4.2 Mineral Rights / Land Tenure

The Property consists of five groups of exploitation mining tenements, shown in Figure 4.2, registered to Aragonita, a private Chilean exploration company. All the claims are in good standing and the annual 2020 payments have been paid. The total area covered by the concessions is 1,465 ha. A two-hectare concession, named Fortuna-2, located in the southern part of the Maipú concessions is owned by a third party unrelated to either Cascada or Aragonita.

Table 4.1 Agua Amarga Mining Tenements

National ID Number	Name	Owner	Area	Survey Inscription ID			Registry
			ha	Folio	#	Yr	
0330117818	AMARGA 1/15	Aragonita	75	473	109	2016	Property
0330116706	ROSARIO 1/25	Aragonita	125	31	10	2008	Property
0330116714	SANTA INES 1/15	Aragonita	75	30	09	2008	Property
0330117850	MAIPU 1/220	Aragonita	1090	287	75	2012	Property
0330116692	LOURDES 1/50	Aragonita	100	334	90	2012	Property

Under the mining laws of Chile, exploitation concessions can be held in perpetuity provided that the appropriate annual payments have been made. There is no requirement that a property be put into production within a specified time frame, there are no minimum work requirements or investment commitments, and there is no requirement to reduce concession sizes over time.

Payments to maintain exploitation and exploration concessions are made annually in March. The Property payments, as made to date, will maintain the Agua Amarga tenements in good standing until March 2021. The total cost to maintain the concessions in good standing is estimated to be Ch\$ 7,325,000 (approximately US\$10,000) annually. Prices are calculated using local tax (UTM) and inflation based (UF) indices that vary daily and thus cannot be calculated exactly.

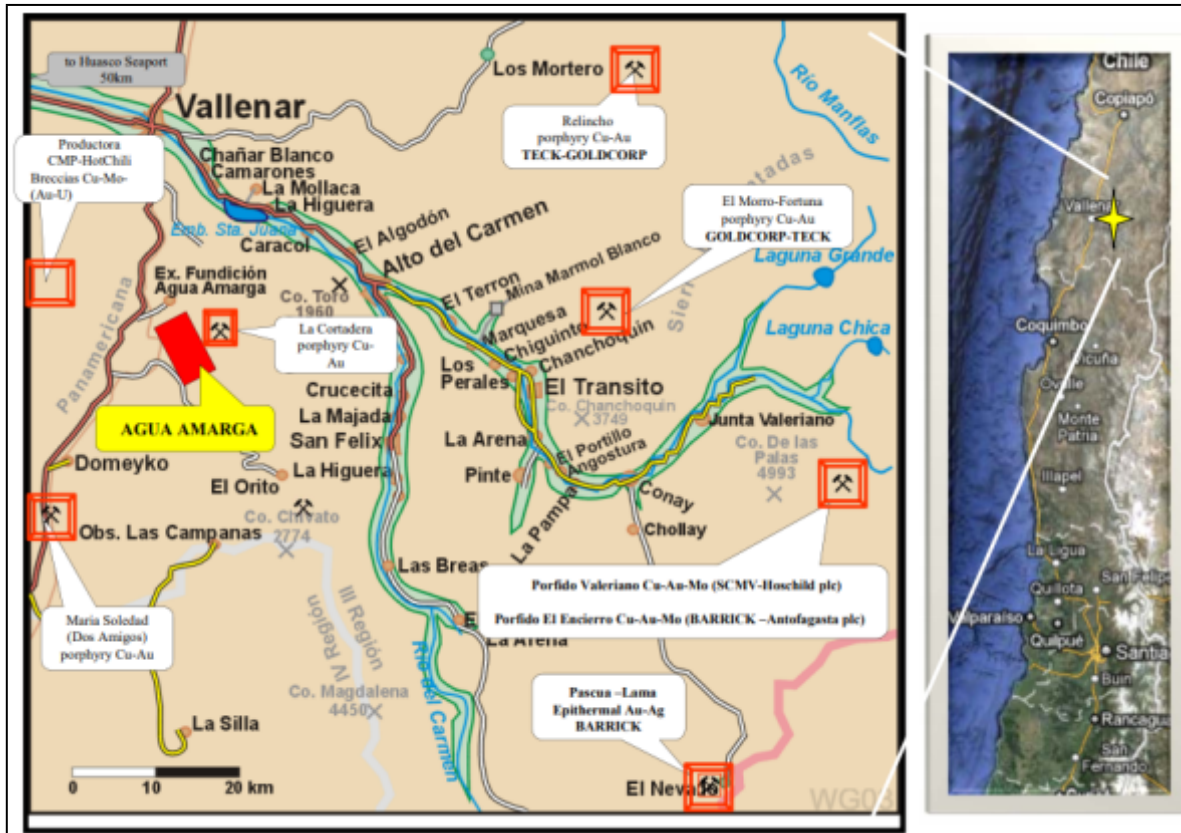


Figure 4.1 Location of Agua Amarga Property

The corners of exploitation concessions are marked in the field by cement monuments surveyed and erected by an authorized surveyor and appropriately inscribed.

### 4.3 Surface Rights

The Property's topography is shown in Figure 4.3. The surface lands are considered public lands ("terreno fiscal", Ministerio de Bienes Nacionales) and therefore no land use agreements are required. The property is accessible by public roads C-506 and C-56 therefore access permissions are not required. There are no indigenous group claims in the area of Agua Amarga.

### 4.4 Underlying Agreements

On September 30, 2020, Aragonita (the "Vendor") and Atacama Silver, Cascada's Chilean subsidiary, entered into an option agreement under which Atacama Silver SpA can earn a 100% interest in the Agua Amarga Property by paying a total of US\$ 2,500,000 in cash, undertaking work commitments comprising US\$ 250,000, drilling 12,500 metres and committing to specific royalties. Table 4.2 summarized the payments and work commitment obligations under the option agreement.

Table 4.2 Summary Terms of Agua Amarga Option Agreement

Dates	Payments (US\$)	Work Commitments
On signing (paid)	\$ 40,000	-
31-August-2021	80,000	\$250,000
31-August-2022	180,000	2,500 m drilling
31-August-2023	250,000	
31-August-2024	1,950,000	10,000 m drilling
Total payments	\$ 2,500,000	

Upon earning a 100% interest in the Property, Cascada will inherit the obligation to future potential payments associated with a 1% net smelter royalty on any precious metals production and a 5% net profits interest on any base metal production payable to Barrick Gold Corporation (the “Barrick Royalties”). The Barrick Royalties are payable on production from all Property concessions with the exception of the Lourdes 1/50 concessions.

Aragonita has a 1% NSR on all metals production from concessions subject to the Barrick Royalties and a 2% NSR on any metals production from the Lourdes 1/50 concessions. Cascada may repurchase 50% of the Aragonita NSR’s for a total of US\$ 2,000,000 any time up to the first anniversary of the commencement of commercial production.

#### 4.5 Environmental Liabilities

Previous mining activities on Agua Amarga comprised the exploitation of silver veins in the north portion of the Property during the 1800’s and the mining of a small lead zinc replacement deposit on the southern portion on the Property during the 1920’s and 1950’s. There is no evidence that the minerals mined at either deposit location were process on site. There are no visible tailings associated with the historical mining operations. There are minor waste rock dumps but due to the arid conditions, the potential acid drainage is minimal.

Previous exploration activities comprised largely of geological mapping, sampling, road building, trenching and four diamond drill holes.

It is the authors understanding that here are no environmental liabilities for Cascada providing that Cascada can demonstrate that any potential impacts were caused by previous operators. This should be verified by Cascada’s legal counsel.

#### 4.6 Permits

Considering the scope of Cascada’s planned first phase of exploration, it is anticipated that an Environmental Impact Declaration (“EID”) will not be required to conduct the planned exploration drilling activities, however, Cascada will need to submit a “Carta de Pertinencia” (essentially an EID waiver request), accompanied by an environmental reconnaissance report, to the Servicio de Evaluacion Ambiental (“SEA” the regional

environmental evaluation service) which must certify that the activities proposed by Cascada do not require an EID or Environmental Impact Study (“EIS”). Once granted, the

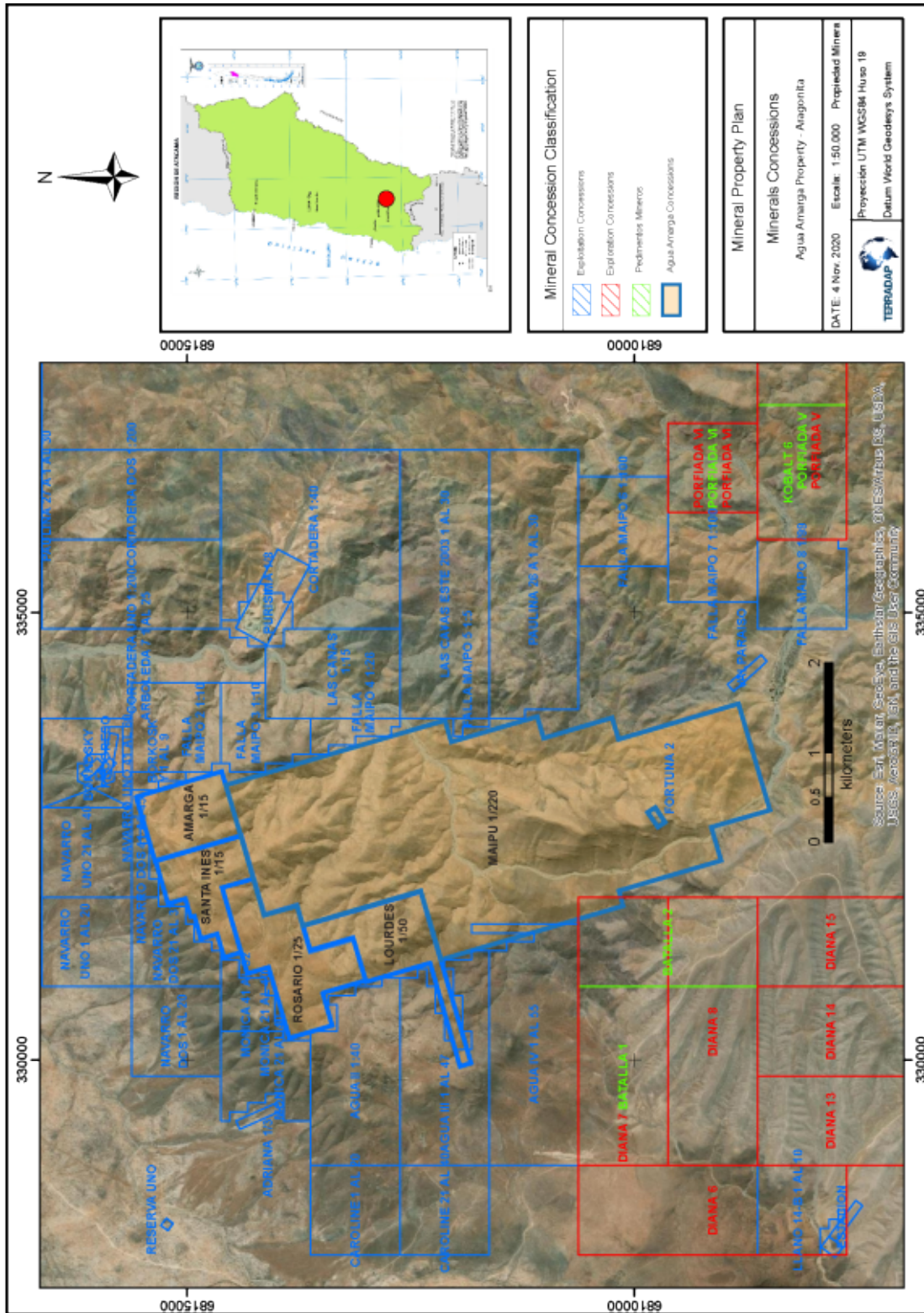


Figure 4.2 Agua Amarga Property Concession Map

waiver must then be presented to SERNAGEOMIN, the Chilean National Mining and Geology Service, in order to obtain approval to undertake earth moving and drilling activities (Activity Initiation Approval or “Iniciacion de Actividades”). With receipt of a Carta de Pertinencia and the Iniciacion de Actividades, a company can build access roads, if required, and drill up to 40 drill holes in the Atacama Region before requiring an EID.

Permits to extract water are not required because the water will be purchased from the surface rights holders, who are either the owners of formal water rights, or by virtue of their surface rights ownership are entitled to extract water.

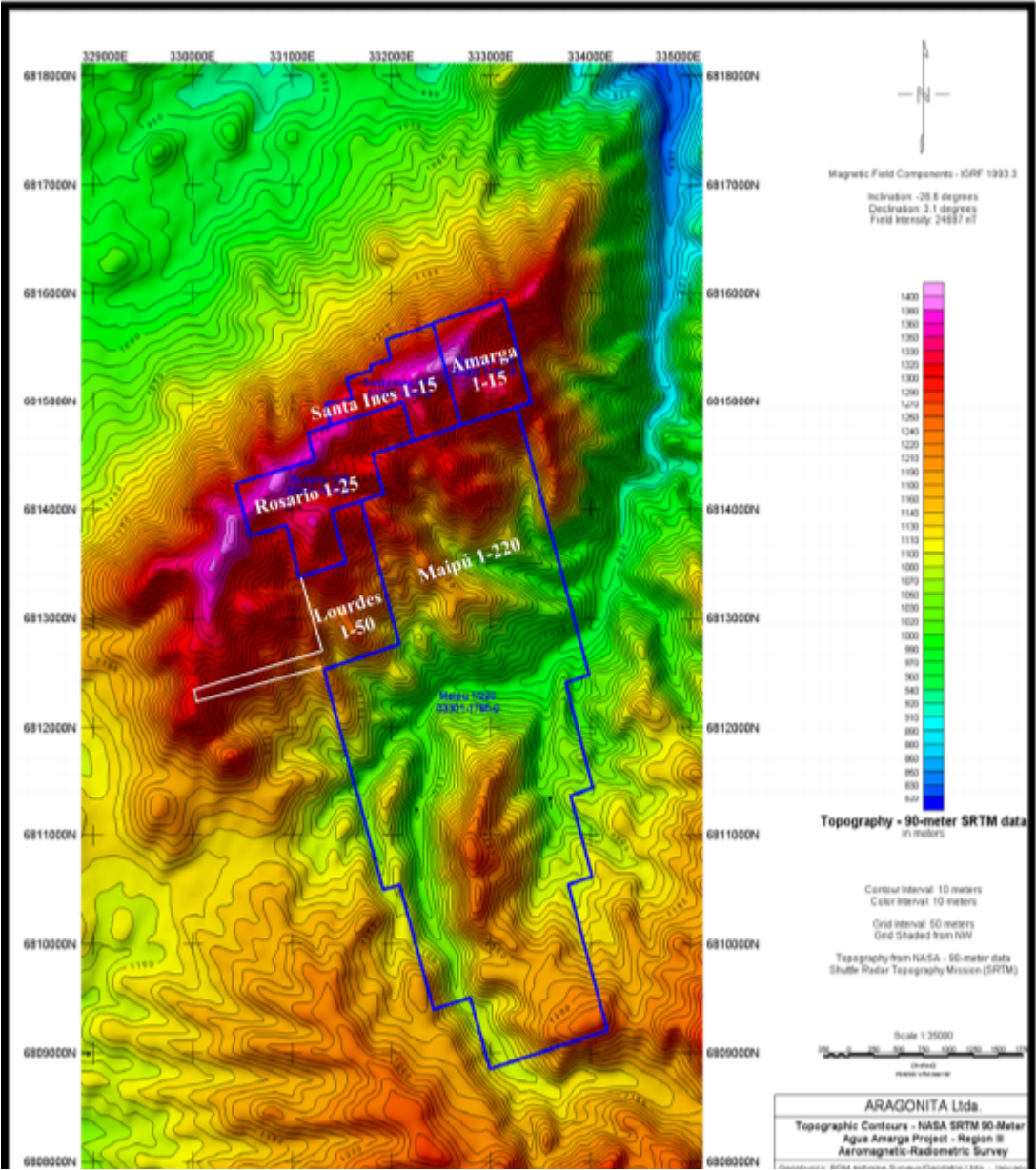


Figure 4.3 Topography in the Area of Agua Amarga (Araneda, 2017)



#### **4.7 Risk and Uncertainties**

While it is anticipated that an Environmental Impact Declaration (“EID”) will not be required to conduct Cascada’s planned exploration drilling activities, the criteria and judgement of the current environmental regulators is not known. A baseline environmental study and accompanying Carta de Pertinencia should be commissioned as soon as possible as no drilling can be conducted until such approval is received. In the unlikely case that the SEA does requests an EID, drilling could be delayed a few months.

As in most exploration jurisdictions around the world, the eventual granting of a “Carta de Pertinencia” that will allow exploration drilling (Section 4.6) will apply specifically to the type and duration of activity as presented to the authorities, and in no way guarantees the granting of future permits to further explore, evaluate and or develop a mine at the site, which would require the submission and approval of environmental impact declarations (EID) and environmental impact studies (EIS).

Access to water supplies are required for drilling activities and, as such, the Company should enter into discussions with local water owners as soon as possible to secure steady water supply; however, more distant and hence more costly alternatives also exist.

The outbreak of the novel strain of coronavirus, specifically identified as “SARS-CoV-2” and commonly referred to as “COVID-19”, has resulted in governments worldwide, including those in Chile, enacting emergency measures to combat the spread of the virus. These measures, which include the implementation of travel bans, self-imposed quarantine periods and social distancing, have caused material disruption to businesses globally resulting in an economic slowdown. The duration and impact of the COVID-19 outbreak is unknown at this time. It is possible that Cascada could incur delays in planned exploration activity, impacting its ability to meet obligations under current regulations or its agreements and may reduce its ability to source financing for future activities. However, as of the date of this report, there are no restrictions on exploration activities in Chile. Mining and related activities have been deemed an essential services in Chile. It is not possible to reliably estimate the length and severity of the COVID-19 pandemic and the impact, if any, it could have on the Company in future.

#### **4.8 Comments of Section 4.0**

With respect to Section 4.5 Environmental Liabilities, the author recommends that all previous exploration and mining activities be photographically documented by a notary public and by the environmental consulting firm used to prepare the Carta de Pertinencia. Concerning community and land owners relations, a single point of contact and engagement policy should be established for Cascada and a full register should be maintained of all interactions and their outcomes, including written, telephone and face-to-face conversations and meetings, both formal and informal. Local news and websites should be monitored for reference to the project, favourable or otherwise.

## **5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY**

### **5.1 Accessibility**

The nearest city to the Agua Amarga Property is Vallenar, with a population of 52,000, located approximately 30 km by road to the north. La Serena, located 130 km south of the Property is the closest major centre with population of 200,000. La Serena has daily air services from Chile's capital, Santiago, and other Chilean cities.

Access to the property takes about 2 hours from the La Serena airport driving along the Panamerican Highway (Ruta 5 Norte) for approximately 117 km, turning east (right) onto gravel road C-509, driving 5.1 km and then turning east again and driving along a gravel road for approximately 2 km to the southern portion of the Property.

### **5.2 Climate and Physiography**

The Project area has a semi-arid climate, with scarce precipitation averaging 40 mm/year and moderate temperatures with lows of 0°C during the winter months and highs of 25°C during the summer months allowing for year around exploration and mining activities. Vegetation is scarce, mainly spiny shrubbery and a few cactus species. Only seasonal water courses are present in the area, of which the Quebrada Las Cañas gulch is the most significant. Wildlife is sparse and consists on small rodents, lizards and insects, although some foxes and guanacos may be occasionally encountered.

The Project is located in the mountains of the Agua Amarga Range. This range is a NE-SW elongated chain characterized by an abrupt NW slope and a flatter SE slopes, being the latter dissected by EW gulches draining to the East towards Quebrada Las Cañas gulch. Altitudes in the area are under 1,500 masl reaching a maximum of 1,416 masl at Cerro Agua Amarga hill and 1,261 masl at Cerro Caña Norte hill.

### **5.3 Local Resources and Infrastructure**

There are no inhabitants in close proximity to the Project area. Experienced mining personnel are available in the cities of Vallenar, Copiapó and La Serena. Personnel can be housed in Vallenar, where all food and minor supplies can be acquired and transportation to the Project site for the personnel could be rented. Water supply for drilling could be an important issue, but it can be brought in Vallenar or eventually from some of the local authorized extraction wells. High tension electrical supply lines run close to the Project, but availability of power supply for a mining operation must be investigated.

## 6.0 PROJECT HISTORY

Information regarding the details of the historical exploration activities on the Property is limited. Reports state that high grade silver veins were discovered on the Agua Amarga Property during 1811 with exploitation of the silver veins continuing from 1811 sporadically through to 1881. After the reported termination mining activities in 1881, there are no records of exploration activities on the Property until Compañía Minera San José initiated exploration in 1982. Table 6.1 summarizes the activities on the Property.

Table 6.1 Summary of the History of Agua Amarga

Date	Company	Activities
1811	Guasco Party	Discovery of high-grade silver veins
1811-1881	Various	Mining activities occurred sporadically
1920-1923	Unknown	Mining stratabound Pb-Zn-Ag at the Fortuna-2, San Bartolo and Cañas Norte mines
1950-1953		
1982-2016	Compañía Minera San José <sup>1</sup>	Mapping, sampling, geophysics and 4 drill holes
2009	Aragonita	QuickBird interpretation and magnetics re-interpretation
2016-2020	Aragonita	Prospecting
2020	Cascada	Geophysical services to commence shortly

1. From 1987 to 1994, various corporate transactions resulted in Compañía Minera San José<sup>1</sup> having a number of owners culminating in Barrick owning the Agua Amarga Property in 1994

### 6.1 1800's Mining Activities

The Agua Amarga Property was the focus on high grade silver mining from the discovery of the vein system in 1811 through to 1881. An article in the "AURORA DE CHILE PERIODICO, MINISTERIAL, Y POLITICO, No. 14", dated May 14, 1812, reported the results of a site visit which was undertaken from January 7, 1812 through to February 25, 1812. The article discussed the "current status" of a new silver discovery made by the Guasco Party at Agua Amarga and summarizes the discovery as such: 'Veins....86; Course....N.S.; Sum of their widths....2 varas [1 vara = 0.84 m]; Sum of its depths....202 estados [1 estado = 3.3 m], Work....167'. Grades are reported as follows: 'grades varies random, that there are four [veins] the have 160 of grade [16,414 g/t Ag], two of 150 [15,388 g/t Ag], four of 200 [20,517 g/t Ag], two of 400 [41,035 g/t Ag], ten of 60 [6,155 g/t Ag], three of 50 [5,129 g/t Ag], twenty-nine of 40 [4,103 g/t Ag], two of 35 [3,591 g/t Ag], one of 45 [6,616 g/t Ag], two of 80 [8,207 g/t Ag], one of 35 [3,591 g/t Ag], one of 70 [7,181 g/t Ag], and the rest are 30 [3,078 g/t Ag] grade'. While the units of measure are not reported in the article, the standard at the time was marcos per cajon with 1 marcos per cajon equivalent to 160 grams per tonne. It is likely the impressive grades were the result of hand sorting of the silver ore.

Historical production data, estimated by Araneda (2020), totals 511 metric tons, or 16,434,000 Ag ounces produced during the period 1811 to 1881. Araneda suggests that most of the production was generated in the first 20 years, declining continuously afterward and production reported during the mines final years was low (approx. 100,000 Ag ounces, 1877).

R. Araneda (2020), in a report title “Agua Amarga, Historical Silver Production 1811-1881”, notes that production records from the Agua Amarga mines are poor to non-existent. Statistical reporting, supported with more confident records, begins around 1850 but the records are still poor.

Mr. Araneda’s report includes copies of pages from a number of reports regarding silver production from the Property. The Silver Book, published in 1882, reports production of \$20,000,000 Pesos from 1811 through 1881 which is equivalent to approximately 511 tonnes of silver or 16,434,000 ounces. Records from 1877, the last significant year of production from the Agua Amarga mines, was published by B. Vicuña Mackenna in a ‘Statistical Yearbook 1878’. A photocopy from the book notes 14 veins with total production of 3,224,718 grams of silver.

## **6.2 Lead Zinc Silver Mining**

Stratabound or mantos deposits of lead zinc ± silver were exploited at the closed Fortuna-2, San Bartolo and Cañas Norte high-grade mines in the Cerro Las Cañas hill during two periods, 1920-1923 and 1950-1953, coincident with periods of higher lead prices. The mantos were exploited by semi-mechanized basic room and pillar methods. No reliable statistics about production are available. Cummings (1946) reported 1,693,275 tons grading 25.05% Pb, 4.7% Zn and 92.7 g/t Ag from hand sorted mineral were sold from Fortuna-2 and Cañas Norte mines, but did not indicate the period of such production.

## **6.3 Compañía Minera San José**

In 1982, Compañía Minera San José, owner of high grade Chilean El Indio Gold Mine, acquired the property from CORFO, a Chilean government agency. As the result of a number of corporate transactions between 1987 and 1994, Barrick acquired control of the Compañía Minera San José.

Minera San José geologists took initially 20 grab samples from old dump and vein material, yielding assays up to 300 g/t Ag, with no significant Au or Cu values (Siddeley, 1982). No detailed assays are available. They followed this cursory sampling program with more extensive surface sampling, which includes dump material, totaling 171 samples. From this program, 14 samples yield  $\geq 100$  g/t Ag, one returning 1,237 g/t Ag from a waste dump. No information about QA/QC procedures was available to the author. The geologists also mapped and sampled accessible underground workings of Los Burros, La Culebra, Rosario and La Leona mines, at 1/100 scale.

During 1983, Minera San José mapped, at a scale of 1/2,000, a small area with abundant old workings and outcropping veins and veinlets. Following that program, 4 diamond drill holes were drilled to test the veins at depth. Finally, a 1/10,000 scale geologic map of the property and surrounding area, mainly to the East, was completed (Carmichael, 1983).

In 1986, Minera San José geologist, M. Gallardo, performed one stratigraphic profile at Cerro Agua Amarga hill together with 1m spacing chip sampling. From 331 samples taken, one sample yielded  $\geq 100$  g/t Ag and the average of all the samples was 1.8 g/t Ag, 0.01% Pb and 0.05% Zn. On another profile, at the calcareous sequence of Cerro Caña Norte hill hosting the stratabound Pb-Zn-Ag mineralization, 133 chip samples were taken with one sample yielding 39 g/t Ag, 6.48% Pb and 2.04% Zn from the mineralized 0.35 m thick

stratabound unit. A regularly spaced sampling program (chip sampling?), along the strike of the mineralization, totaling 108 samples yielded the following high grades: 250 g/t Ag; 31.2% Pb and 7.25% Zn. No details on sample spacing, sampling method, total length of the sampled mantos and QA/QC procedures are available.

A small portion of an extensive airborne aeromagnetic-radiometric survey completed by WORLD GEOSCIENCE/GEODATOS was acquired by Minera San José and interpreted by company geophysicist C. Ludwig (1993) over an area including the entire Agua Amarga property. The results of this interpretation is discussed in Section 6.5.

#### **6.4 Aragonita Asesorías Limitada**

Aragonita entered into an agreement to acquire Agua Amarga from Barrick in 2012, completed the acquisition of the property in 2016 and currently owns a 100% interest in the property subject to a 1% NSR on future production of precious metals and a 5% NPI on future base metal production. As a continuation of the 1993 geophysical interpretation completed by Minera San José, Ludwig (2009) completed a re-interpretation of the same survey's window for Aragonita as described in Section 6.5.

In 2009, Aragonita contracted Dr. Ming-Ho Du to conduct a QuickBird image interpretation over the Agua Amarga property in order to assist in the exploration for bonanza-type silver veins. Dr. Du produced two images, false and true color, both a 60 cm resolution which should be useful for mapping geological units and possible structures. He also provided following overlays: a) fault-lineaments interpretation b) prominent faults traces or regional faults and c) working-trenches traces around old mines and mine-dumps polygons.

The geophysical and QuickBird interpretations contracted by Aragonita were undertaken prior to Aragonita's acquisition of Agua Amarga. Aside from cursory prospecting, Aragonita has undertaken no significant exploration activities on the property to date.

#### **6.5 Geophysics**

On August 1993, Lac Minerals' geophysicist, C. Ludwig, performed an interpretation of a small portion of an extensive aeromagnetic-radiometric survey completed by WORLD GEOSCIENCE with assistance from GEODATOS, in a rectangular window of the survey comprising 6 km E-W by 10 km N-S, which includes the entire Agua Amarga property (Ludwig, 1993).

The geophysical data was acquired from a fixed-wing airborne survey flown in 1993 on N15°W-S15°E oriented lines separated 400 m apart at a nominal terrain clearance of 122 m. Ludwig delivered to Lac Minerals ten color plots: total field, pole-reduced, and vertical gradient magnetic contours; K, eTh, eU, and total count radiometric contours; K/eTh ratio and "anomalous" K contours, and a Ternary K-eTh-eU image. Ludwig's 1993 interpretation defined five geophysical targets or zones of interest plus one Landsat alteration target, not all within the property boundaries. Only the hard copy of Ludwig's report was available to the author but none of the maps and target distribution plots.

During 2009, Aragonita contracted Ludwig to continue with the interpretation of the 1993 geophysical information. A number of geophysical targets were identified including one

favorable silver vein environment. Figure 6.1 shows the geophysical targets outlined by Ludwig.

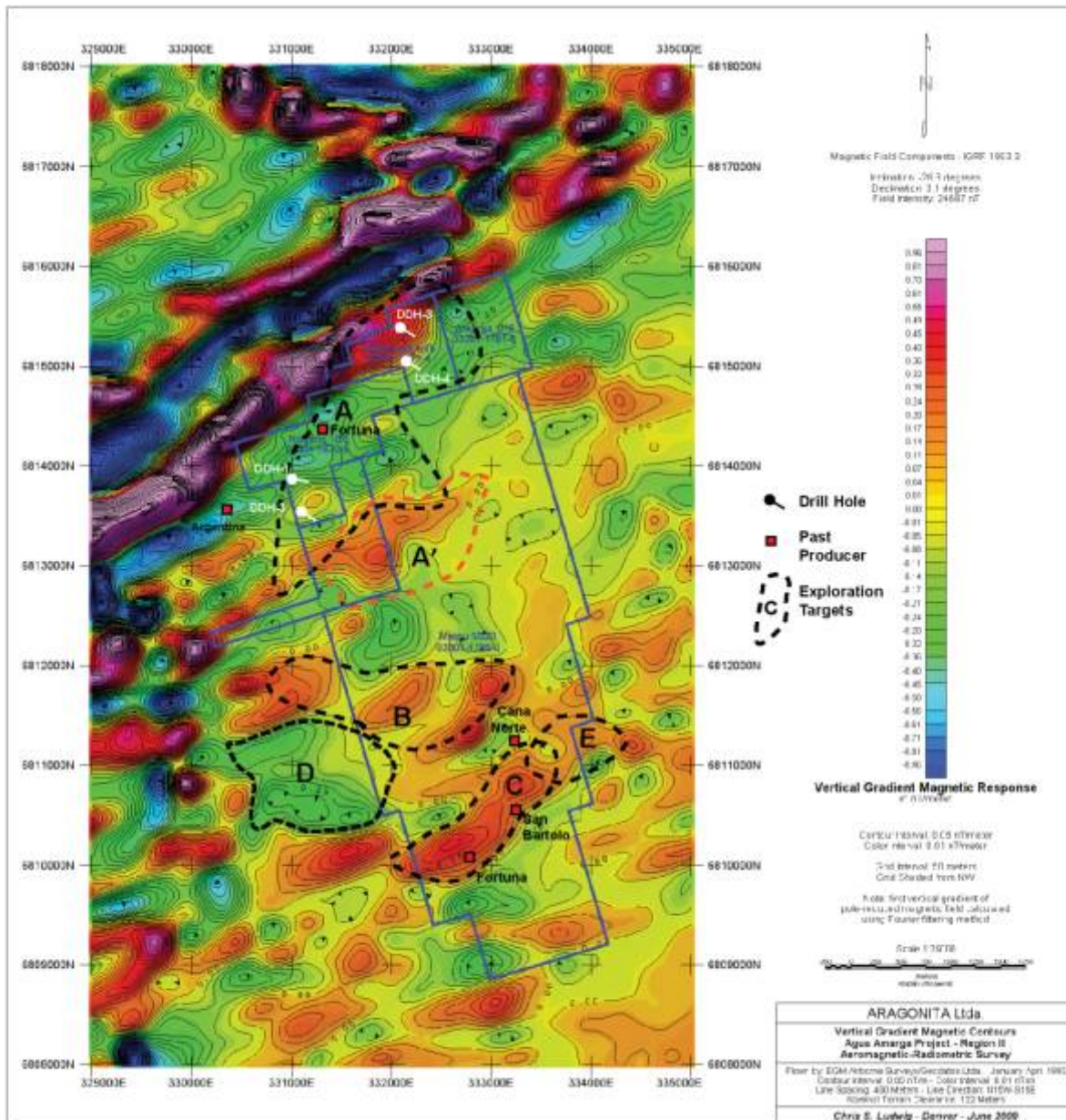


Figure 6.1 Exploration Targets (modified after Ludwig 2009)

A summary of the Agua Amarga targets, modified from Ludwig (2009) follows:

**Target A and A` Potential Extension of Vein Environment:** These target areas (Figure 6.1) were given a high priority by Ludwig (2009) given the historical silver production and can be considered as a generalized target. From the geophysical survey, it was noticed that much of the area, where silver mining activities were prevalent, is within a “shelf” of elevated pole-reduced magnetic response extending southeast and eastwards away from the prominent NE-trending strong linear magnetic high. The area of mapped veins is schematically shown by the yellow dotted line on Figure 6.2. This magnetic “shelf” extends

southeast and east past the exposed area of historic silver mining. This extended area is schematically shown with a dotted orange outline (Figure 6.2) represents an area of potential extension of the silver vein environment. It is possible that the underlying (magnetic) intrusion and/or magnetite-rich contact horizon becomes deeper to the east and offering “blind” vein targets.

**Target B:** This zone was assigned a medium-high priority. It is primarily a complex zone of high potassium. Magnetically, the area is very weak to weakly anomalous. There are two weak highs, one through the center of the target, and one near the eastern end, that have a NE trend, sub-parallel to the NE-trending Target C magnetic high. The zone also has some magnetic characteristics that are interpreted as perhaps being favorable for silver vein emplacement. This target also surrounds Target D and may potentially be related with mineralization events associated with porphyry intrusive.

**Target C:** Target C was assigned a medium priority. It is primarily a well-defined weak magnetic anomaly, 1800 by 500 m, correlated with San Bartolo and Fortuna-2 mines. Weakly elevated potassium is present near the SW end, and the NE end overlaps with the good K anomaly of Target E.

**Target D:** Partially located on the extreme eastern margin of the claim block, Target D was assigned a high priority rating. The target is a subdued magnetic low, 1100 m by 1500 m in extent, with an associated strong potassium response and has characteristics typical of magnetite-destructive (hydrothermal) alteration such as often seen over porphyry copper systems. The associated strong K response is the highest in the Agua Amarga survey window. Additionally, interpreted magnetic linears suggest structural complexity in the target area.

**Target E:** The area was given a medium priority by Ludwig (2009). It consists in an elevated potassium anomaly, located near the NE end of a NE-trending weak magnetic high, which appears to be related to Fortuna-2 and San Bartolo Pb-Zn-Ag stratabound mines.

## **6.6 Production**

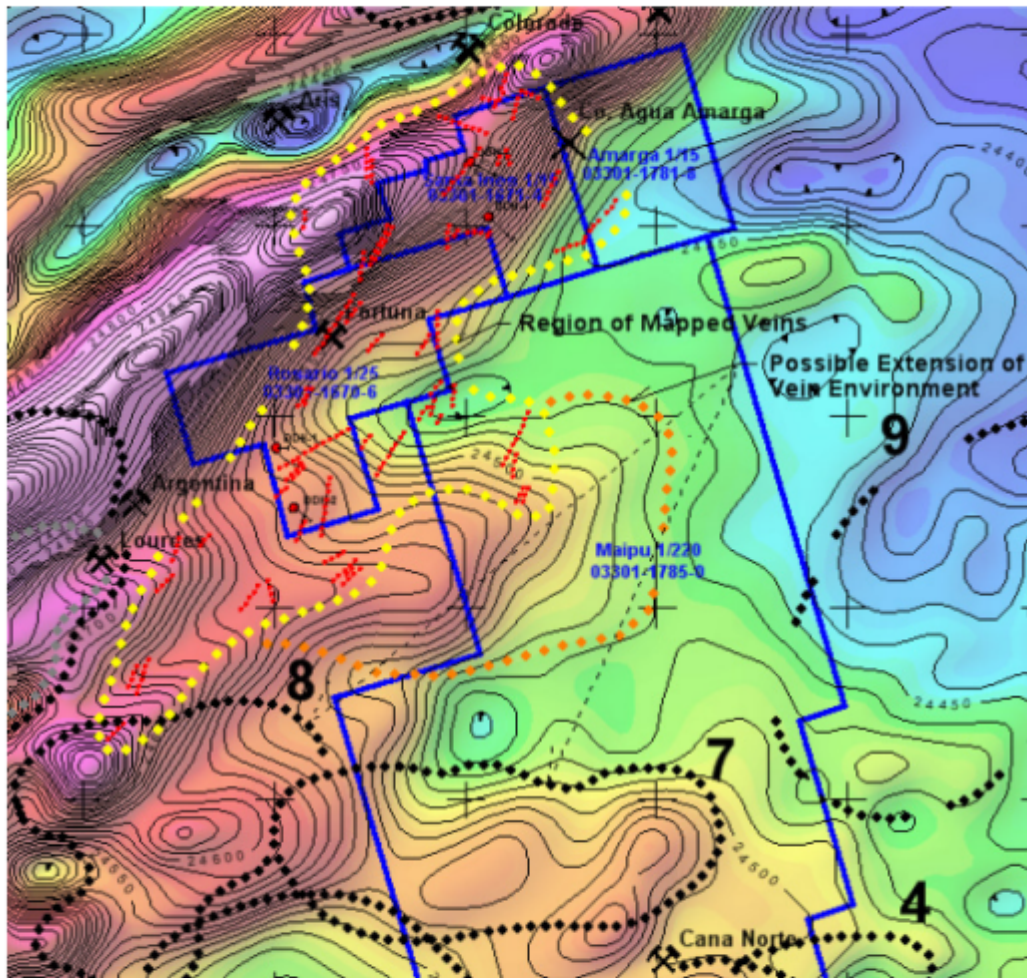
See Section 6.1 for a summary of the historical silver production from the 1800's and Section 6.2 for a summary for the historical base metal production.

## **6.7 General Comments**

No historical resource or mineral reserve estimates are present on the Property.

The geochemical sampling, geological mapping, geophysics and initial drilling that have been performed at Agua Amarga have served to define preliminarily the zones of interest and the styles of mineralization which endowed the property. This has provided Cascada with the basis for planned exploration efforts. It is the author's opinion that high grade silver veins and bulk tonnage potential associated with the vein systems, stratabound lead-zinc-silver mineralization and copper-gold porphyries are potential targets to be explored at Agua Amarga.

***“Region of Mapped Veins” & “Possible Extension of Vein Environment”***



Coordinate Mesh: one kilometer – ARAGONITA claims in thick blue lines  
Base image: pole-reduced magnetics shaded from NW & contoured on 10-nT interval  
Mapped veins in red dotted lines - Targets in black dotted outlines  
Note “Region of Mapped Veins” in yellow dotted outline and the  
“Possible Extension of Vein Environment” in orange dotted outline

Figure 6.2 Possible Extension of Vein Environment Target (Ludwig 2009)



## 7.0 GEOLOGICAL SETTING AND MINERALIZATION

### 7.1 Regional Geology

The regional geological setting of Agua Amarga property has been compiled and described by Lieben *et al.* (1999) and more recent geologic cartography by Sernageomin (Arévalo *et al.*, 2009) of the Vallenar-Domeyko region updates the geologic framework of Agua Amarga as shown in Figure 7.1.



Figure 7.1 Regional Geological Setting (Arévalo *et. al.* 2009)

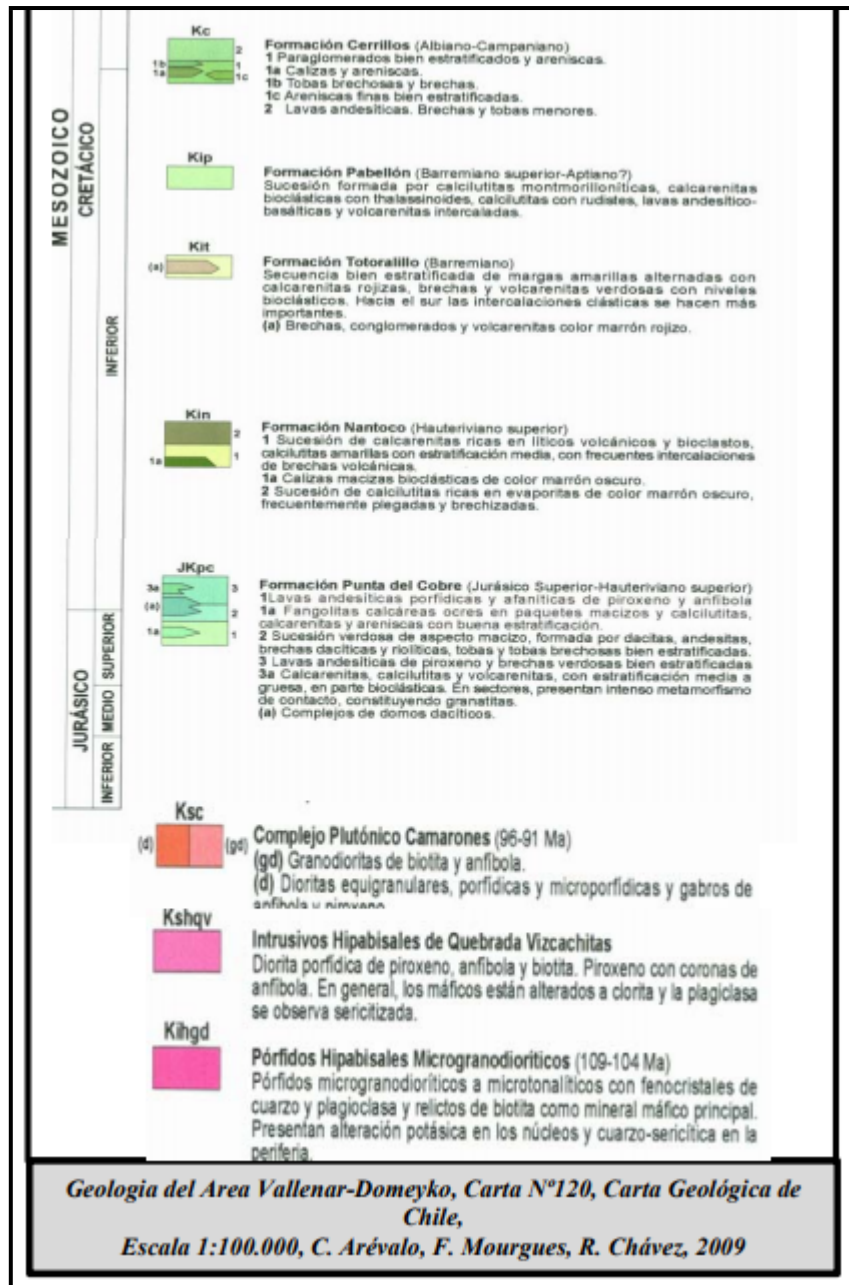


Figure 7.2 Legend for Figure 7.1 (Arévalo et. al. 2009)

The oldest rocks in the region are those of the Punta del Cobre Formation, from Upper Jurassic-Hauterivian. These rocks represent a volcanic arc sequence of continental to transitional origin. It is a volcanic and sedimentary heterogeneous sequence outcropping in the NW area of Vallenar-Domeyko region. Punta del Cobre Formation underly the Nantoco Formation's limestones, and it is thought that overly concordantly to lavas of La Negra Formation (Lower-Upper Jurassic). Punta del Cobre comprises three vertical sections: lower section: andesitic volcanics and volcanoclastics, with subordinate

limestones; medium section: acid volcanics and clastic, with breccias and tuffs; upper section: volcanics with limestone intercalations.

To the east outcrops the Chañarcillo Group, a marine sequence from Upper Hauterivian-Aptian which consist of up to 2,000 m of shallow water marine carbonate rocks with volcanic and volcanoclastic intercalations and is composed of the Nantoco, Totoralillo, and Pabellón formations. The Chañarcillo Group represents a trans-arc or intra-arc association. Easterly, the Chañarcillo Group is overlain in small angular discordance by continental clastic sedimentary and volcanic rocks of Cerrillos Formation from Upper Cretaceous.

The Upper Jurassic-Lower Cretaceous rocks rest unconformably upon a folded Paleozoic and Triassic-Liassic basement. They have been affected by various stages of extensional and contractional tectonics. A main structural feature that affected the Chañarcillo Fm. rocks in the vicinity of the Cerro Las Cañas hill, the Agua de los Burros Fault System, consists of N-S to NNE-SSW folds and faults with a dominant western vergence.

Plutonic to hypabyssal intrusives of various composition are intruding the stratified sequences along progressively younger belts towards East, like following: Infiernillo Plutonic Complex, Retamilla Plutonic Complex, Camarones Plutonic Complex, Quebrada Vizcachitas Hypabyssal Intrusives, Pie de Gallo Plutonic Complex, etc. The age of the intrusives vary from Lower Cretaceous to Paleocene-Eocene.

Low-grade metamorphism affected parts of the Jurassic-Cretaceous volcano-sedimentary sequence, while higher-grade metamorphic rocks are restricted to the vicinity of large intrusions. An Upper Cretaceous granodioritic batholith, dated at 95-93 Ma, occurs 5 km NW of Cerro Las Cañas hill. To the east, a NNE trending magmatic belt consists of Paleocene to Lower Eocene granodiorite and granite.

## **7.2 Local and Property Geology**

The local geology was mapped at 1/10,000 scale by Compañía Minera San José geologists (described by Carmichael, 1983; Gallardo, 1986) who mapped a 100 km<sup>2</sup> area which is presented on Figure 7.3. Note at the time this map was created, geologists did not identify the basal Punta del Cobre Jurassic-Hauterivian volcanic rocks in the NW and N surroundings of Agua Amarga. Instead, they mapped an andesitic fine grained greenish intrusive and a dioritic amphibole intrusive.

### **7.2.1 Sedimentary Rocks**

Sedimentary rocks outcrop throughout the property and consist of a marine sedimentary sequence composed by limestones, muddy limestones, sandstones and conglomerates. This sequence appears as roof pendants over or intruded by dioritic and granodioritic rocks, being estimated at a maximum thickness of 250 m at Agua Amarga. The sedimentary rocks could be correlated to the Neocomian Nantoco Formation, of the Chañarcillo Group.

To the east of the Property, the stratified sequence presents intercalation of andesitic lavas of presumable submarine origin.

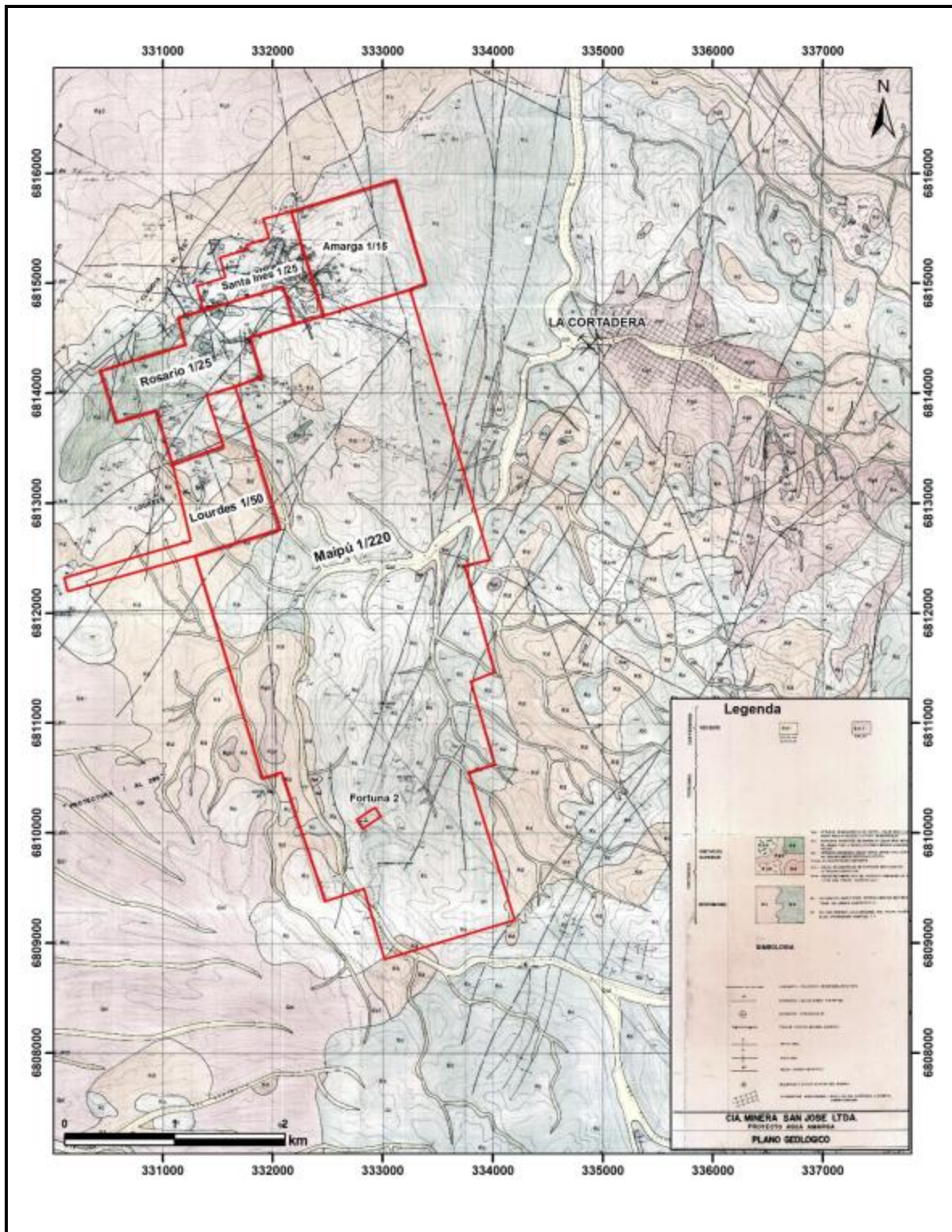


Figure 7.3 Geology of the Agua Amarga Property (Carmichael 1983)

The sedimentary sequence strikes NE and gently dipping SE. It is slightly folded and faulted with short displacements. Alteration of the limestones is mainly silicification, more intense at the proximity of intrusives. At the contact zones, the following alteration-metamorphism assemblages have been noted: calcite-epidote; calcite-epidote-garnet or calcite-quartz-epidote-garnet. To the west of Quebrada Las Cañas gulch, the limestones show weak to moderate dissemination of pyrite and local pyrrhotite.

## **7.2.2 Volcanic Rock**

Volcanic rocks of andesitic composition are observed mainly in the eastern mapped area, as lava flows interbedded on sediments. The lavas show local “pillow” structures.

## **7.2.3 Intrusive Rocks**

### **7.2.3.1 Intrusive Porphyritic Andesites**

These intrusive andesites have a porphyritic texture with up to 2 cm plagioclase phenocrysts in an aphanitic to microgranular groundmass. Its outcrops show concordant to sub-concordant contacts with the stratified limestones, and thickness from few centimeters to 30 m. Initially, the intrusives were classified as volcanic rocks and named as “ocoftas”.

At the contact with limestones, the intrusive andesites assimilate carbonate material and the limestones were silicified, denoting the intrusive nature of the andesites. At the proximity of dioritic or granodioritic intrusives, the andesites contain epidote with or without associated calcite.

### **7.2.3.2 Microdiorites and Diorites**

These rocks intrude as dikes, sills or big irregular bodies into the sedimentary sequence and also to the intrusive andesites. They have amphibole phenocrysts in a groundmass composed by mafics and acicular plagioclase. Locally may contain epidote and calcite patches close to some granodioritic intrusives.

### **7.2.3.3 Granodiorites**

These intrusive rocks predominate to the north and west of the property and at the Quebrada Cortadera gulch. Granodiorites are medium to coarse-grained with equigranular texture containing biotite. They intrude all other units and it is presumed to be the responsible for the hydrothermal alteration-mineralization zones of the area.

## **7.2.4 Metamorphic Rocks**

At the proximity of intrusive granodiorites or diorites, contact metamorphic rocks are developed. Protoliths may be sedimentary, volcanic and also intrusive. They are characterized by recrystallization, with epidote, calcite, garnet and variable silicification. Some marble levels are observed in the eastern portion of the area, occasionally with disseminated garnet.

### **7.2.5 Structure**

The stratified sequence is characterized by its homoclinal attitude, generally striking NE and dipping lightly to the SE (15° -17°), locally folded and faulted.

The main fault system at Agua Amarga strikes NE-SW; it is sub-vertical with normal displacement; however, at the Cerro Caña Norte area the fault system strikes NW, dipping 60° to 90° to NE or SW. Stratigraphically measured displacement of this system reaches a maximum of 10 m vertically.

### **7.3 Mineralization**

Two types of significant mineralization have been identified at the Agua Amarga property: epithermal silver vein and stratabound (manto) lead zinc silver.

#### **7.3.1 Epithermal Silver**

In the northern portion of the property, within the Rosario, Santa Inés, Amarga and the portion of Maipú concessions, located north of Quebrada Las Cañas, silver mineralization occurs as veins hosted in sub-vertical fault structures striking from N-S to N50°E and N60° to 80°W and with widths of up to 2 m. The veins have been traced by old workings up to 400-450 m along strike and to depths rarely exceeded 50 m. However, the true depths of the veins haven't been established because of lack of historical data and access to the workings.

The host rock for the silver veins is generally a fine grained, dark gray limestone and occasionally, porphyritic andesite or diorite as noted in the deeper parts of La Culebra Mine. The contact vein/host rock is sharp and in some places with thin clayish and limonitic gouge.

Observed mineralization consists of crystalline galena, pyrite, scarce chalcopyrite, pyrrhotite and sphalerite. In dump material, traces of proustite and native silver was found. The gangue mineralization associated with mineralization is white or brownish calcite, siderite with minor barite and quartz, occurring as stock-works, calcite-host rock breccias, calcite or barite veinlets, and quartz-limonite-calcite veinlets.

High-grade shoots of silver-bearing mineralization in the zone of oxidation and enrichment is not visible on surface or in accessible portion of the underground workings. Reported mineralogy of this zone consisted of silver halides (chlorargyrite, bromargyrite, iodargyrite). Acanthite, stephanite and dyscrasite, possibly related to secondary enrichment, have also been reported.

Surface sampling of vein material and waste dumps carried out by Minera San José averaged 49.3 g/t Ag (maximum value 1237 g/t Ag from dump material), 0.06% Cu, 0.67% Pb and 0.55% Zn from a total of 161 samples. No evidence of hypogene mineralization was reported from waste dumps suggesting that the historic mining may not reached the primary mineralization perhaps due to declining grades at depth, the nature of the artisanal method of mining in use at that time and/or ground water flooding.

### 7.3.2 Stratabound Lead Zinc Silver

Stratabound Pb-Zn-Ag mineralization outcrops at Cerro Caña Norte hill in the central-southern portion of Maipú concession and has been exploited at the Fortuna-2, Caña Norte, San Bartolo and other small mines on the eastern part of the hill where the mineralization is repeated by normal faults. It is represented by a Pb-Zn-Ag enriched layer intercalated concordantly in the west calcareous cornice of that hill

It has been described in detail by Lieben *et al.* (1999) who states that the volcanoclastic layer hosting the main stratiform mineralization is a reversely graded vitric and lithic green tuff with a micritic matrix, bounded on both sides by finer grained strata.

The base of the volcanoclastic layer, in sharp contact with underlying greenish calcareous mudstone, is composed of a 10 cm thick well-sorted, clast-supported coarse tuff of 1 mm to 3 mm grain size, with less than 10% lapilli. The fragments consist of about 70% greenish shards and pumice fragments, 20% andesitic lithic clasts, and 10% crystals. It is overlain by a 20 cm thick well-sorted, clast- to matrix-supported lapilli tuff dominantly composed of 3 mm to 10 mm grains of essentially greenish pumice with minor lithic clasts and crystals in the matrix. The tuff has an andesitic composition with a relatively high Cr content of approximately 350 ppm. The layer extends regionally for 30 km to 40 km (Jurgan, 1977) and maintains a constant thickness and composition in the area of the old mines.

Locally, pumice fragments with strongly flattened vacuoles indicate some degree of welding, compaction or deformation. The distinct pigmentation of the greenish pumices and shards is due to the high abundance of chlorite and the presence of a greenish K-bearing clay mineral (possibly celadonite) that probably replaces the originally glassy groundmass and fills the abundant fine vacuoles. Alteration of the glass groundmass produced quartz and alkali feldspar crystals, including mainly albite microlites. Calcite and lesser amounts of chalcedony, sericite, hematite, and barite also occur as secondary minerals in the tuffaceous unit mainly within clast vacuoles.

The main mineralized Pb Zn Ag unit, hosted by within the tuffaceous layer, striking N-S and dipping 15°-25° E, extends discontinuously for at least 2.0 k, and has a width (thickness) of 35 cm with the lower 24 cm reportedly returning the highest grades. A lateral extension of at least 500 m has been outlined by the underground (artisanal room and pillar) exploitation at the Fortuna-2 and Caña Norte mines. Historical sale records of material mined reported grades of 25% Pb, 4.7% Zn, 76 g/t Ag. The high grades are likely the result of hand sorting of the mineralization.

Mineralogy of the mined unit, as described by Lieben *et al* (op. cit.), includes abundant disseminated fine-grained galena, subordinate sphalerite, lead and zinc carbonates, minor chalcopyrite, pyrite and hematite together with barite, quartz and potassic feldspar as intergranular cements within interconnected vacuoles of the clasts, and as fillings of sub-millimetric fractures.

A second style of stratabound Pb Zn mineralization, as described by Lieben *et al.* and revised by the author after field examinations, outcrops near the lower adit of the Fortuna-

2 mine. This is a silica-barite lens approximately 10 m long by 2 m thick that consists of mostly silica and barite, with up to 3% Pb and lesser Zn, hosted by a dark laminated limestone.

In the lens, silica, barite, galena and small amounts of sphalerite and pyrite occur as replacements and cavity-fillings, locally arranged as parallel millimeter-thick sheet cavities with bipolar grown crystals. Galena is generally associated with small amounts of silica, commonly expressed as chalcedony. Quartz-carbonate veinlets with large carbonate crystals cut the quartz-sulfide veinlets and vugs in some places.



## 8.0 DEPOSIT TYPES

The primary focus on Cascada's exploration activities is: 1) epithermal silver veins; and 2) porphyry copper gold. Stratabound Pb Zn Ag is present within the boundaries of Agua Amarga, however, the mineralization horizon is relatively narrow. Cu-Zn-Au skarn mineralization occurs to the immediate west of the property. Figure 8.1, a schematic east west cross section through the northern portion of the property, shows the potential relation between the epithermal, porphyry and skarn mineralization.

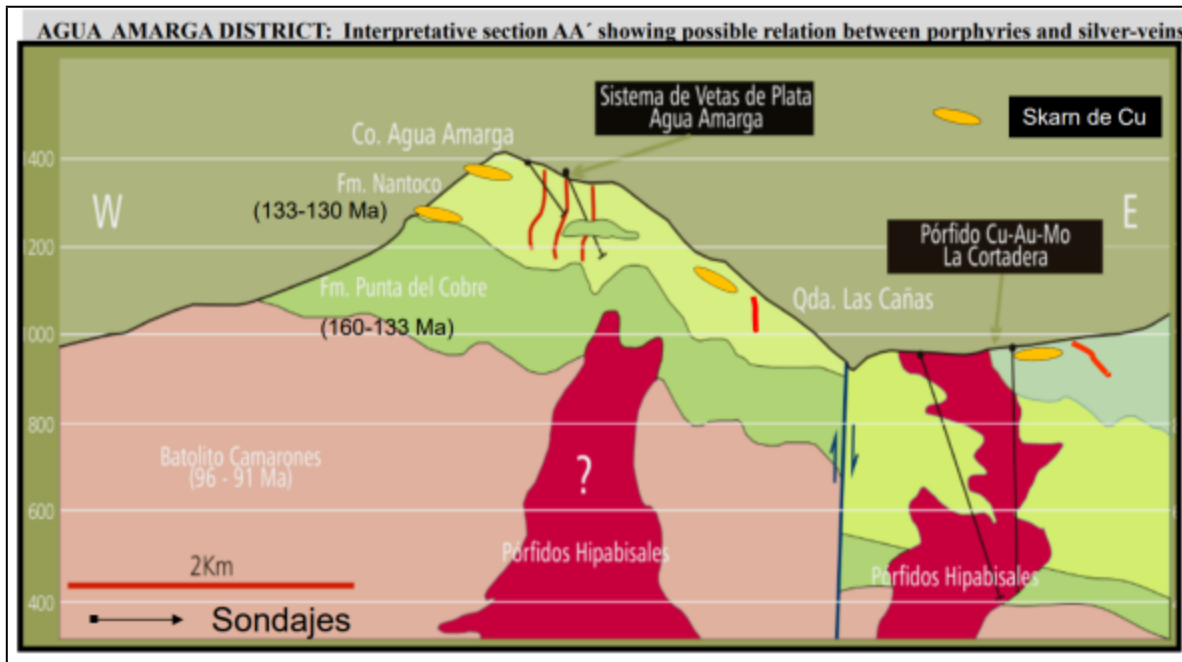


Figure 8.1 Schematic E-W Section Across Agua Amarga Property (Araneda, 2017)

### 8.1 Epithermal Silver Deposits

Epithermal gold-silver deposits form in the uppermost parts of the earth's crust, at less than about 1,500 meters (m) below the water table, and contain gold and (or) silver minerals in structurally controlled veins and breccias and disseminated in larger host rock volumes. These deposits are distributed throughout the world, most commonly along convergent plate margins. Epithermal gold-silver deposits range in size from tens of thousands to greater than 1 billion tonnes of ore and have gold contents of 0.1 to greater than 30 g/t and silver contents of less than 1 to several thousand grams per tonnes. Historically, epithermal gold-silver deposits have been an important source of gold and silver; about 6 percent of all gold and about 16 percent of all silver have been mined from these deposits.

Epithermal deposits have been classified as low-, intermediate-, and high-sulphidation systems reflecting the differences in the sulphur fugacity of the inferred mineralizing fluids that resulted in the main ore mineral assemblages. While the Agua Amarga silver veins have been largely mined out, reported mineral assemblages and the nature of the veining suggest that the Agua Amarga mineralization should be classified as an intermediate

epithermal system. Mineralizing fluids may be associated with porphyry intrusive bodies which are common throughout the region.

Intermediate-sulphidation deposits form as multistage quartz carbonate veins and associated breccias with coarse layers and comb and crustiform textures as well as disseminated deposits. Economically important mineralization within the veins and breccias is commonly dominated by electrum, silver sulphides and sulfosalts with minor chalcopyrite, galena and Fe-poor sphalerite. Pyrite and pyrrhotite are the common Fe sulphides. Other common gangue minerals are barite and manganiferous silicates.

More than 80 silver vein structures, which were mined in the north portion of the Property, constitute an attractive exploration target. Notwithstanding the oxidized upper part of the vein system was the focus of mining activities and is likely exhausted, no exploration efforts have been made to test the medium and lower portions or hypogene zones, except for the 4 shallow core holes drilled by Minera San José on 1983, reaching up to 120 m below surface. The potential for bonanza Ag-Pb-Zn mineralization remains unknown. Using the Chañarcillo silver veins as a model, possible replacement of favorable calcareous layers at depth by may be possible at Agua Amarga. Figure 8.1 depicts an example of a longitudinal section from a silver vein mined in Chañarcillo (Constancia Mine) showing the extent of the mineralized ore shoots.

The Chañarcillo silver district is located approximately 50 km NNE of Agua Amarga and in a similar geological environment. The veins are hosted by the calcareous Nantoco Formation. As described by Whitehead (1919) and Segerstrom (1962), individual veins vary from 0.25 to 1.0 m wide and the richest vein, the Colorada Vein, extend for 2 km along strike. Ore shoots at Chañarcillo were of irregular shape in the oxidized zones and reached up to 10 m wide by 30 to 50 m vertical and  $\geq 200$  m horizontal (see long section above). Grades of 2% to 2.5% Ag were reported.

The zone of oxidation extends to depths of 190 m but supergene or secondary processes reach at a depth of 160 to 300 m in the north area and up to 350 to 400m in the southern area of the district. Historical production from 1832 to 1885 was estimated by Whitehead (*op cit*) at 2.3 million kilograms of fine silver. Production continued intermittently up to 1930 mainly from dumps and old workings.

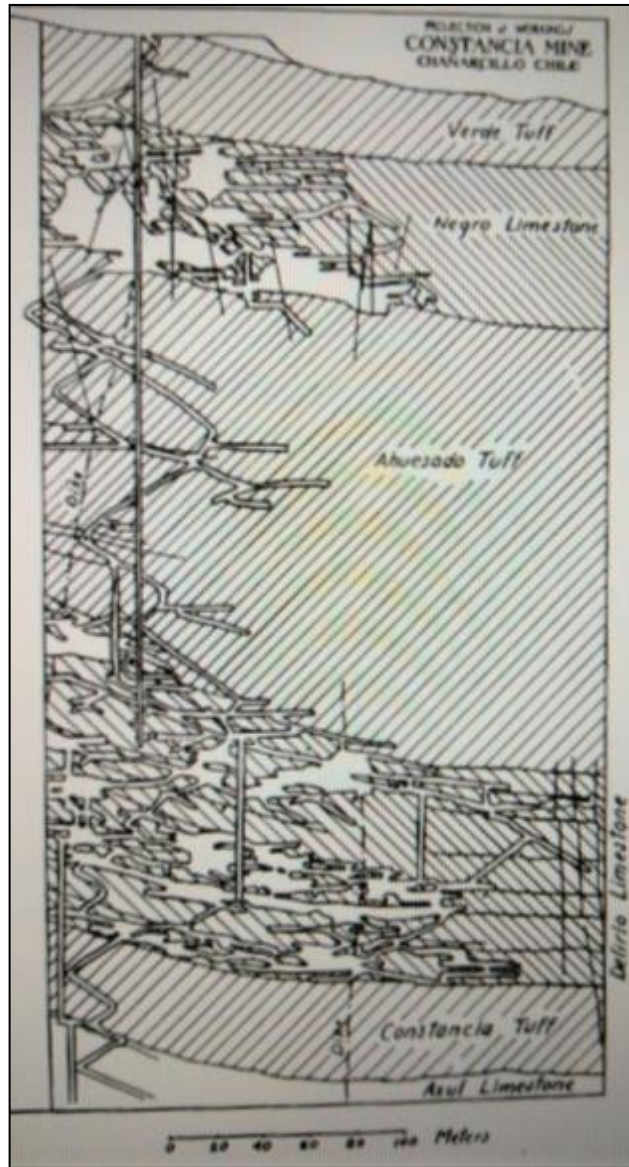


Figure 8.2 Longitudinal Section, Constanca Mine, Whitehead (1919)

## 8.2 Porphyry Copper Gold Deposits

Aragonita's preliminary interpretation regarding the origin of the silver veins proposes the hypothesis that they are related to the presence of mineralized porphyries at depth. These deposits are part of a mid-late Cretaceous belt of porphyry copper deposits that extends along the eastern flank of the Coastal Cordillera of northern Chile between latitudes 26° and 31° South, which have been intensively explored between Vallenar and Domeyko. The following description of porphyry copper ( $\pm$ Au,  $\pm$ Mo) deposits is summarized from USGS, Scientific Investigations Report 2010-5070-B, Porphyry Copper Deposit Model, D.A. John et al., 2010.

Porphyry deposits consist of copper minerals ( $\pm$ Au,  $\pm$ Mo) occurring disseminated throughout and in veins and breccias that are relatively evenly distributed in large volumes

of rock, forming high tonnage (greater than 100 million tons), low to moderate grade (0.3–2.0 percent copper) ores. Host rocks are altered and genetically related granitic porphyry intrusions and adjacent wall rocks. Porphyry deposits are the world's most important source of copper, accounting for more than 60 percent of the annual world copper production and about 65 percent of known copper resources.

Porphyry deposits commonly are centered on or around cylindrical porphyry stocks or swarms of dikes that in some cases are demonstrably cupolas of larger underlying plutons or batholiths. Plan areas of ore-related intrusions typically range from 0.2 to 0.5 km<sup>2</sup>. Undeformed ore zones commonly have circular or elliptical shapes in plan view, with diameters that typically range from 0.1 to 1.0 km and have vertical dimensions that are similar to their horizontal dimensions. In cross section, ore zones vary from cylindrical shells with altered, but low-grade, interiors referred to as “barren” cores, to inverted cups around barren cores, to multiple domes or inverted cups, and to vertically elongate, elliptical shapes (figure 8.1). Not all porphyry deposits have barren cores with diorite, gold-rich and or mafic hosted porphyry deposits often having high-grade vertical extensive cores of altered rock. In other deposits, the ore is concentrated in vertical breccia pipes which may occur alone or in clusters.

Copper and molybdenum minerals typically account for 1–2 volume percent of hypogene ore and occur in several forms: (1) disseminated in host rocks as discrete, less than or equal to 1 mm anhedral to subhedral crystals that replace feldspars and other minerals internally and along grain boundaries or in millimeter-to-centimeter clot-like aggregates; (2) in veins, less than 1 millimeter to several centimeters wide; and (3) in breccia matrices with quartz and other hypogene minerals. Copper, molybdenum, and other hypogene minerals in these three forms are part of the zoned alteration mineral assemblages (figure 8.1) superimposed on intrusions and wall rocks.

In porphyry deposit environments, hydrothermal alteration is characterized by ionic metasomatism, including alkali metasomatism and hydrolytic (or acidic) reactions, oxidation-reduction reactions (including sulphidation), solubility-induced precipitation reactions, such as quartz precipitation, and hydration-carbonation reactions in which water or carbonate is added. Several types of wall-rock alteration characterize porphyry copper ore zones. These alteration types extend upward and outward several kilometers from deposit centers and are spatially and temporally zoned. Major alteration types commonly present in porphyry copper deposits are: potassic, sericitic (phyllic), advanced argillic, intermediate argillic, and propylitic, each of which has distinctive mineralogical, geochemical, and sometimes geophysical characteristics. These zones are sometimes overprinted by genetically related epithermal high-sulphidation systems with advanced-argillic alteration and sometimes anomalous to economic gold mineralization.

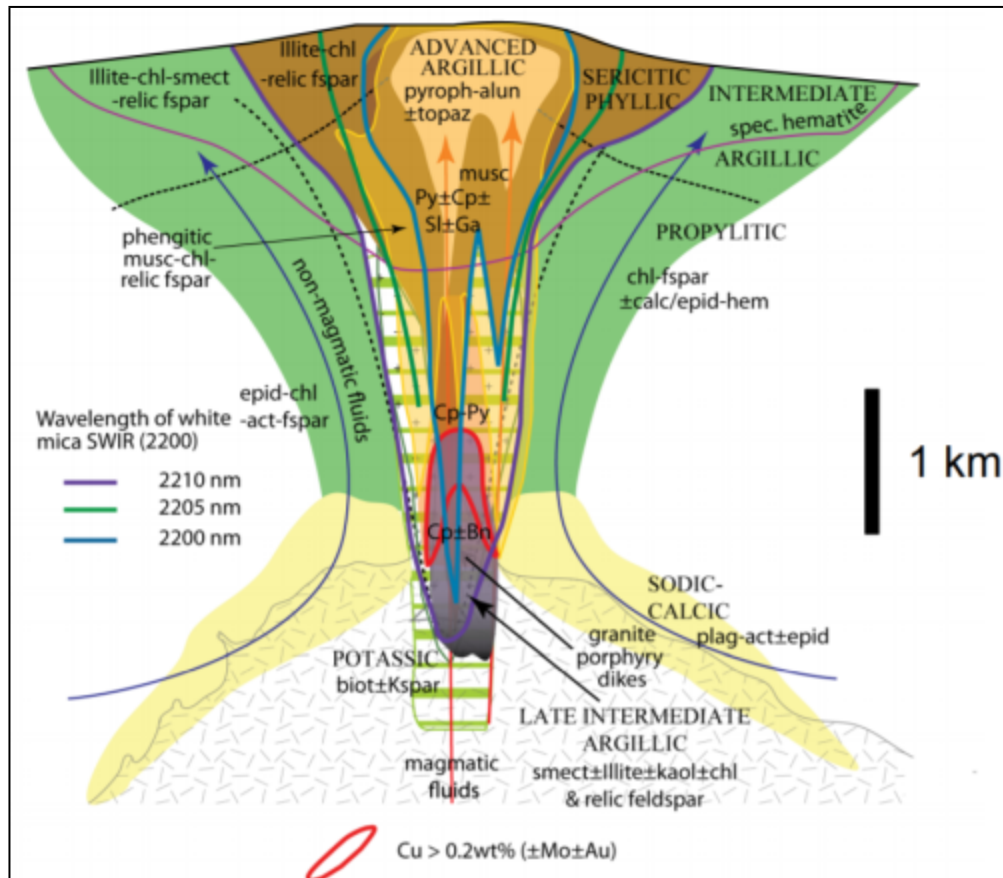


Figure 8.3 Integrated Porphyry Cu – Epithermal Deposit Model (Halley et al. 2015)

### 8.3 Stratabound (Manto) Lead Zinc Silver Deposits

Stratabound carbonate-hosted Lead zinc silver ±copper deposits constitute a major source of lead and zinc in North America and Europe, (Pirajno, 1992) where this type of deposit is represented in the MacKenzie district in Canada, the Appalachian, Tri-State, southeast and southcentral Missouri (Viburnum Trend) and the upper Mississippi Valley districts in the USA, in the Alpine, Silesian, central Irish Plain and Pennine districts of Europe.

Carbonate-hosted base metal deposits generally occur in shelf-facies sedimentary sequences along rifted passive margins or within intracratonic basins. The most important features of the deposits are summarised as follows: (1) they occur in limestone or dolomitic rocks; (2) the ore is usually stratabound and consists of replacements and/or veins; (3) the chief ore minerals are galena, sphalerite, pyrite, marcasite and chalcopyrite, whereas gangue minerals are dolomite, calcite, fluorite, barite and quartz; (4) they are not associated with igneous rocks; (5) they occur in areas of mild deformation; (6) the mineralisation is often spatially associated with basement highs, with the ore being located within reef structures around these highs; (7) the mineralisation was probably formed at relatively shallow depths (1-1.5 km), and fluid inclusion studies indicate that the ore solutions were of low temperature (50-200°C) with a salinity range of between 10 to 30% wt. NaCl equivalent.

These types of deposits are located in the Cerro Las Cañas hill area of Agua Amarga where the real extension of the stratabound mineral bodies has never been properly explored. This style of mineralization represents a low priority target with high-grade mineralization reported grades of 25% Pb, 4.7% Zn and 76 g/t Ag over narrow widths of up to 0.35 m.

Aragonita's interpretation is that the stratabound mineralization at the Property was formed by sedimentary-exhalative processes (SEDEX deposits), hydrothermal fluids of submarine-volcanic sources exhaled into the Cretaceous marine basin responsible for the origin of the mineralization. The feeders of this mineralization have not been located and these feeders, along with the down-dip extension of the mineralization, represent targets for future exploration.

#### **8.4 Skarn Copper Zinc Gold Deposits**

Skarn copper zinc gold deposits are located just in the western border of the Agua Amarga claims. The skarns in the Agua Amarga district are part of the metamorphic aureole around the batholith located towards west. Copper and Zinc production from skarn-mines have been reported in the past; currently the mines are abandoned (e.g. Argentina mine). Ore mineralization includes pyrite, chalcopyrite, sphalerite, associated to classic skarn alteration minerals (garnet, epidote, scapolite and magnetite). A probable zone for skarn is located at the contact dioritic intrusive/Chañarcillo sediments and volcanics, in between Maipú and Rosario claims (see geologic map 1/10,000), also coincident with a radiometric K-alteration proposed target. This zone is also proposed by geophysics as a possible extension of vein environment.

## **9.0 EXPLORATION**

There are no records of the exploration activities that led to the discovery of the Agua Amarga silver veins and there is no information related to the discovery of the stratabound lead zinc silver mineralization that was mining on this southern portion of the Property. Since both areas of mineralization initially were exposed on surface, it is likely that discoveries were made by prospecting and sampling. There are no detailed records of exploration activities prior to Minera San José's acquisition of the property in 1982, as discussed in Section 6.0. A brief summary of the exploration activities since 1982 are provided below.

Minera San José (Siddeley, 1982; Carmichael, 1983; Gallardo, 1986) undertook a program of geological mapping and sampling and collected samples from underground workings and old dumps which were assayed for Au, Ag, Cu, Pb and Zn. In 1983, Minera San José completed 4 angled diamond drill holes in selected areas of the mineral system totalling 669.10 m. Selective 229 core samples were assayed for Au, Ag, Cu, Pb and Zn. Minera San José (Ludwig 1993) acquired and undertook an interpretation of airborne geophysical data (magnetics) over the Agua Amarga.

In 2009, Ludwig completed a re-interpretation of the same geophysical data noted above for Aragonita. As discussed in Section 6.5, Ludwig defined a number of targets for further consideration within the property boundaries.

Cascada acquired an option to acquire the Property from Aragonita in September 2020. The Company has recently commenced exploration activities on the Agua Amarga Property. The core from the Minera San José 1983 drill program has been re-logged and, in November 2020, Cascada contracted Mapping Ltda., a geophysical services company, headquartered in Santiago, Chile, to complete a magnetometer survey over the property using a drone platform. Results from the magnetometer survey are discussed in Section 9.1.

### **9.1 Geophysics**

#### **9.1.1 Magnetometer Survey Methodology**

During November 2020, Mapping Ltda. performed a drone-borne magnetometer survey at the Agua Amarga Project.

The magnetometer survey comprised 42 survey lines with an E-W orientation. On the northern half of the property, covering the area of the historical silver production, flight lines were separated every 100 m and over the southern portion of the property, flight lines were separated every 200 meters. Data was collected at an interval of 200 Hz on all lines. A total of 98 km of magnetic data was collected.

A fluxgate triaxial Sensys R3 magnetometer was used on this project. The magnetometer sensor was mounted on an autonomous quadcopter drone flying at a height of 50 meters above ground level, parallel to the earth's surface. The magnetometer recorded the three components of the magnetic field, x, y, z direction, 200 readings per second. A Scintrex Model SM5 Cesium Vapor magnetometer was used for a base magnetometer to record diurnal changes in the Earth's magnetic field. All data was checked in the field and edited

for bad data points. The distance between sampled points was practically a continuous line along each profile.

The raw magnetic data was again checked, corrected for diurnal variation and then processed to create a total magnetic intensity map (Figure 9.1) which is similar to the results of earlier magnetic survey discussed in Section 6.5.

A total magnetic field reduced to pole map was created to alleviate shortcomings in the variation of inclination and declinations as one gets farther from the magnetic poles. Reduced to pole magnetics show magnetic anomalies directly on the bodies that generate them and can be useful in correlating magnetic data with underlying geology, however, the data is not that useful in defining the edges of the magnetic bodies.

The magnetic data was also processed to create an analytic signal map of the total magnetic field (Figure 9.2) which is useful in highlighting the anomalous source body contacts and linears (e.g. contacts, fault/shear zones, etc.). Analytic signal maxima are located directly over faults and contacts, regardless of structural dip, and independently of the direction of the induced and/or remnant magnetizations.

### **9.1.2 Magnetic Survey Interpretation**

The following is summarized from “Geophysical Report UAV-Borne Magnetic Survey” prepared by Mapping Ltda on behalf of Cascada Silver Corp.

Taking into account the total intensity, pole reduced and analytic signal data processed from the raw magnetic data provided from the drone-based magnetics survey, an interpretation map it was completed by Mapping Ltda. (Figure 9.3) which summarizes the survey results. It should be noted that in this area, geophysics plays an important role in mineral exploration because more than 75% of the surface of the Property is covered by rubble and recent sediments of variable thickness.

The magnetic field in the Agua Amarga area is moderate to low, the tenor of the magnetic values is not high, which means, without considering outliers, the highest magnetics values found are of the order of 23,800 gammas [nT] and the low magnetic values are of the order of 23,200 gammas [nT] giving a contrast in the order of 600 gammas [nT]. Nevertheless, despite this moderate contrast, it is possible to outline the magnetic bodies on the Property.

Based on the processes applied to the magnetic data, as noted above, along with 3D magnetics inversion modelling, a structural pattern of preferred directions (NS, NE, NW and EW) has been defined, interpreted lithologies have been outlined and exploration targets, based solely on the magnetic data, have been proposed. Figure 9.3 shows the results of the modelling on which various targets are proposed: T1a, T1b, T1c, T2a, T2b, T3a, T3b and T4. Targets T3b and T4 are more subtle than the others because they are deeper targets.

Within both northern part and southern part of the investigated area, stratigraphic sequences were observed and associated with relatively higher magnetic susceptibility values. In the northern area, stratigraphy is apparently sub-horizontal, cut by sub-vertical faults. Within the southern area, the stratigraphic package is cut by thrust faults.



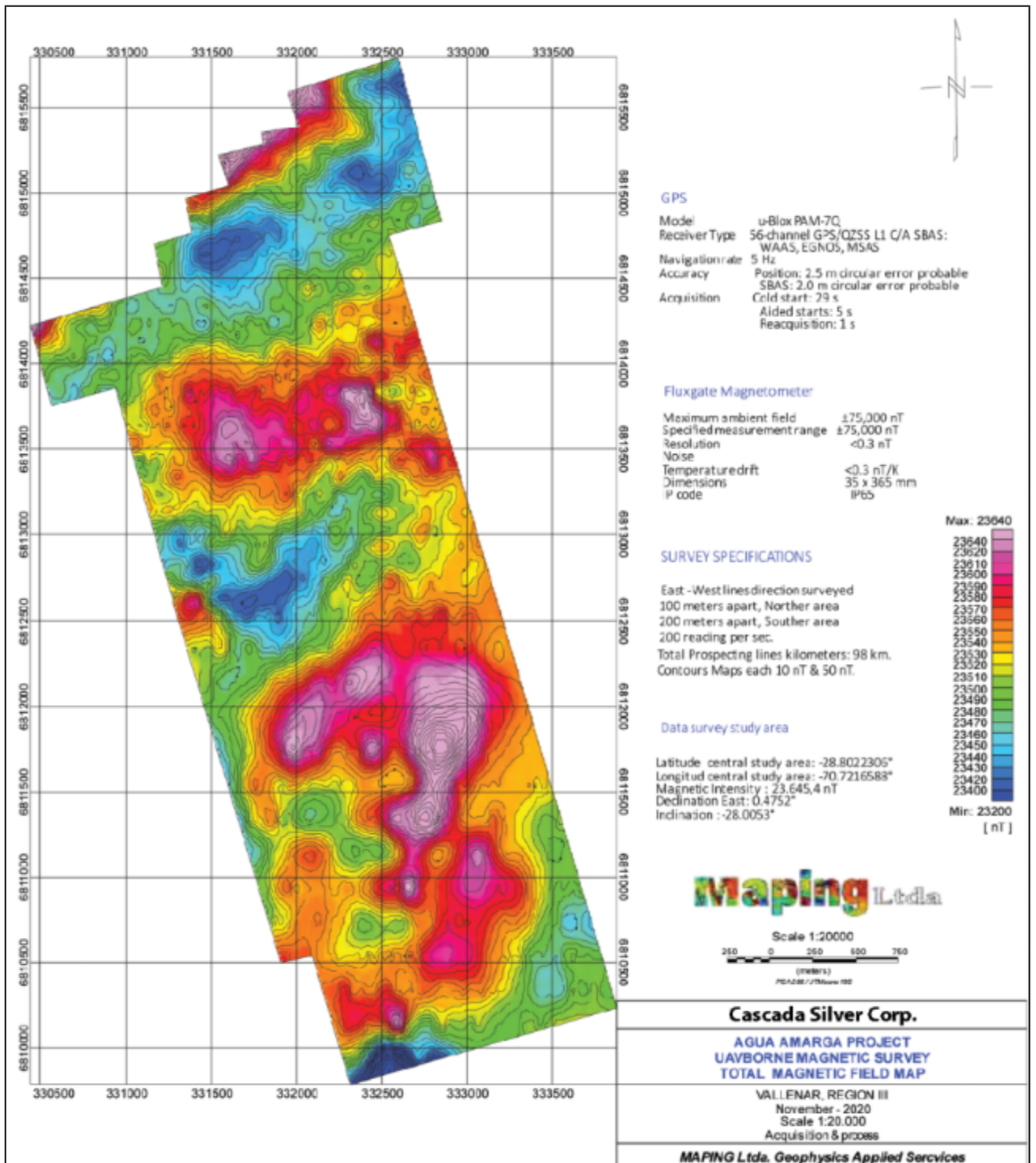


Figure 9.1 Total Magnetic Intensity (2020)

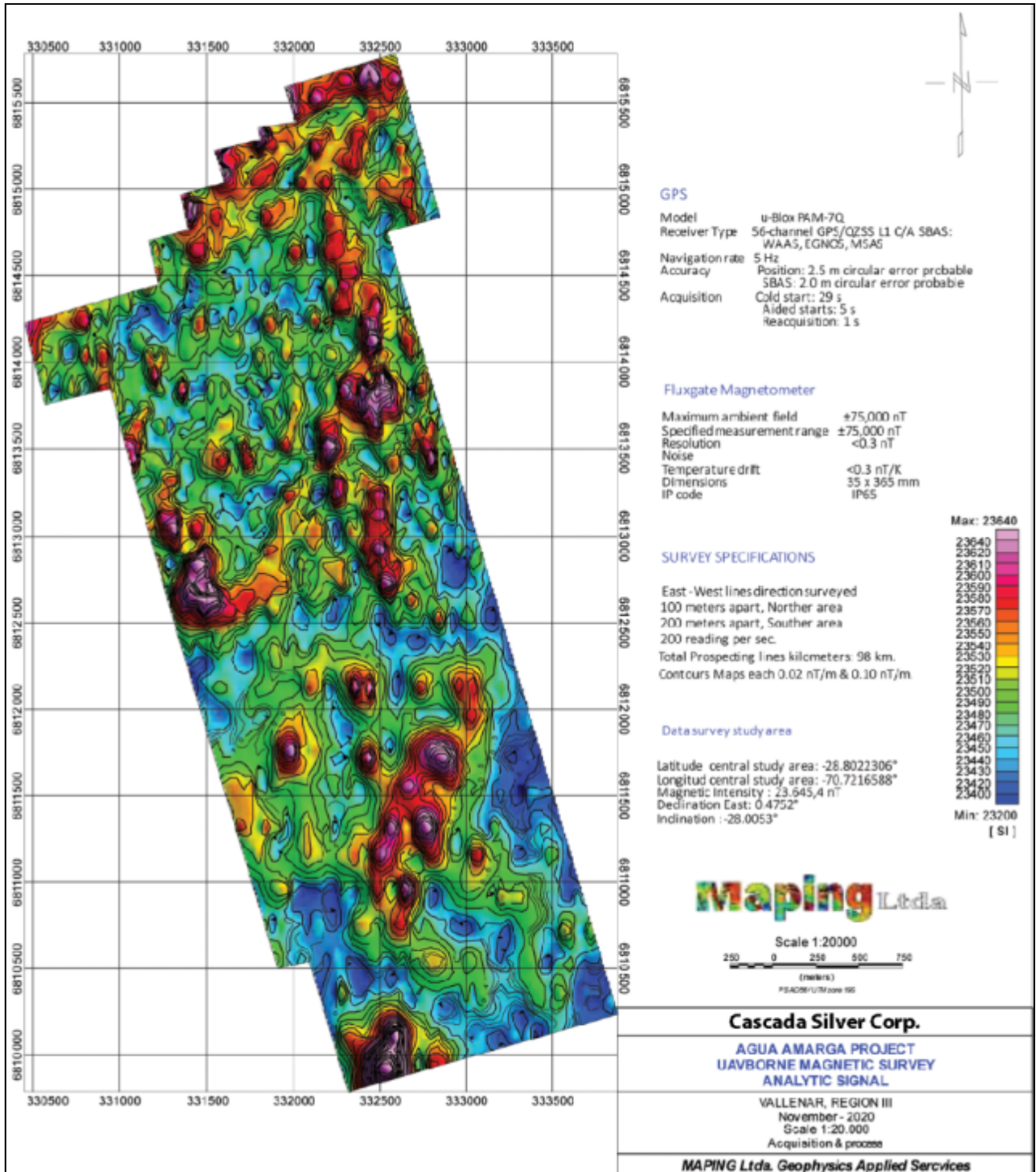


Figure 9.2 Analytic Signal of Total Field Magnetics (2020)

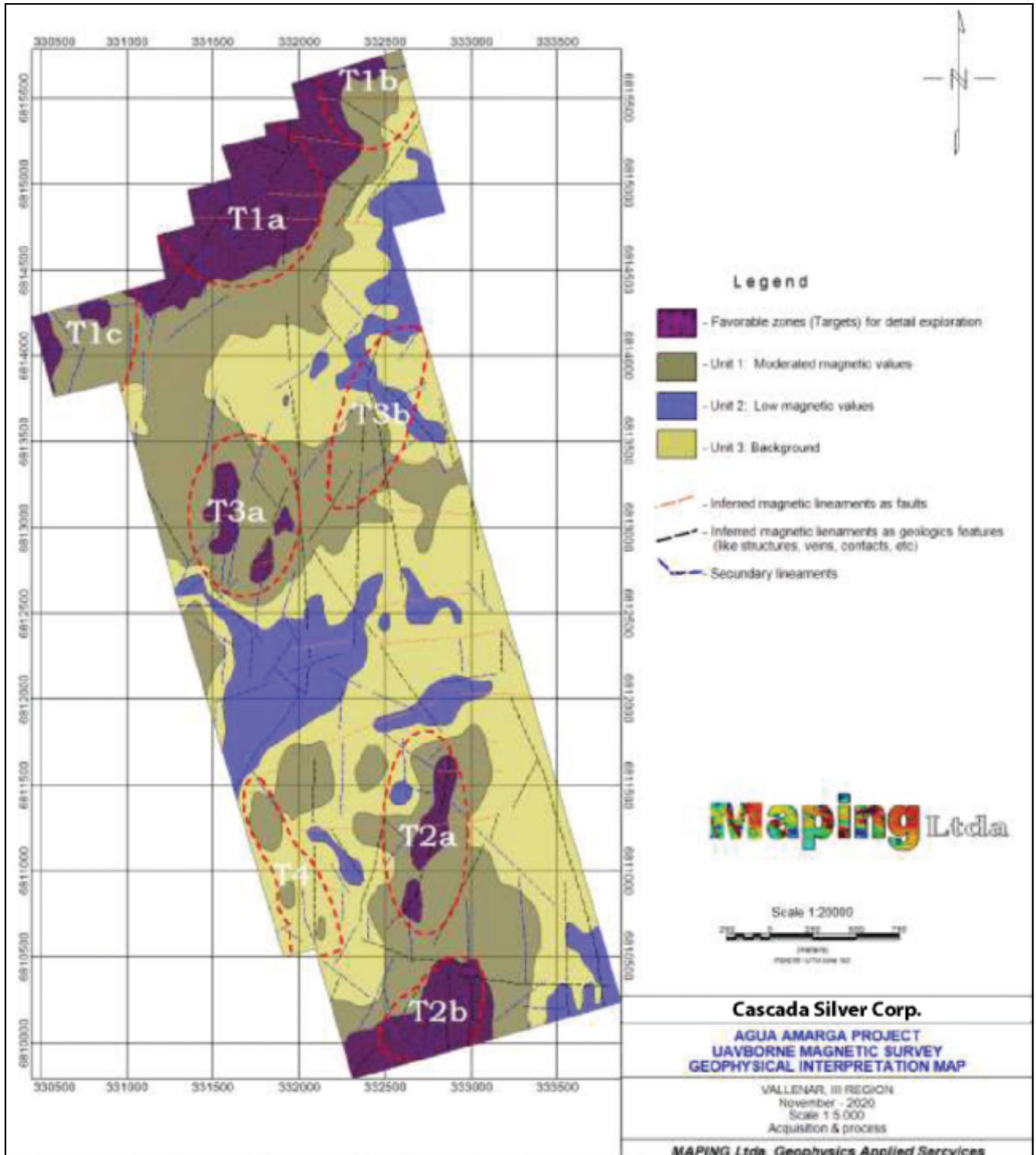


Figure 9.3 Interpretation of Magnetic Survey Data (2020)

### 9.1.3 Discussion of the 2020 Magnetic Survey Results

A series of “targets” have been proposed by Mapping Ltda. based upon their interpretation of the geophysical data collected and processed. The proposed targets correspond with those outlined by Ludwig (2009) as discussed in Section 6.5.

Maping Ltda.'s T1 (Figure 9.3) series of targets correspond with Ludwig's Target A and are related to an area of relatively weaker magnetics associated with the area of historical silver production on Agua Amarga. The analytic signal (Figure 9.2) shows possible linears which may be related to fault structures hosting or displacing the silver vein. The relationship between the silver veining, as expressed by the mined veins at surface, and the analytic signal map should be examined in the field prior to drilling.

Maping Ltda.'s T3a target is similar to Ludwig's A' target and may represent a potential extension of the silver veining environment. Maping Ltda. does note that the potential target is deeper which is similar to Ludwig's hypothesis.

The T1 and T3 target areas, as defined by Maping Ltda., represent high priority targets for the potential discovery of vein-related silver mineralization.

The T4 target outlined by Maping Ltda. (Ludwig's B target) may be associated with mineralization related to a deeper porphyry system which is interpreted to exist to the immediate west of the property.

Maping Ltda.'s T2 series of targets are related to the stratigraphic horizon hosting the stratabound lead zinc silver mineralization which was mined during the 1920's and 1950's. These targets were given a medium priority by Ludwig and represent his C and E targets.

## 10.0 DRILLING

The only drilling undertaken at Agua Amarga Property consists of 4 angled diamond drill holes, with a total length of 669.1 m, performed by Minera San José between July and September 1983.

On October 22, 2020, the author visited the Property and located 4 of the drill pads and 2 collar sites (DDH-3 and DDH-4). The core from the 4 drill holes is stored in a warehouse, rented by Aragonita, located in Vallenar. The NQ diameter (47.6 mm) core was examined by the author on October 23, 2020. The core is in good condition and the core recovery appears to have been good. Only selected portions of core, of variable length, were sampled, split in half with an impact core splitter and assayed for Au-Ag-Cu-Pb-Zn. The un-assayed core remains unsplit. Some of the wooden core trays are in poor condition and should be replaced; however, the core is not disordered.

The core warehouse in Vallenar has 24-hour security, is partly fenced in, open in one of its sides and with a damaged access door. The core trays are piled on wooden pallets, grouped by each hole.

Carmichael (1983) documented the core logging sheets completed by Minera San José geologists of the four drill holes. Table 10.1 summarizes the drill collar coordinates and associated drilling information

Table 10.1 Collar Coordinates of Diamond Drill Holes at Agua Amarga Property

Hole ID	Northing m	Easting m	Elevation m	Strike	Dip	Length m
DDH-1	6,813,838.918	331,006.998	1,333.614	N81°47'58" E	-45°	91.90
DDH-2	6,813,525.335	331,098.227	1,297.447	S50°51'00" E	-45°	153.20
DDH-3	6,815,332.722	332,026.981	1,362.408	S61°49'29" E	-45°	184.70
DDH-4	6,815,046.489	332,119.455	1,340.425	S46°20'17" E	-45°	239.30
TOTAL						<b>669.10</b>

*Note: Coordinates are in UTM system PSAD 56 zone 19 S.*

No information about down-the-hole surveys is provided on the reports. Assaying was likely done in-house at Minera San José's analytical laboratory in La Serena or at similar lab facilities at the El Indio mine. The drill holes were complete by the Minera San José drilling department using a Longyear 38 drill rig.

The four holes were drilled in the NW zone of the area of historical epithermal silver mining, in two sections located 1800 meters apart with 2 holes on each section (see Figure 10.1). The objectives of the drill holes were (Carmichael, 1983) as follows:

DDH-1: to intercept the Ag vein of the Los Burros mine at approximately 50 m below surface. The hole does cut the vein from 18.42 to 18.45m along the hole axis with silver grades of up to 4 g/t Ag returned

DDH-2: to test the extension in depth of the La Culebra Vein. The La Culebra Vein was found not intersected but the hole intercepted, at 104 m, an old working which can be

associated to another outcropping vein. Highest silver grade from this hole was 8 g/t Ag from 30.25 to 30.60 m.

DDH-3: to test, at depth, a group of veins exploited at surface. The hole only cut calcite veinlets some with fine galena. One vein was correlated with surface with grades 9 g/t Ag from 26.65 to 27.10 m

DDH-4: to test the depth extension of a zone of abundant veinlets at surface. The hole only cut calcite veinlets and scarce disseminated pyrrhotite and minor pyrite. The highest silver grade was 7 g/t from 77.60 to 78.20 m.

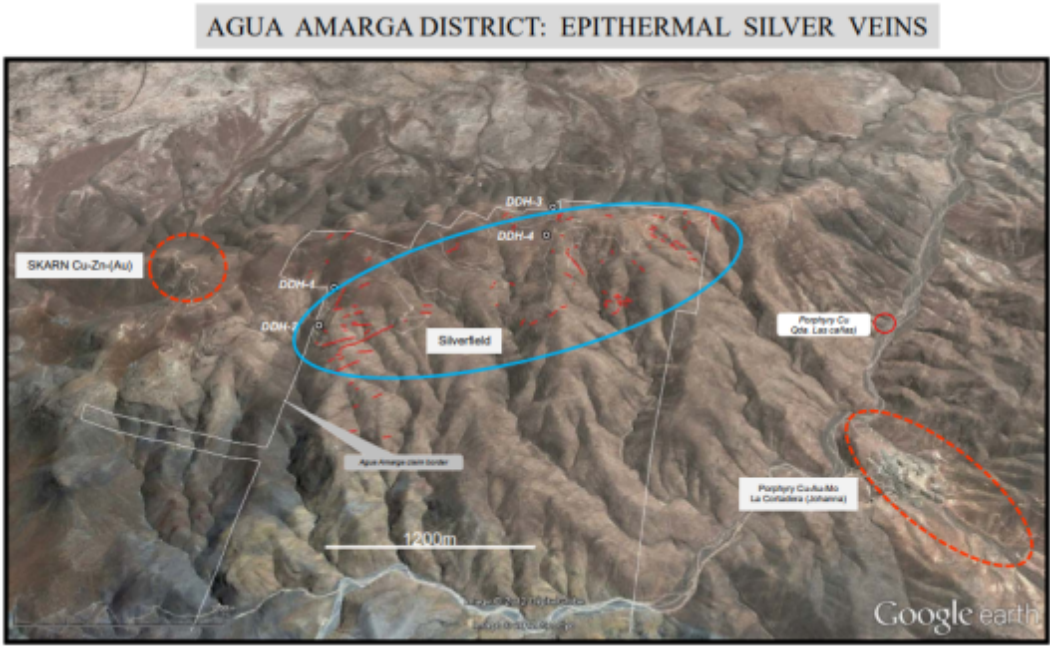


Figure 10.1 Diamond Drill Hole Locations

The maximum assay values obtained from drilling were:

- Ag: 9 g/t in DDH-1
- Au: 0.6 ppm in DDH-1
- Cu: 0.7% in DDH-2
- Pb: 0.36% in DDH-4
- Zn: 1.01% in DDH-2

Figure 10.1 shows the geological sections along the four diamond drill holes, mapped by Minera San José geologists:

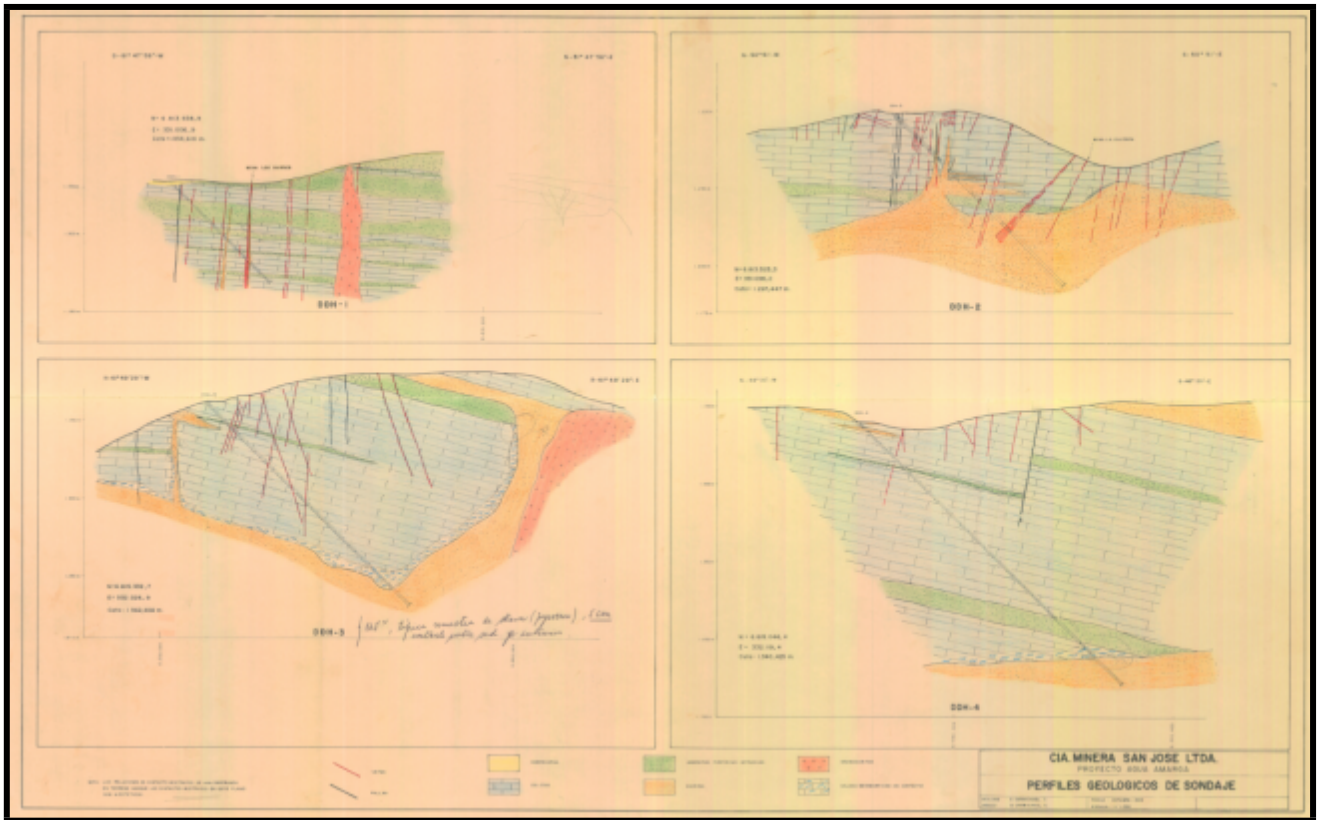


Figure 10.2 Geological Sections from Agua Amarga Drilling (Carmichael 1983)

### 10.1 General Comments

From the author's review of the drill core, the following observations can be outlined:

**DDH-1:** In general, drill hole cut mainly of the calcareous sediments as noted in the logs. The volcanics noted could represent intercalated layers or dikes as contact relationships are unclear. The short diorite or microdiorite intervals noted look more intermediate flows or dikes. The interval 68.7 to 71.66 m, partially sampled, may represent the Los Burros Vein.

The top of sulfides appears at 47.60 m, represented by pyrite, scarce pyrrhotite and rare chalcopyrite contained in limestones and volcanics, the latter with chlorite alteration, epidote traces and moderate silicification.

**DDH-2:** Similar comments to DDH-1, however, the logged diorite porphyries could be fine porphyritic intermediate units. From this drill hole, the depth of oxides may be estimated at 24 m below surface. Mineralized intercepts indicate that several thin structures were cut by this hole, where barite veinlets, manganese dendrites and calcite and pyrite filled vugs were observed. Mineralization in the country rocks consists of rare pyrite, disseminated and in veinlets together with distal type propylitic alteration (with strong chlorite, weak-moderate silicification, moderate magnetism, local epidote, calcite and some barite veinlets).

**DDH-3:** The rock is characterized by a long intercept of limestone with short intercalations of porphyritic intermediate flow or dikes and strong fractured intervals which probably are associated with the vein intercepts. The top of sulfides is recognized at 30 m along the drill core. From 30 to 56.74 m, disseminated pyrite and traces of galena are observed. From 150 to 162.5 m, the limestones show weak to moderate silicification and weak recrystallization close to the contact with the underlying fine porphyritic intermediate flows or dikes, chloritized and accompanied by veinlets and disseminated pyrite.

**DDH-4:** The drill hole cut a long intercept of limestone from surface up to 179.40 m, with intercalated porphyritic intermediates, some of them “ocoitic”, which may be intrusive dikes or layers. From 179.40 to 215.20 m, the hole intercepts medium grained porphyritic andesites, which grades to fine grained porphyritic andesites to the bottom of the hole (239.3 m). Alteration of the final meters of the core, from 215.20 m to the end of the hole, is a distal propylitic (moderate to weak chlorite, weak to moderate silicification, moderate magnetite, epidote, calcite veinlets with moderate pyrite, traces of pyrrhotite and rare chalcopyrite). Pyrite/pyrrhotite occurs disseminated and as veinlets from 15.10 m to the end of the hole.

The limited and widely spaced drilling historically performed in Agua Amarga property is not sufficient to estimate the potential of the epithermal silver vein system. Before initiating drilling, detailed geological and structural mapping is strongly recommended with the aim of establishing the most promising sites for vein intersections or vein crowding which could generate possible undiscovered silver bonanzas at depth.

The altered porphyritic intermediates from the bottoms of the drill holes, previously mapped as intrusive diorites, are favorable indications for a hypothetical Candelaria type deposit (Iron Oxide Copper Gold, IOCG) at depth.

No holes were drilled to test the stratabound lead zinc silver deposits to the south or the geophysical magnetic and radiometric anomalies.



## **11.0 SAMPLE PREPARATION, ANALYSES AND SECURITY**

There is no information available regarding the sample preparation or analyses procedures used by Minera San José, the company which undertook a program of surface and underground sample and a program of 4 diamond drill holes. It is likely that samples from Minera San José exploration activities at Agua Amarga were processed at the company's laboratory. Cascada has not collected any samples for assaying at this time.

## **12.0 DATA VERIFICATION**

Data used in this report were obtained mainly from Aragonita, which inherited almost all reports on exploration work conducted in Agua Amarga by previous owner Minera San José. Aragonita itself only contracted a geophysical review of airborne magnetometry to a reputed geophysicist C. Ludwig and a Quick Bird image interpretation to Dr. Ming-Ho Du. Regional geology and data of adjacent mineral deposits was obtained from public domain geologic reports and maps from Sernageomin and/or web pages of the private companies.

The authors did not have the opportunity to validate the data contained in reports. No information was available about QA/QC procedures for the samples. Sergio Díaz, a Chilean Professional Geologist, worked as senior geologist for Minera San José from 1988 to 1997 and can testify of the professionalism of the work done by the company and that industry accepted standard practices applied at its assay and sample preparation laboratories in Chile. No rejects, pulps or duplicates of the samples are available for verification of the assays.

The property visit performed from October 22<sup>nd</sup> to 23<sup>rd</sup> 2020 served to confirm that the veins and stratabound mineralization and the mapped geology and logged drill core are generally as described. Also, 2 drill pads and associated drill hole collars were observed at sites where they have been reported. It was confirmed that the total core of the four drill holes in the property is effectively stored in a warehouse in Vallenar city.

### **13.0 MINERAL PROCESSING AND METALLURGICAL TESTING**

No mineral processing or metallurgical test work has been completed on mineralization from the Agua Amarga Project.

#### **14.0 MINERAL RESOURCES ESTIMATES**

No mineral resources have been established at the Agua Amarga Project.

## 15.0 ADJACENT PROPERTIES

There are numerous porphyry copper gold deposits and mines, both operating and closed, located within the region including the adjacent Cortadera Cu-Au porphyry deposit, figure 15.1. The nearest significant epithermal silver deposit, the Chañarcillo silver mine, is located approximately 50 km NNE of Agua Amarga as discussed in Section 8.1.

The following information regarding the Cortadera Project is summarized from Hot Chili's publicly available corporate disclosure.

The Cortadera deposit comprises a cluster of outcropping tonalitic porphyry bodies, Figure 15.1, which have been vertically intruded along a regionally significant NW-trending fault corridor, through a shallowly dipping sequence of intercalated felsic volcanoclastics and sediments. Multiple phases of tonalitic porphyries have been mapped and recognized in diamond core including an early, intermediate and late phase of intrusion.

Drilling across the porphyries returned significant intersections of copper, gold, molybdenum +/- silver from surface to depths of approximately 900 m vertical. Copper and gold show a strong correlation throughout the deposit with molybdenum generally increasing in grade to depth.

The Cortadera deposits host indicated resources of 183 million tonnes grading 0.40% Cu, 0.15 g/t Au, 0.7 g/t Ag and 43 ppm Mo. Inferred resources stand at 267 million tonnes grading 0.35% Cu, 0.12 g/t Au, 0.7 g/t Ag and 73 ppm Mo. The Cortadera resource remains open and Hot Chili, is continuing drilling at Cortadera to increase resources.



Figure 15.1 Drilling at Cortadera with Agua Amarga in the Center Background

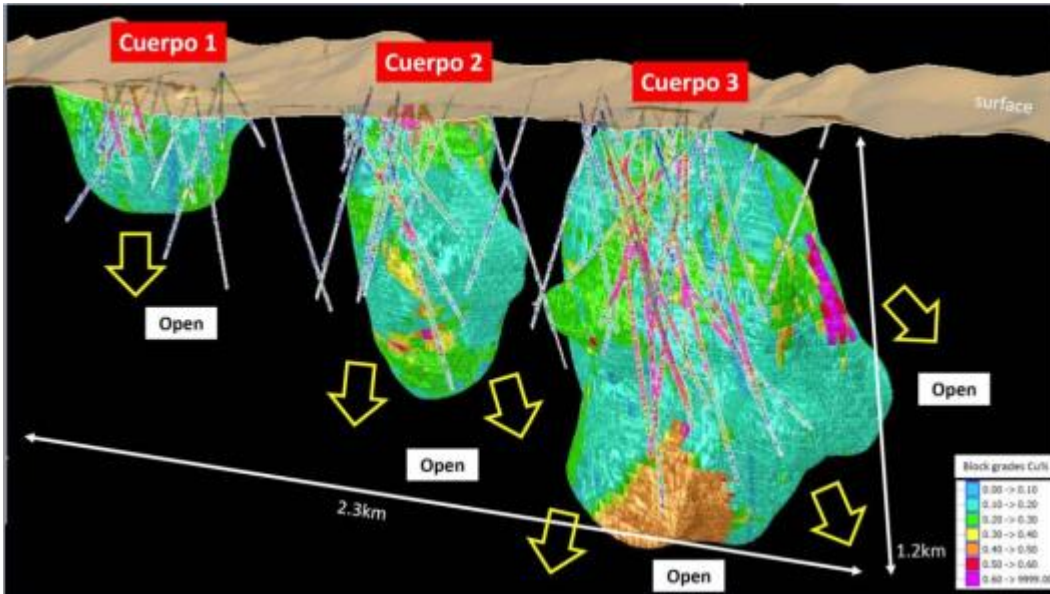


Figure 15.2 Long Section of Cortadera Resource Model (www.hotchili.net.au 2020)

Note: the author of this Report as not been able to verify the technical information related to the Cortadera Property and mineralization noted on the Cortadera property is not necessarily indicative of mineralization on Agua Amarga.

## **16.0 OTHER RELEVANT DATA AND INFORMATION**

To the best of the author's knowledge at the time of writing, there is no other relevant data or information to be disclosed.

## **17.0 INTERPRETATION AND CONCLUSIONS**

Mineralization at Agua Amarga is hosted into a NE-trending gently dipping SE stratified marine sequence of carbonate sediments with volcanic intercalations of andesite layers assigned to the Nantoco Formation. These rocks overlie to the east, a volcano-sedimentary series of greenish andesites, tuffs and auto-breccias assigned to the upper section of Punta del Cobre Formation. The sequences have been variously intruded by dikes, sills and stocks of dioritic, andesitic and granodioritic composition.

The emplacement of the high-level, probably intermediate epithermal, mineralization hosted by these rocks was probably controlled by subvertical fault structures, faulted contacts with dykes and sills and also by favorable carbonaceous and tuffaceous sub-horizontal strata. The silver vein structures have been exploited on Cerro Agua Amarga hill sector within at least the upper 50 m below surface (oxidized horizon). New bonanza veins are possible, especially at favorable calcareous horizons. In addition, the potential for hypogene mineralization has been poorly examined with only four widely-spaced diamond drill holes reaching up to 120 m below surface. This leaves a large area which is unexplored. The intrusives logged at the lower portion of the drill holes appear to the authors to be altered porphyritic intermediate flows which may be indicative of an iron oxide copper gold -type of deposit at depth.

The stratabound lead-zinc-silver deposits mined at Cerro Caña hill, in spite of being a low priority target at this stage, have not been systematically explored and the potential of this mineralization remains unknown.

The porphyry geophysical target (Section 6.5) located at the center of Maipú claims consists of magnetic anomalies peripheral to a concealed potential porphyry body, similar to the model of many of the Cretaceous belt of Cu-Au Porphyries in the Vallenar-Domeyko region. This untested target deserves should be considered a high priority during Cascada's exploration program.

To the west of Maipú claims there is a group of small mines (Argentina mine and others) which exploited skarn-type copper zinc gold mineralization. These skarns may be related to the interpreted porphyry system and, as such, may also occur on the Agua Amarga Property. Furthermore, the presence of Punta del Cobre volcanic formation underlying the limestones of Nantoco Formation shows similarities with the Candelaria deposit, opening the possibility of iron oxide copper gold deposits at depth.

It is the author's conclusion that the exploration work that has been performed on Agua Amarga Property by previous explorers, supported by the magnetometer survey recently completed by Cascada, has identified a variety of mineral occurrences and showings within the property boundaries that justify Cascada's planned exploration program.**17.1**

### **17.1 Risks and Uncertainties**

The author is not aware of any significant risks and uncertainties that could be expected to materially affect the reliability or confidence of the exploration information discussed herein.



As with all mineral projects, there is an inherent risk associated with exploration. As such, there is no guarantee that drilling activities will be successful, will lead to the establishment of a resource estimate or that, if a resource is established, it will be successfully converted to a mineral reserve.

The Project's potential economic viability is predicated on the establishment of a mineral reserve which, in itself, has inherent risks and uncertainties associated with parameters outside the scope of this Report including: future metal prices; development costs; mining methods, metallurgical recovery rates, regulatory and permitting processes; delays in obtaining financing; or, the successful completion of exploration. These risks are not specific to this Project but rather implicit to all exploration activities.

## 18.0 RECOMENDATIONS

Based on the available data which the author has reviewed, it is the author's opinion that the Agua Amarga Property warrants exploration. Geological mapping and sampling should be the first step in exploring the property. Following upon the results of mapping, sampling and geophysical program, a program of reverse circulation drilling should be sufficient to test for high grade epithermal silver veining and examining the potential for a bulk tonnage silver deposit.

In particular, Cascada should target the epithermal veins both in the area of historic mining and within the area of magnetic lows south of and adjacent to the mining area.

In addition, the porphyry Cu-Au potential of the Agua Amarga should be examined.

### 18.1 Phase I Program

The Phase I program should commence with detailed geological mapping over the entire property at a scale of 1/2,500 or 1/5,000. The high-resolution Quick Bird image available from Aragonita could serve as the base for this work. Special emphasis must put on alteration, disseminated mineralization and metamorphism features. Accessible outcropping veins and mantos must be sampled in detail and analyzed with a multi-element package.

Detailed re-logging of the drill core, along with additional sampling of mineralized intervals previous not sampled, could aid in the vectoring of blind targets below the drilled areas. A significant portion of the drill core was not previous assayed.

Completion of this preliminary work will allow for a carefully planned reverse circulation drill campaign focused on highest priority epithermal and porphyry targets as noted in Figure 18.1.

Cascada has prepared a preliminary budget for a Phase I exploration program totaling US\$856,800 as summarized in Table 18.1. It is anticipated that the Phase 1 program, including drilling, should take approximately 3 months to complete.

Table 18.1 Phase 1 Agua Amarga Exploration Budget

Item	US\$
Geological Mapping	20,000
Sampling ( <i>geological mapping and drilling</i> )	150,000
Food, Board and Travel	30,000
Vehicles	20,000
RC Drilling (2,000 m)	500,000
<b>Subtotal</b>	<b>\$ 720,000</b>
VAT 19%	136,800
<b>Total</b>	<b>\$ 856,800</b>

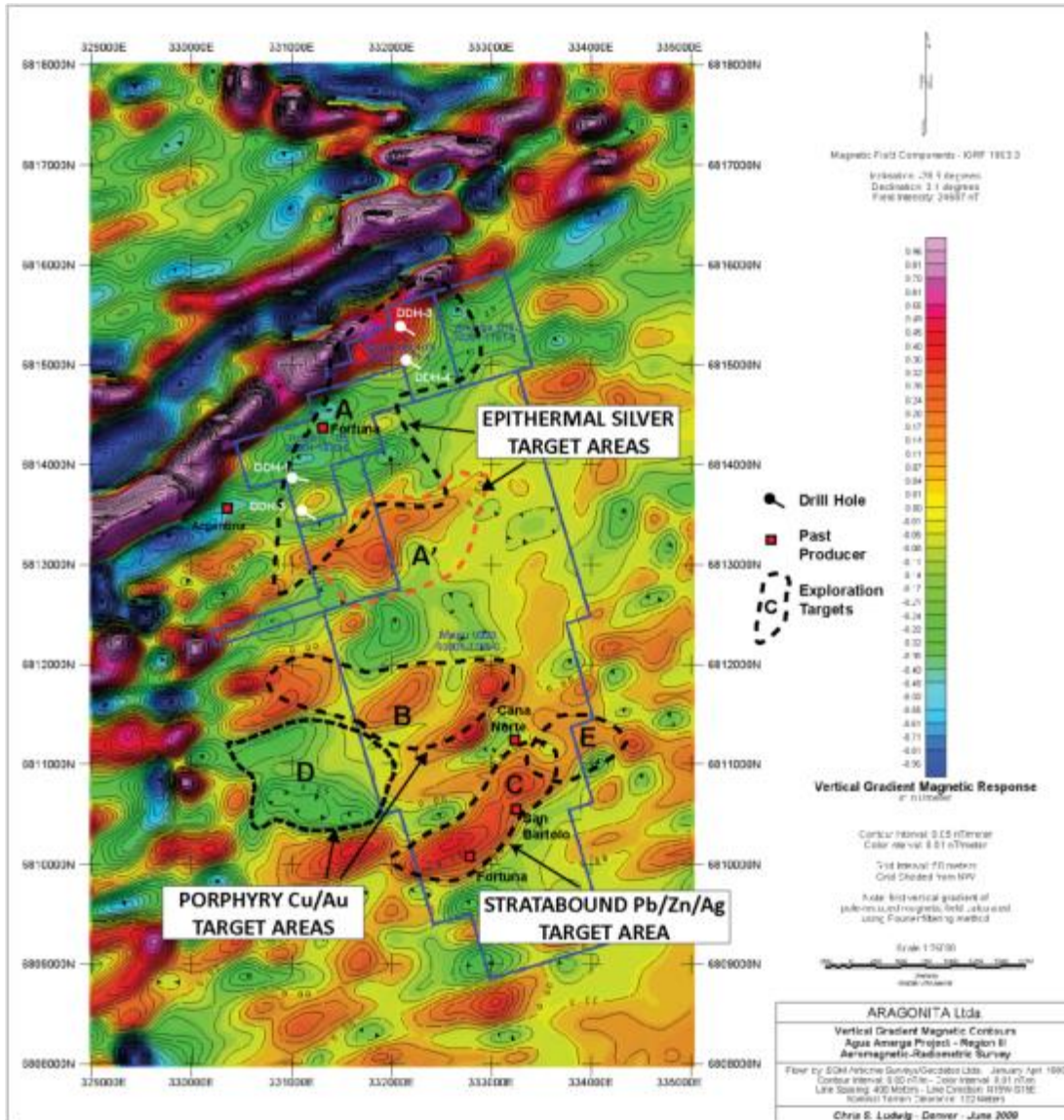


Figure 18.1 Proposed Exploration Targets at Agua Amarga Property

## 18.2 Comments on Section 18

The current program, if completed as budgeted, will fulfill the option agreement work commitment obligation of US\$250,000 due by August 31, 2021 and will fulfill a significant portion of the 2,500 m of drilling commitments which must be completed by August 31, 2022. As the Agua Amarga Property is at lower elevations and can be accessed and explored year-round, Cascada is not confined to exploring during the summer season allowing the Company addition leeway in completing its exploration activities.

It is recommended that all previous exploration and exploitation impacts be photographically documented and signed by a notary public, and surveyed and documented by the environmental consulting firm used to prepare the Carta de Pertinencia. Concerning community relations and land owners, a full register should be maintained of all interactions with owners, locals, other members of the general public and

their outcomes, including written, telephone and face-to-face conversations and meetings, both formal and informal.

The proposed budget (Table 18.1) is considered by the author to be appropriate for the initial exploration activities and should be sufficient to test the potential of the Agua Amarga Property.

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