

Valiente Copper-Gold Project Peru

NI 43-101 Technical Report

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This Technical Report titled “Valiente Copper-Gold Project, Peru, NI 43-101 Technical Report” and dated May 14, 2024, with an effective date of May 14, 2024, was prepared under the supervision of the following author:

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1. Summary

This report describes the geology and mineralization at the Valiente Copper Gold project in Peru. The Valiente project covers 931km² of mining licences in a recently discovered Miocene age magmatic belt that extends for over 150km strike. The project is 100% owned by Peruvian subsidiaries of Hannan Metals Ltd (“Hannan” or the “Company”).

Valiente is situated within the sub-Andean zone of the Huánuco and Ucayali departments in central Peru. A region characterized by high altitude jungle with coffee and cacao plantations, in the transition between the Andean Mountain range and the Amazon basin.

The project is an early-stage mineral exploration project. It does not have any history of mineral exploration. The discoveries outlined here are characterized by outcropping mineralization in creeks and ridges. The mineralization on the property is multi-signature with characteristic porphyry, skarn and epithermal style caused by 21.8-12.2Ma age intrusions hosted within Cretaceous and Paleogene age sandstone, mudstone, limestones, and shales.

This report describes mineralization at seven porphyry-epithermal targets with a high-K calc-alkalic to alkalic host rock composition. The most advanced targets are Ricardo Herrera and Previsto East.

Ricardo Herrera represents the upper parts of a multistage high-K calc-alkalic porphyry stock with a mineralized footprint on surface that extends 1,000m in length by 275m in width. The surface expression of the mineralization is leached, but an orientation pole-dipole survey has mapped a coinciding high resistivity high chargeability anomaly to at least 500m deep indicating a target with significant exploration scale.

Previsto East represents a 1,800m long x 400m wide porphyry-epithermal target defined by strongly gold anomalous soil samples and large local copper and gold mineralized boulders assaying up 0.64 g/t gold in soils and 1.85 g/t Au in boulders. Previsto East is interpreted to be a gold-rich copper porphyry with an alkalic host rock composition and represents a significant drill ready exploration target.

The Company is carrying out systematic surface work to de-risk these geological targets which includes detailed geological mapping, surface geochemistry and geophysics. This is coupled with extensive social work and drill permitting. The Company is also conducting reconnaissance field work in new target areas.

It is the authors opinion that the project has significant potential for multiple gold-rich porphyry copper, skarn copper and epithermal gold mineralization in multiple target areas. The surface work also suggests that these mineralizing systems have large surface footprints.

It is recommended that the Company continue with the strategy of geological de-risking using exploration techniques with proven high success rate such as detailed surface mapping and soil sampling. Further geophysical surveys such as pole-dipole IP geophysics needs to be completed at all target areas prior to drilling. Once drill permits are obtained the author recommends an estimate of 5,000m of drilling. The proposed work and budget is broken down into two stages:

1.1 STAGE 1

Geological de-risking using conventional exploration techniques such as detailed surface mapping, grid-based soil sampling (200m x 200m), channel sampling and large-scale IP pole-dipole geophysical surveys. If the combination of these results is positive the target should be permitted for drilling. The estimated budget for Stage 1 is CAD\$1.497M.

TABLE 1.
Valiente Budget Summary (Stage 1)

	CAD
Staffing, Travel, Logistics, Office, Vehicles, Lima Office	700,000
Tenure Fees	372,000
Geology, Geochemistry, Geophysics, Permitting	425,000
TOTAL	1,497,000

1.2 STAGE 2

Diamond drilling is recommended to test the targets developed during Stage One. Due to the variety of targets presented within the property it is difficult to predict the number of metres needed to evaluate each area. In the Belen Zone the drill application that is currently being permitted cover three targets. It is estimated that that this will require a minimum of 5,000m of drilling with a maximum depth of 800m and an average depth of 300m in the initial evaluation using hand portable drill rigs with a maximum capacity of 1000m depth, low environmental impact and minimizing the need to create access roads. The estimated budget for Stage 2 is CAD2,772,000 per drill target.

TABLE 2.
Valiente Budget Summary (Stage 2)

	CAD
Staffing, Travel, Logistics, Office, Vehicles, Lima Office	700,000
Tenure Fees	372,000
Diamond Drilling (5,000m)	1,700,000
TOTAL	2,772,000

2. Introduction

This report was prepared under the supervision of Lars Dahlenborg, President of Hannan Metals Ltd. The information in this report has been generated by Hannan Metals Ltd during exploration between 2020 and 2024. Lars Dahlenborg regularly visits the project and has in-depth knowledge about the project, the data and exploration results.

3. Reliance on Other Experts

This report relies on data generated by Hannan Metals Ltd and its 100% owned Peruvian subsidiary Hannan Resources Peru SAC. It has been compiled by the QP without reliance on external experts. The QP has validated the information independently.

4. Property Description and Location

The Valiente Project (the “Project”) is owned and operated by Hannan Resources Perú S.A.C, which is a 100% owned subsidiary of Hannan Metals Ltd. The mineral exploration project is located in the Huánuco and Ucayali districts of North Central Peru and consists of five different areas with a combined area of 91,300ha ([FIGURE 1](#)).

The different areas are respectively named: Valiente, Serrano, Serrano Norte, Pucacunga and Pozuzo. Each area is made up individual mining licences which from the project areas as coherent blocks. The individual mining licences range in size from 200ha to 1,000ha. In total there are 99 mining licences of which 90 licences are granted and 9 licences remain under application. The mining licences have been applied for in stages between 2020 and 2022. [TABLE 3](#) provides a summary of the concessions and a full list, including application dates, is provided in [Appendix 1](#).



FIGURE 1.
Mining Licences that Comprise the Valiente Project

TABLE 3.
Summary of Mining Licences

Project Area Name	Total Area (HA)
Valiente	63,900
Serrano	6,200
Serrano Norte	4,900
Pucacunga	9,800
Pozuzo	6,500

In Peru an annual validity fee (holding cost) of US\$3.00 per ha is paid to INGEMMET (the Peruvian Geological, Mining, and Metallurgical Institute) annually no later than the 30th of June. No other actions are required to keep the mining licences in good standing and there is no time limit for how long a licence can be renewed.

The Valiente project is not subject to any royalties, back-in rights, or payments. To the best knowledge of the author there are no environmental or title overlays to any of the mining licences.

The project is an early-stage exploration project. In Peru, to conduct basic field exploration such as surface mapping and rock sampling (“cateo and prospección”), no prior authorization is required from regulating government bodies. However, access needs to be granted from local stakeholders, private landowners and land possessors. A stakeholder may be an individual who relies on an area for water supply for agriculture and consumption, a land possessor is a person who lives in the area and uses it for agriculture but does not have legal ownership of the land.

When the project enters the drill stage different permits are required. In Peru there are three different types of permits for drilling FTA, DIA and EIA which are summarized in [TABLE 4](#). In addition, fuel and water permits are needed during drilling. These are obtained after the drill permit has been approved.

TABLE 4.
Summary of Drill Permits in Peru

Drill Permit	Description
FTA	Max 20 drill platforms or a maximum affected area of 10 hectares. No prior consultation and automatic approval.
DIA	Max 40 drill platforms, maximum affected area of 10 hectares. Possibly prior consultation.
EIA	Max 700 drill platforms, an affected area of more than 10 hectares. Possibly prior consultation.

Different processes apply to obtain each drill permit. The FTA is an automatic permit that applies to projects in the which, amongst others, the drilling does not affect sensitive flora and fauna, water bodies or any economic activity in the area and is without any first title or environmental overlays. The maximum affected area may not exceed 10ha and 20 drill platforms. The time to obtain an FTA is estimated to be four months.

The DIA is similar to the FTA but is required in areas with sensitive environment, when the planned work is close to economic activity such as agriculture or if there are indigenous rights. The maximum affected area may not exceed 10ha and 40 drill platforms.

The time to obtain an FTA is estimated to be four months whereas the DIA may take up to 12 to 24 months. The decision whether to apply an FTA or DIA permit to drill project rest with the DGAAM (Dirección General de Asuntos Ambientales Mineros).

The EIA is applicable to projects with up to 700 drill platforms, and an affected area of more than 10 hectares. It involves everything from a DIA but may also include prior consultation and more detailed environmental and socio-economic studies.

Other permits are also required to conduct drilling. These include environmental baseline studies, socio-economic studies, archeological investigations, identification of surface rights, water permit, fuel permit, closure plan and authorization to initiate activities.

The Valiente project areas overlap with small farms of coffee and fruit plantations, deforested areas after abandoned plantations, as well as some primary forest with sensitive flora and fauna. There are no overlaps with indigenous areas as far as the author is aware. The environmental and socio-economic conditions make the DIA permit the most likely path for drill permitting at Valiente.

To the best knowledge of the Company there are no significant risk factors that may affect access, title or the ability to perform work on the property. However, natural resources exploration involves several risks many which are beyond the control of the Company such as:

1. Individuals or NGOs may initiate or undertake actions that could delay or interrupt access to an area.
2. National political risks.
3. Sever weather conditions, and natural disasters such as earthquakes.
4. Outbreaks of mosquito borne diseases such as dengue, yellow fever and malaria.

5. Accessibility, Climate, Local Resources, Infrastructure and Physiography

The project elevation lies between 1,000m ASL (above sea level) to 2,500m ALS. The topography is strongly influenced by the underlying bedrock and more resistant rock units such as limestones and quartz sandstones form topographic highs while softer sandstones and shales form topographic lows. The vegetation in the 800m to 1,400m ASL range is dominated by plantations of cacao, coffee and banana as well as grazing pasture mixed with minor patches of rain forest. At higher altitudes rainforest dominates the landscape.

From Lima the closest airport is in the town of Huánuco from where it takes two hours by car to reach Tingo Maria via highway 18A. Tingo Maria is the location of the Company's field office and the main population centre of the area with a population of 46,191 (Anon., 2024).

Access to the Property is along the different parts of the paved highway 5N. To Valiente the 5N runs between the city of Tingo Maria and Pucallpa ([FIGURE 1](#)) and to Pucacunga 5N between Pucallpa and Codo del Pozuzo. To Serrano and Serrano Norte access via smaller gravel roads from 5N highway with exists near Hermillio Validzan. Gravel roads exist within all project areas.

The project has a tropical climate with seasonal variations in rainfall. The dry season last between beginning of May and the end of October. The rain season peaks in January to March. The average annual precipitation in Tingo Maria is 2,890 mm. The average daily temperature in the Tingo Maria is 25.5°C with daily highs at 31°C and nightly lows around 21°C.

The project can be operated all year round, but locally access may be restricted in certain parts during the wet season due to rain fall and the subsequent impact on access roads.

6. History

6.1 PRIOR OWNERSHIP OF THE PROPERTY AND OWNERSHIP CHANGES

The Company has acquired the project by applying for mining licences from INGEMMET. There was no prior ownership to the mining licences.

6.2 HISTORIC WORK

6.2.1 Mineral Exploration

To the best knowledge of the author there are no previous mining licences in the area and the author is not aware of any mineral exploration activities at the Valiente project. In the 1990s the sub-Andean and Amazon basin was sporadically explored by Gitennes, Newcrest, BHP and WMC but records are sparse, and the mining law of Peru does not require exploration and mining companies to report data back to the government.

There are no records of drilling, and no historic mineral resources exist within the project area. There are both historic and active placer gold workings on the western side of the Valiente project area. This work is conducted by informal miners that are local to the area using gravitational gold separation techniques. The scale of the operations are minor and the production is unknown.

6.2.2 Petroleum Exploration

The Valiente project is in a zone that traditionally has been the interest of the oil and gas industry. Both 2D and 3D seismic surveys have been conducted in the adjacent Patchitea Basin and the entire area is covered by high-level regional spaced magnetic and gravimetric airborne surveys. The airborne surveys are from 2007 and 2013 respectively and the coverage in relation to the Company's project areas are shown in [FIGURE 2](#). Hannan has acquired the data and evaluated it from a mineral perspective.

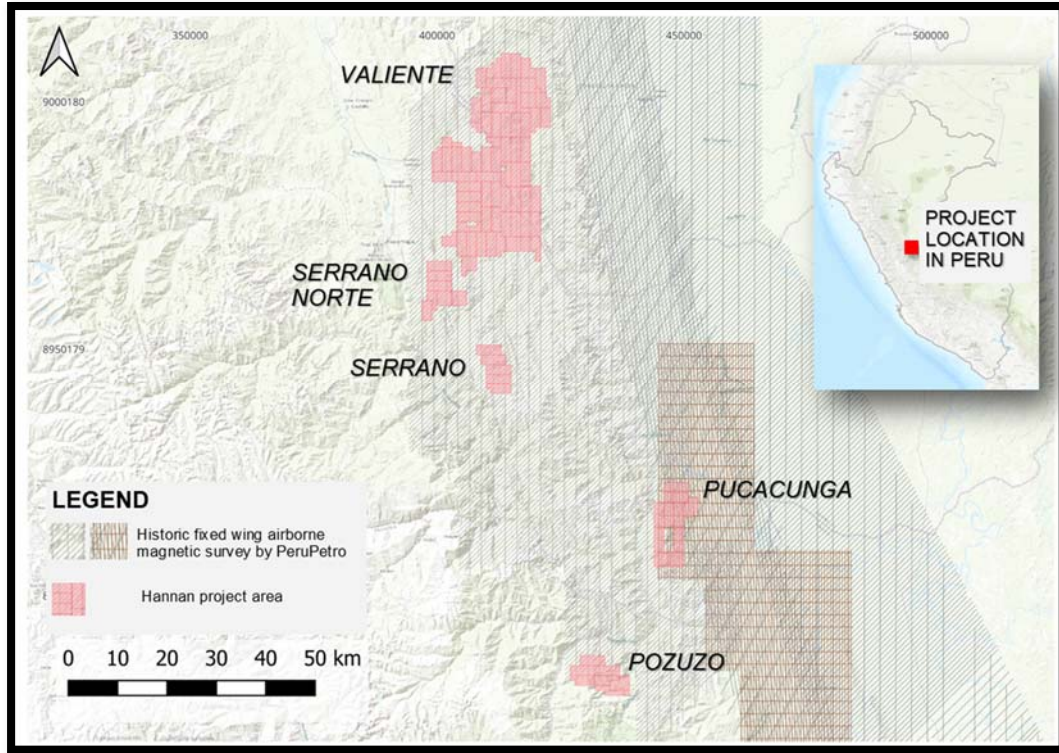


FIGURE 2.
Historic Airborne Magnetic Coverage

6.3 HISTORICAL MINERAL RESOURCES AND MINERAL RESERVES

There are no historical mineral resources or minerals reserves at the property.

6.4 PRODUCTION FROM THE PROPERTY

There is no current or historic production from the property.

7. Geological Setting and Mineralization

7.1 REGIONAL GEOLOGY

The Valiente project is in the Eastern part of the Peruvian Andean cordillera. The Andes is a continental scale mountain range that formed by subduction of the Nazca plate under the South American continent. The subduction started in the Jurassic and is still active. It dominates the entire west coast of South America, and it extends for over 7000km from Venezuela in the North to Chile in the South.

In Peru the Andes are broadly subdivided into the Cordillera Occidental, Cordillera Oriental, Altiplano and sub-Andean zone. The Cordillera Occidental corresponds to the bedrock of the Cenozoic magmatic arc, the Cordillera Oriental corresponds to a belt of exhumed Precambrian crystalline and Paleozoic sedimentary rocks. The two ranges are separated by the Altiplano, a relatively flat zone of narrow intermontane depressions. The Valiente project is located within the most eastern part of the Andes which is referred to as the sub-Andean (FIGURE 3). The sub-Andean marks the eastern boundary of the Andes and it is the transition zone to the vast Amazon Basin that covers large parts of the South American continent.

The sub-Andean is a thrust and fold belt formed by compression during the Andean orogeny. The main deformation took place during the late Miocene, but earlier Cretaceous stages of deformation have been recorded (Calderón, et al., 2017). The bedrock in the sub-Andean is dominated by Triassic to Paleogene sedimentary rocks that were deposited in both fluvial and marine depocenters. The general structural trends are NNW-SSE and parallel to the Andes. Evaporites are locally common, and salt is often localized in low angle thrust planes (Mobil Exploration and Producing Peru INC. , 1993). The rocks have not undergone any substantial degree of metamorphism.

Historically, igneous rocks in the sub-Andean area are rare but, in the literature, there are confirmed Miocene age intrusions near Tingo Maria and Codo del Pozuzo (INGEMMET, 1996) (Stewart, 1982). In addition, radiometric age determinations by the Company have confirmed Miocene intrusive centers in eight separate intrusions (Hannan, 2021).

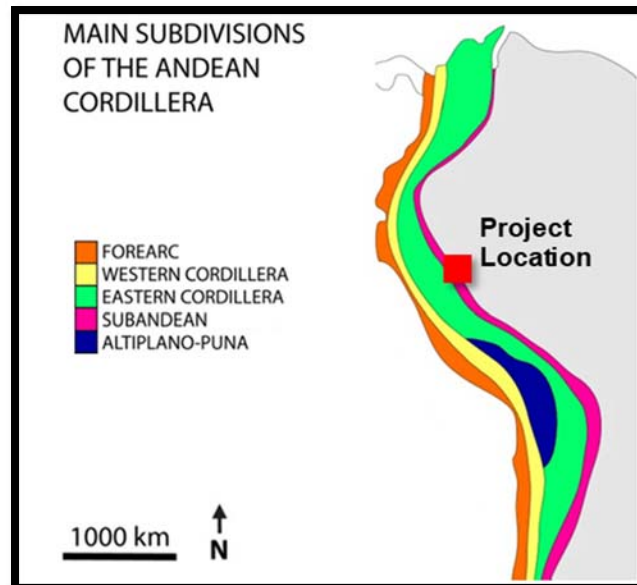


FIGURE 3.
Subdivision of the Andean Cordillera

7.2 LOCAL GEOLOGY

The Valiente project is in a 150km long and 40km wide thrust and fold belt in the sub-Andean zone. Mapping across the belt has been done by INGEMET (INGEMMET, 1997) (INGEMMET, 1996) and Occidental (OCCIDENTAL, 2003). Hannan's mapping varies in scale from more detailed 1:2,500 in the the tenured project areas of Valiente to regional reconnaissance mapping scale ([FIGURE 1](#)). Historic mapping was mostly focused on major roads exsting at the time the field work was done. This was coupled interpretations of remote data (INGEMMET, 1997). An overview of the mapping by INGEMMET is shown in [FIGURE 4](#) (INGEMMET, u.d.). This is the only mapping that covers the entire Valiente project.

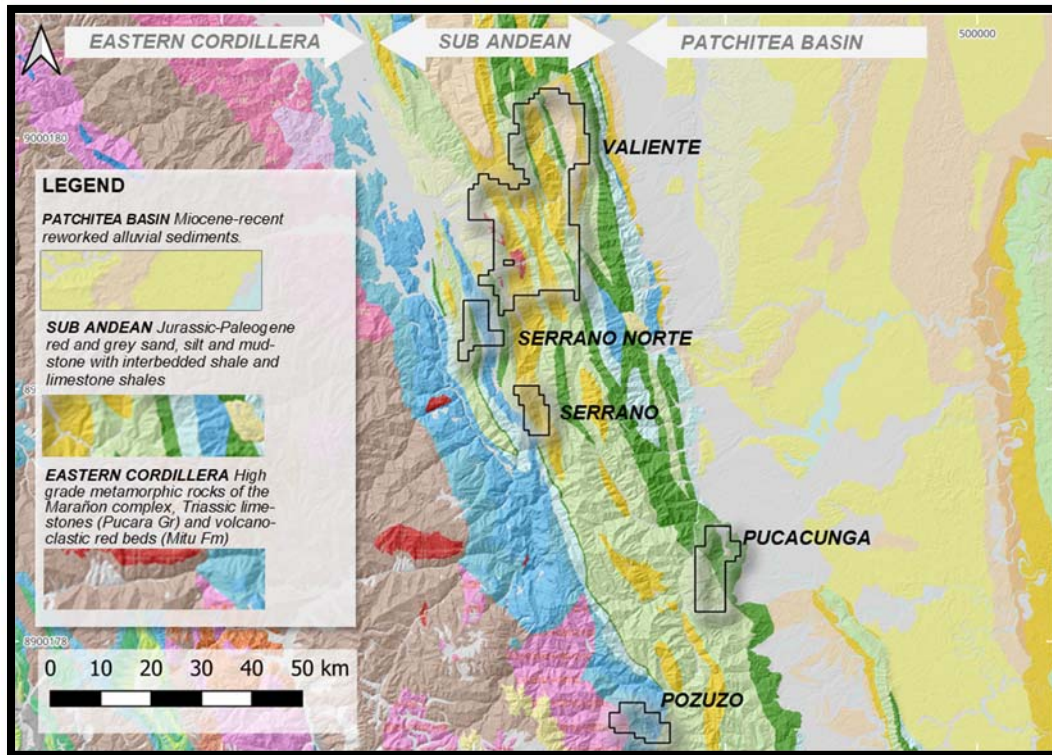


FIGURE 4.

Regional Geology Mapped by INGEMMET and Main Geological Domains

Structurally the belt is dominated by low to high angle thrust faults of both west and east vergence (OCCIDENTAL, 2003). The prevailing structural trends are NNW-SSW trending parallel to the Andean trend. Minor strike slip faults are recorded throuout the belt and are oriented oblique to the NNW-SSE striking Andrean deformation.

Salt deposits exists within the belt causing local deformation through halokinetic proccesess. The salt has also mobilized in in low angle thrust planes during Andean deformation thus forming an important part of the deformation history of the area.

Seismic data from adjacent contemporary sedimentary basins that are less deformed, such as Patchitea and Huallaga, can be used to correlate the stratigraphic sequence in the thrust and fold belt. The oldest outcropping sedimentary rocks are Triassic to Paleocene-age marine to fluvial rocks (Hurtado, et al., 2017) (Mobil Exploration and Producing Peru INC. , 1993). Miocene-age intrusive rocks have only been recorded from either outcrop or boulder samples (Hannan, 2021). The rocks are not altered except locally, where contact metamorphism caused by Miocene-age intrusions has altered sediments into hornfels, skarn or marble depending on the original sedimentary wall rock composition and relative heat gradient from the intrusion.

The stratigraphy of the belt can be subdivided into the following units. An overview is provided in [FIGURE 5](#).

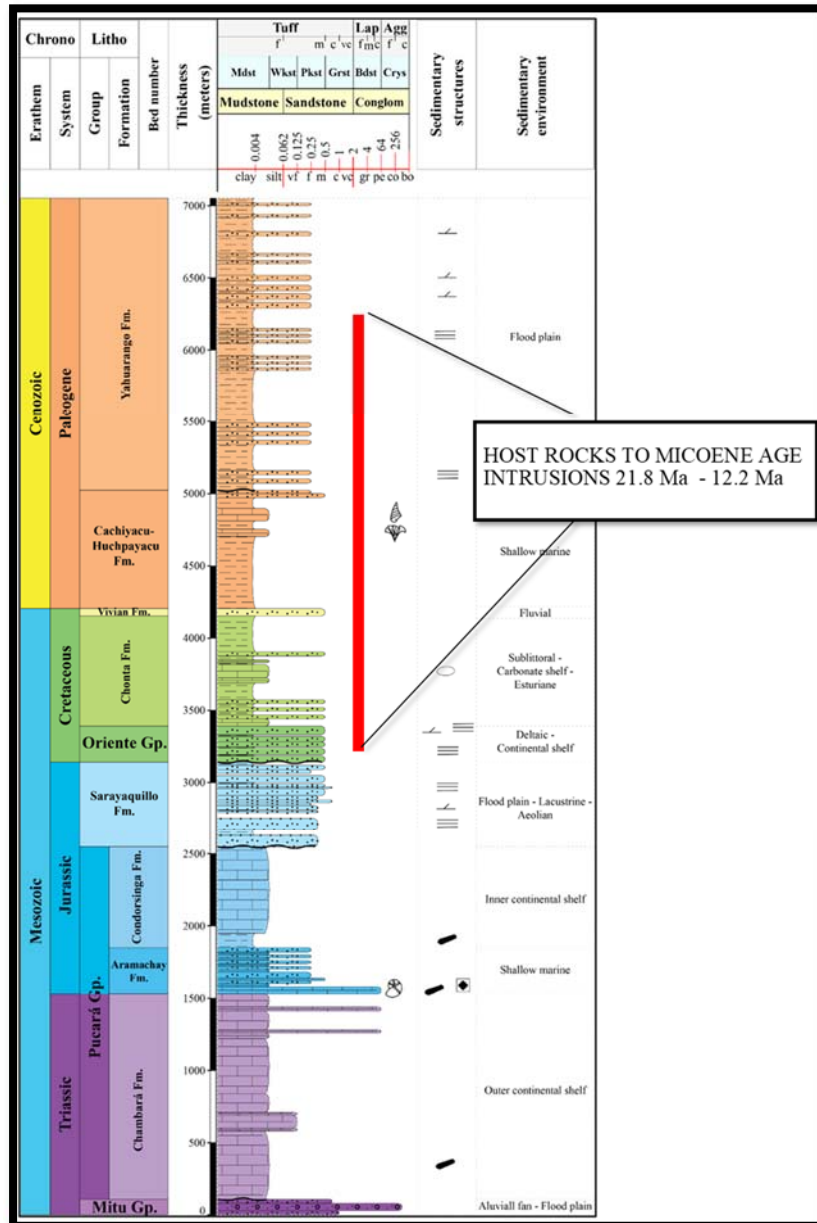


FIGURE 5. Stratigraphic Column of the Valiente Project

7.2.1 Stratigraphic Summary

7.2.1.1 *Mitu Group (Triassic)*

The Mitu Group is the lowest stratigraphic unit exposed in the thrust and fold belt that underlies the Valiente project. The rocks formed during a Triassic rifting phase relating to the breakup of Pangaea.

They have been extensively studied in southern Peru where they are well exposed. The Mitu Group is composed of red, siliciclastic rocks that are intercalated with alkaline lava flows, deposited in subaerial basins as alluvial fans and in fluvial systems. The Mitu Group is underlain by rocks of Carboniferous to Devonian age dominated by carbonates of the Copacabana Formation.

7.2.1.2 *Pareni Salt Formation (Triassic)*

Onset of subduction terminated the Triassic Mitu Rift (Spikings, et al., 2016) and the Pareni Salt evaporitic sequence was deposited (Mobil Exploration and Producing Peru INC., 1993), (Sempere & Cortina, 2018) (Carillo, et al., 2022)). The Pareni Salt Formation has played a critical role during the structural evolution and deformation of the sub-Andean zone due to halokinesis (Mobil Exploration and Producing Peru INC., 1993)

7.2.1.3 *Grupo Pucara (Triassic-Jurassic)*

The Pucara Group overlies the Pareni Salt Formation. It consists of limestone, dolomites and argillaceous limestone and shale. The Pucara Group is subdivided into three Formations. The lower and upper units consist of limestone and dolomites, whereas the middle unit, the Aramachay Formation, is dominated by black argillaceous limestone and shales.

The rocks of the Pucara Group were deposited in an epeiric (or inland) sea (Rosas, et al., 2007), or alternatively in an anoxic silled basin (Sempere & Cortina, 2018). The western margin was likely sealed which caused periodic flooding or flooding locally using structurally controlled inlets or passes with limited connectivity to the sea. The Pucara Group is overlain and grades into the Sarayaquillo Formation going eastward (Rosas, et al., 2007).

7.2.1.4 *Sarayaquillo Formation (Jurassic)*

The Sarayaquillo Formation consists of red sandstone, siltstones, and mudstones. There are grey to green units of sandstone and siltstone rich in carbonized plant fossils (Sánchez F & Herrera T, 1998). The Formation was deposited in an environment that was characterized by intense extension, a paleoclimate with high precipitation and dense vegetation.

7.2.1.5 *Grupo Oriente (Cretaceous)*

The contact between the Grupo Oriente and the underlying Sarayaquillo Formation is marked by an erosional unconformity. In adjacent basins this unconformity has affected paleohorsts with erosion of all Jurassic and Triassic units. Different interpretations have been proposed for the unconformity:

1. The Brazilian-Amazonian Jura orogeny (Calderón, et al., 2017).
2. A product of salt tectonics and related deformation of the Sarayaquillo – Pucara unit (Sempere & Cortina, 2018).

The deposition of Grupo Oriente marks the initiation of the Andean foreland. The Cushabatay formation is the first unit to be deposited and it is dominated by grey to white quartz sandstones, mainly composed of hyaline quartz, rare muscovite, clay minerals and carbonaceous material (Sánchez F & Herrera T, 1998).

The Cushabatay Formation is overlain by the Esperanza Formation which is composed of a marine sequence of pyritic shales and grey pelite. The upper part is dominated by shale and subordinate grey siltstones and sandstones with glauconite. The upper most unit of Grupo Oriente is Agua Caliente Formation. It is composed of grey sandstones and siltstones formed in a costal delta environment. (Sánchez F & Herrera T, 1998)

7.2.1.6 Chonta and Vivian Formation (Cretaceous)

Sedimentation during the Cretaceous continued with deposition of grey and greenish siltstones and micritic limestones (Chonta Formation) which are overlain by fine grained white sandstones (the Vivian Formation) (Sánchez F & Herrera T, 1998).

7.2.1.7 Paleogene to Pleistocene

During the Paleogene further mudstone intercalated with grey sandstone and limestone were deposited. The main stages of Andean deformation took place in the Middle Eocene and Late-Early Miocene. The latter corresponds with the deposition of sandstone and conglomerates.

The Tulumayo Formation is a young alluvial / colluvial deposit that is approximately 100m thick (INGEMMET, 1996). It is made of conglomerates with clasts of intrusive rock and red quartz and feldspar sandstone. It rests unconformably on the Cretaceous Chonta Formation (INGEMMET, 1996).

7.2.1.8 Intrusive Rocks

Intrusive rocks have been recorded by both INGEMMET while conducting regional mapping (INGEMMET, 1996) and by Occidental during petroleum exploration (OCCIDENTAL, 2003). Of importance are monzonite stocks at Topa and Hermillio Validzan which were dated with K-Ar to 27Ma. INGEMMET and Occidental reported evidence of the intrusive rocks in the Codo Del Pozuzo area but without age determinations (OCCIDENTAL, 2003) (INGEMMET, 1997). However, INGEMMET described contact relationships with wall rocks that suggests these are of Miocene age.

Hannan has conducted radiometric age (U-Pb) determinations of outcrops and boulders sourced from well-defined catchments. The work supersedes the age determinations by INGEMMET (INGEMMET, 1996) and demonstrates that there are multiple intrusions of Miocene age within the project area.

The result of the radiometric dating is illustrated in [FIGURE 6](#).

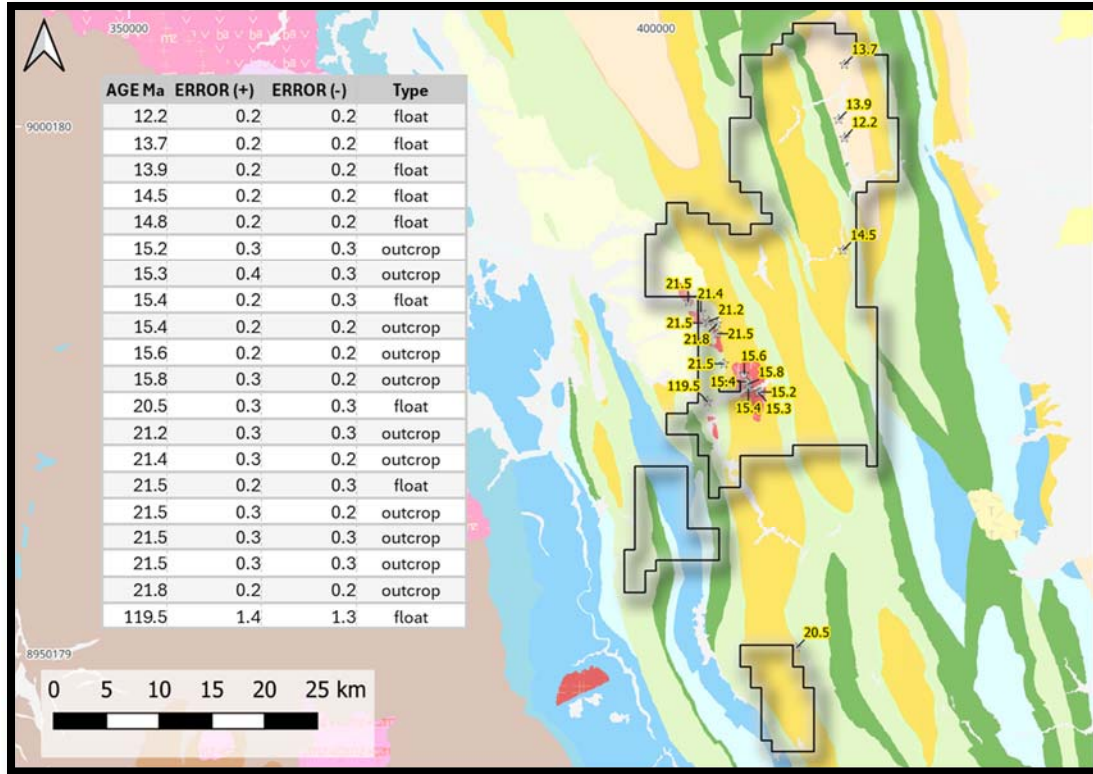


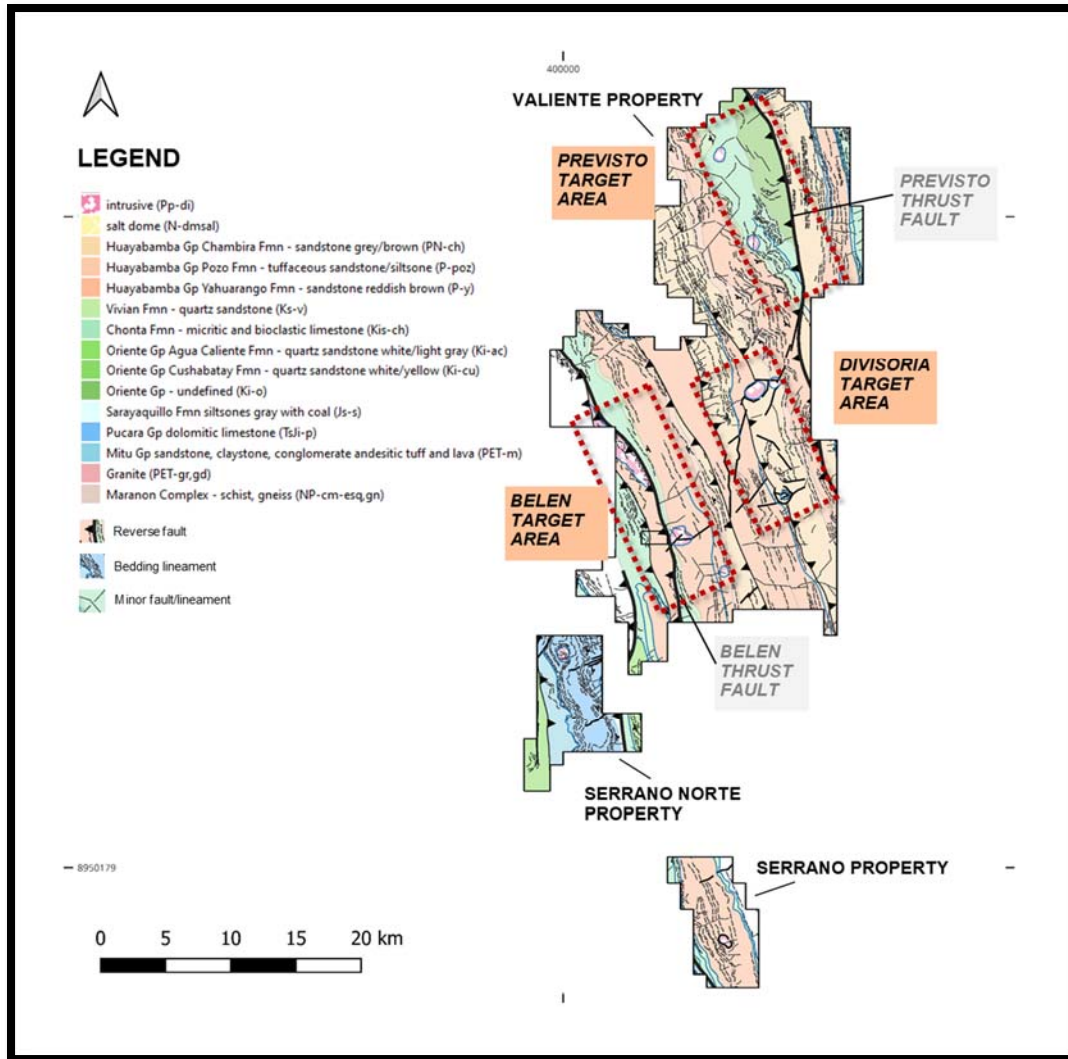
FIGURE 6.
Results of Hannans Radiometric Dating at Valiente

7.3 PROPERTY GEOLOGY

The detail of the geological work varies across the Valiente project and in large parts the interpretations rely on remote data and historical work by INGEMMET (scale of 1:50,000). The Company has conducted more focused work between 2021 to 2024 at the scale of 1:2,500 to 1:20,000 in specific target zones where mineralization has been discovered. The account below summarizes Hannan's work which supersedes the previous workers.

7.3.1 The Valiente Property

The Company has completed a stereoscopic interpretation of medium resolution topographic data, being ALOS PALSAR (with 15m to 20m resolution) and Sentinel-2 satellite imagery. Integration of INGEMMET geological mapping with Hannan's mapping and the latest project-wide resolution of satellite data has provide an interpretation shown in [FIGURE 7](#). This was completed by the external consultants "Gavin Daneel & Associates". The size of the interpreted area is 70km x 35km.



The Valiente property is dominated by Cretaceous to Paleogene sediments that are located in NNW-SSE trending thrust and fold belt with low angle east and west verging thrust faults. Structural control of the intrusions appears to be a combination of NNW-SSE thrust faults and the intersection of NNE-SSW strike-slip fault system. Within this corridor which extends for some 50km across the property Hannan and INGEMMET mapping has identified eight intrusions, with confirmed Miocene ages from radiometric dating. In the satellite data intrusions are often characterised by rounded positive or negative topographic expressions, concentric lineaments and an absence of sedimentary formlines.

The mapped and inferred intrusions are located parallel to two Andean NNW-SSE structural trends marked by regionally significant thrust faults named the Previsto and Belen Faults. The target areas are named after these two fault systems, the westernmost Belen zone, is mapped at 1:2,500 to 1:5,000 scale and includes at least two porphyry targets (Ricardo Herrera and Sortilegio), and one epithermal target (Vista Alegre) within a 10km strike (FIGURE 7). The mapped geology of the Belen zone is shown in FIGURE 8.

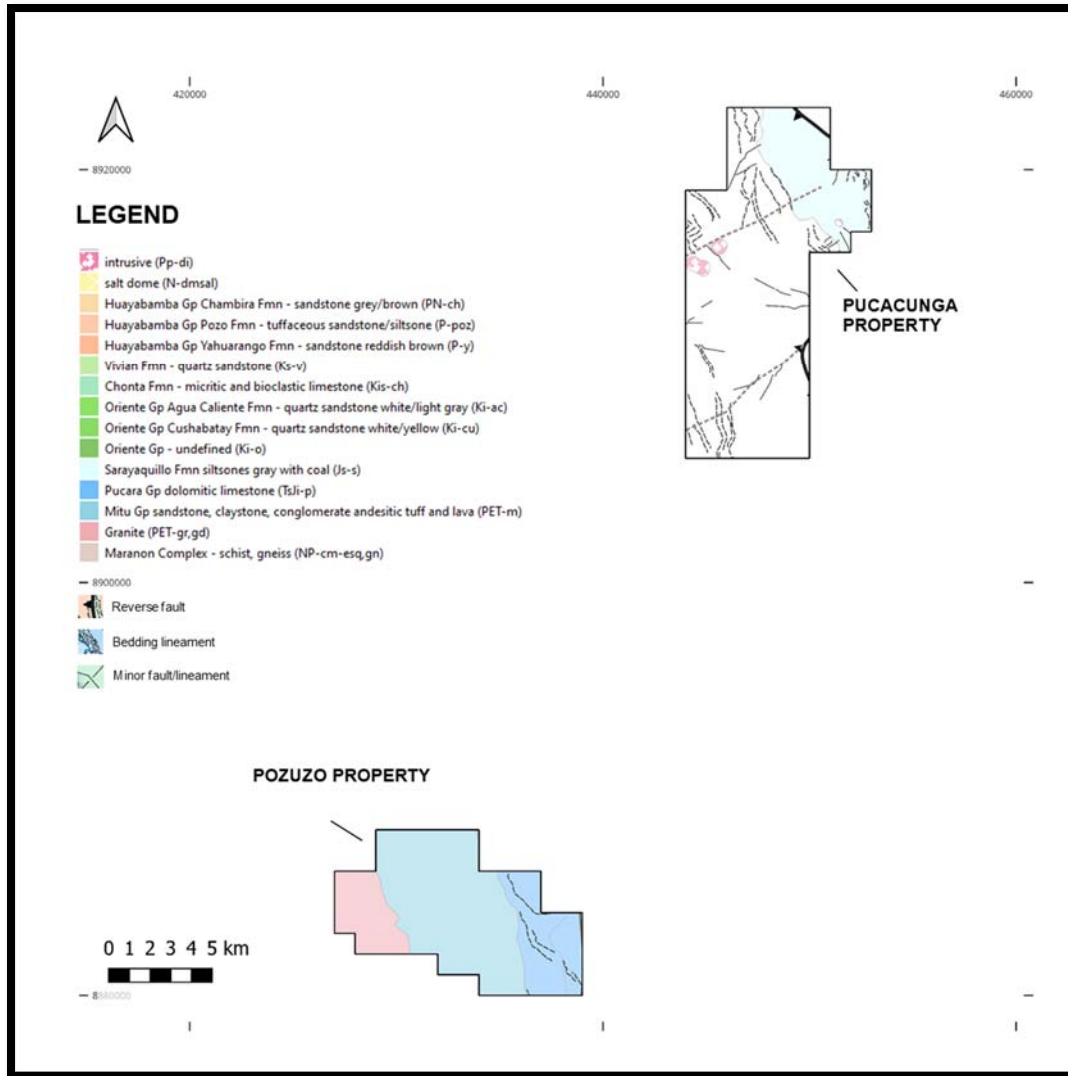


FIGURE 8.
Valiente Property Geology Interpreted by Hannan

The eastern most target area, Previsto with porphyry and epithermal targets, is located 20km east and is a 20km x 10km large area which is currently being mapped and sampled by Hannan (April 2024).

A third target area is located in between these two areas called Divisoria (FIGURE 7). It is structurally located on a NE-SW trending fault splay and hosts a larger Miocene intrusive complex with smaller satellite intrusions.

7.3.1.1 *Belen Zone: Geology of Ricardo Herrera Copper Target Area*

Hannan has mapped a porphyry intrusion at Ricardo Herrera at 1:2,500 scale and has conducted geochronology and shortwave infrared (SWIR) spectrology on hand samples to characterize the alteration.

The intrusion consists of a multistage Miocene-age porphyry stock intruding mudstone and siltstone of the Yahuarango Formation (Hannan, 2021) ([FIGURE 9](#) and [FIGURE 10](#)). It covers an area of 1,700m x 950m and is composed of six distinct zones classified after intensity of mineralization, alteration, and veining:

1. PRECURSOR

A phaneritic intrusive rock of diorite composition. This is the oldest intrusion based on contact relationships to wall rock and is dated 21.5Ma (Hannan, 2021)

2. EARLY PORPHYRY ONE

A feldspar porphyry with subordinate hornblende phenocrysts. Characterized by intermediate argillic (chlorite from secondary biotite-white micas), relicts of potassic alteration (secondary biotite-magnetite) with “EB” type veinlets (early biotite), “M” type veinlets and few type “A” veinlets. Pyrite dominates over chalcopyrite. Radiometric age 15.8Ma.

3. EARLY PORPHYRY TWO

A quartz-feldspar porphyry with phyllic alteration where sericite dominates over silica in the grey ground mass. Cut by type A quartz veinlets with pyrite-chalcopyrite. The sulphide mineralization is strongly leached and copper anomalous iron oxides are dominated by goethite and jarosite in veinlets as well as copper oxides such as neotocite. Radiometric age 15.4Ma.

4. INTERMINERAL PORPHYRY

Both feldspar hornblende porphyry and hornblende porphyry. Appears to be multiphase with fine hornblende phenocrysts and magmatic magnetite. Supergene argillic alteration (montmorillonite) and propylitic alteration (chlorite, epidote, pyrite calcite). Xenoliths with A type veinlets have been observed. Trace sulphide minerals are dominated by pyrite-jarosite. Radiometric age 15.6Ma and 15.3Ma.

5. LATE PORPHYRY

Brown feldspar hornblende porphyry. With feldspars within brown ground mass. Intrudes the sediments of the Yahuarango Formation. Mostly unaltered or weakly propylitic (epidote>chlorite). Radiometric age 15.2Ma.

6. HORNFELS ALTERATION AUREOLE

Biotitic hornfels with chlorite-epidote and calcite veinlets. Trace disseminated pyrite.

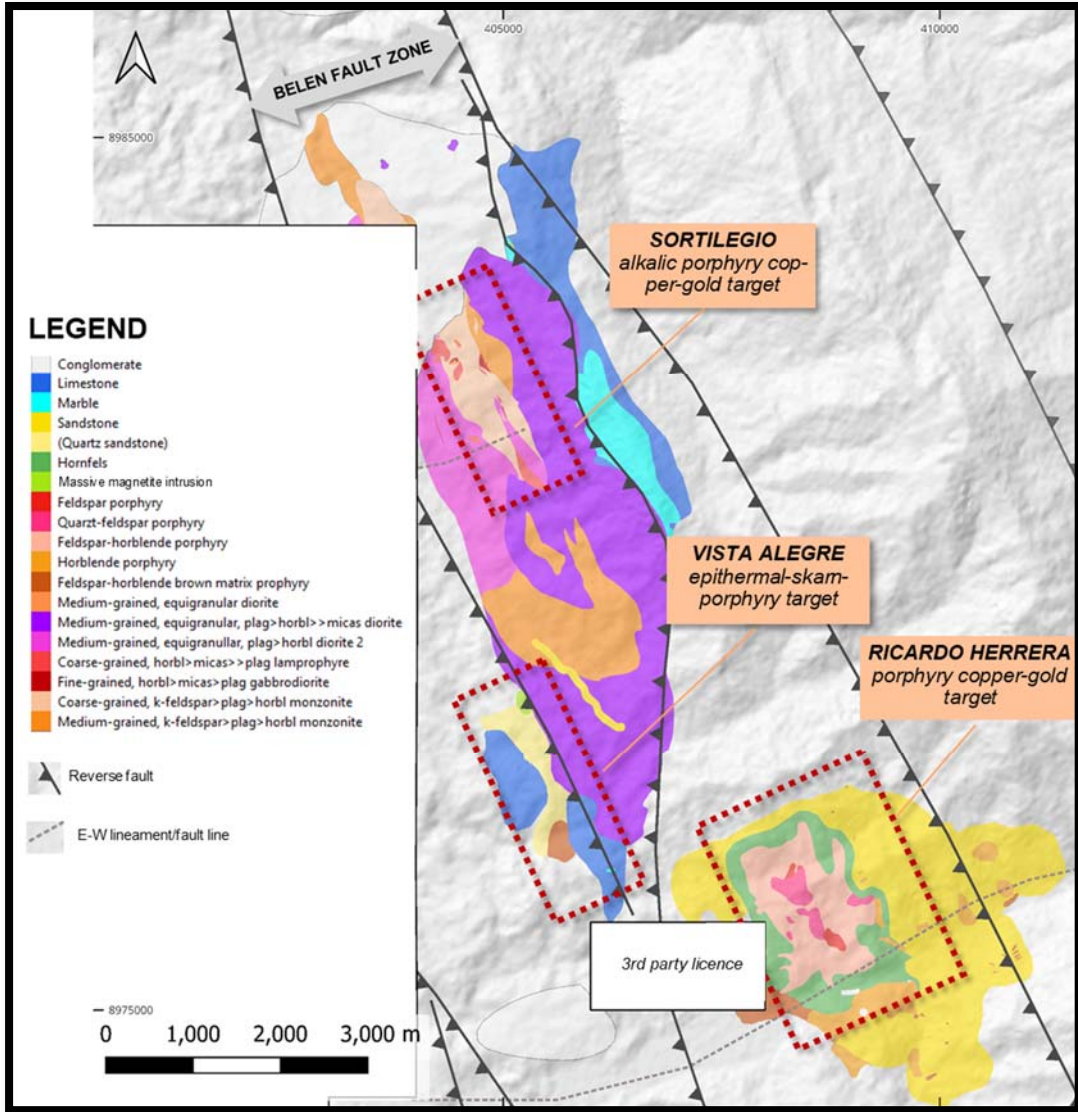


FIGURE 9.
Geology of the Belen Zone

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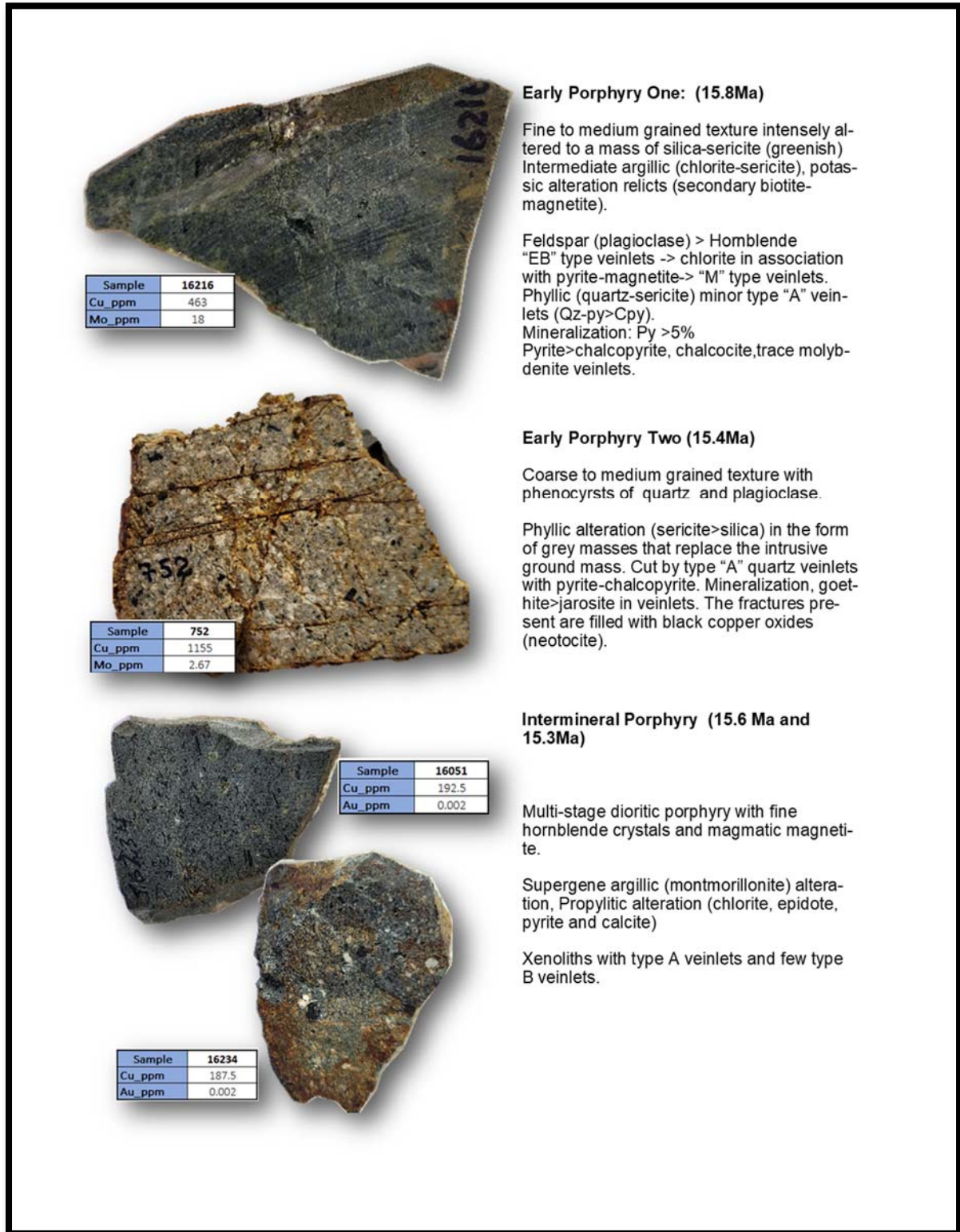


FIGURE 10.
 Representative Rock Photos of Key Geological Units at Ricardo Herrera

Alteration Mineral Assembly ([FIGURE 11](#))

1. PROPYLITIC ALTERATION

In Ricardo Herrera the rocks are characterized by their green hue. The mineralogical assemblage is chlorite epidote+calcite+pyrite and is found both in the wall rock to the intrusion and in the intrusive stock itself.

2. ARGILLIC ALTERATION

This alteration develops in the central zone and in high elevations of Ricardo Herrera. It is present in Early Porphyry Two. Locally it is found making an overprint to the grey aggregates of phyllic alteration. Near topographic highs it is replaced by supergene argillic alteration dominated by montmorillonite.

3. POTASSIUM ALTERATION

Found in the topographically lowest areas of the of the intrusion, mainly in the San Pablo creek. Characteristic minerals are secondary biotite and magnetite +- potassium feldspar. It is associated with the presence of type E-B (early biotite) veinlets and type "M" veinlets.

4. INTERMEDIATE ARGILLIC ALTERATION

This alteration is associated with early porphyry (1) that outcrops in the lower levels of the boundary between Ricardo and San Pablo. Locally it is found replacing aggregates and veinlets of biotite secondary to chlorite.

5. PHYLIC ALTERATION

This is associated with early porphyry (2) in Ricardo Herrera and San Pablo. It is composed of grey masses of silica-sericite that replace the matrix of the early porphyries. Type A quartz veinlets are found with a halo of white sericite.

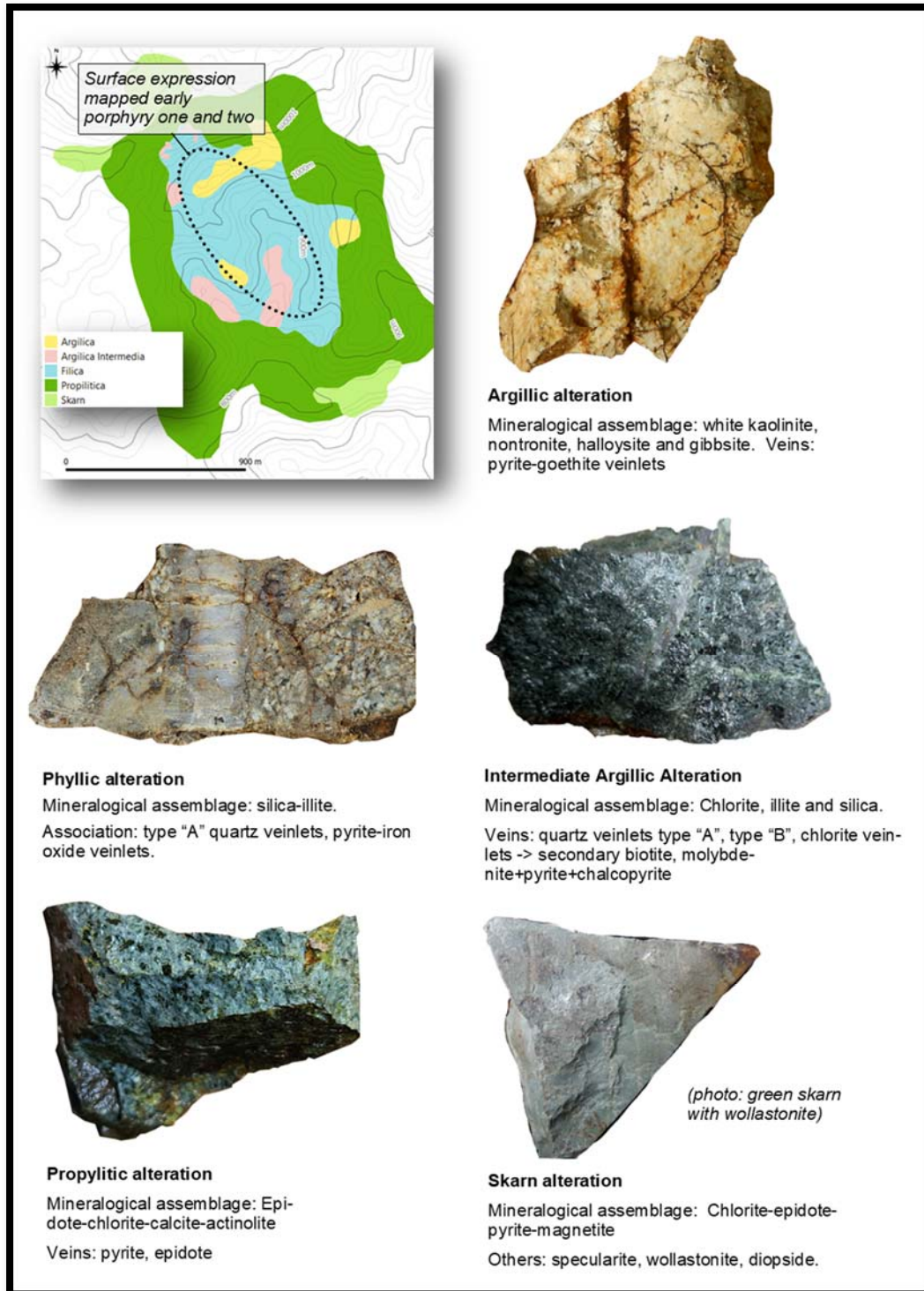


FIGURE 11.
Representative Rock Photos of the Alteration at Ricardo Herrera

7.3.1.2 Significant Mineralized Zones at Ricardo Herrera

Surface mapping by Hannan shows that the strongest mineralization is hosted by the Early Porphyry One and Early Porphyry Two. These porphyry stocks represent the zones of strongest alteration, mineralization and veining of the intrusions. This style of mineralization is pervasive and occurs in both disseminated form as well as in veins and veinlets. The mapped surface footprint covers an area of 1,000m x 275m. Surrounding the early porphyry stocks is an intermineral porphyry with lower intensity of alteration and mineralization.

In the Early Porphyry One and Two, copper mineralization that is exposed at surface is strongly affected by supergene weathering and leaching of the sulphide minerals. There are some notable differences to the style of mineralization in Early Porphyry One compared to Early Porphyry Two. In the former, copper mineralization is hosted by millimetric veinlets of pyrite-chalcopyrite-chalcocite-molybdenite and dissemination of sulphides. In the latter the copper mineralization is hosted by veins (Type A) and veinlets of pyrite-chalcopyrite. In the leached zone primary copper minerals have been replaced by jarosite-goethite and neotocite.

Hannan has carried out systematic channel samples of outcrop exposures in creeks and hill sides. However, only a few percent of the porphyry is outcropping and sampling may not cover the best parts of the porphyry stock. Most channel samples by the Company are from the leached zone of Early Porphyry Two. The channel results are summarized in the [TABLE 5](#) and location of channels shown in [FIGURE 12](#).

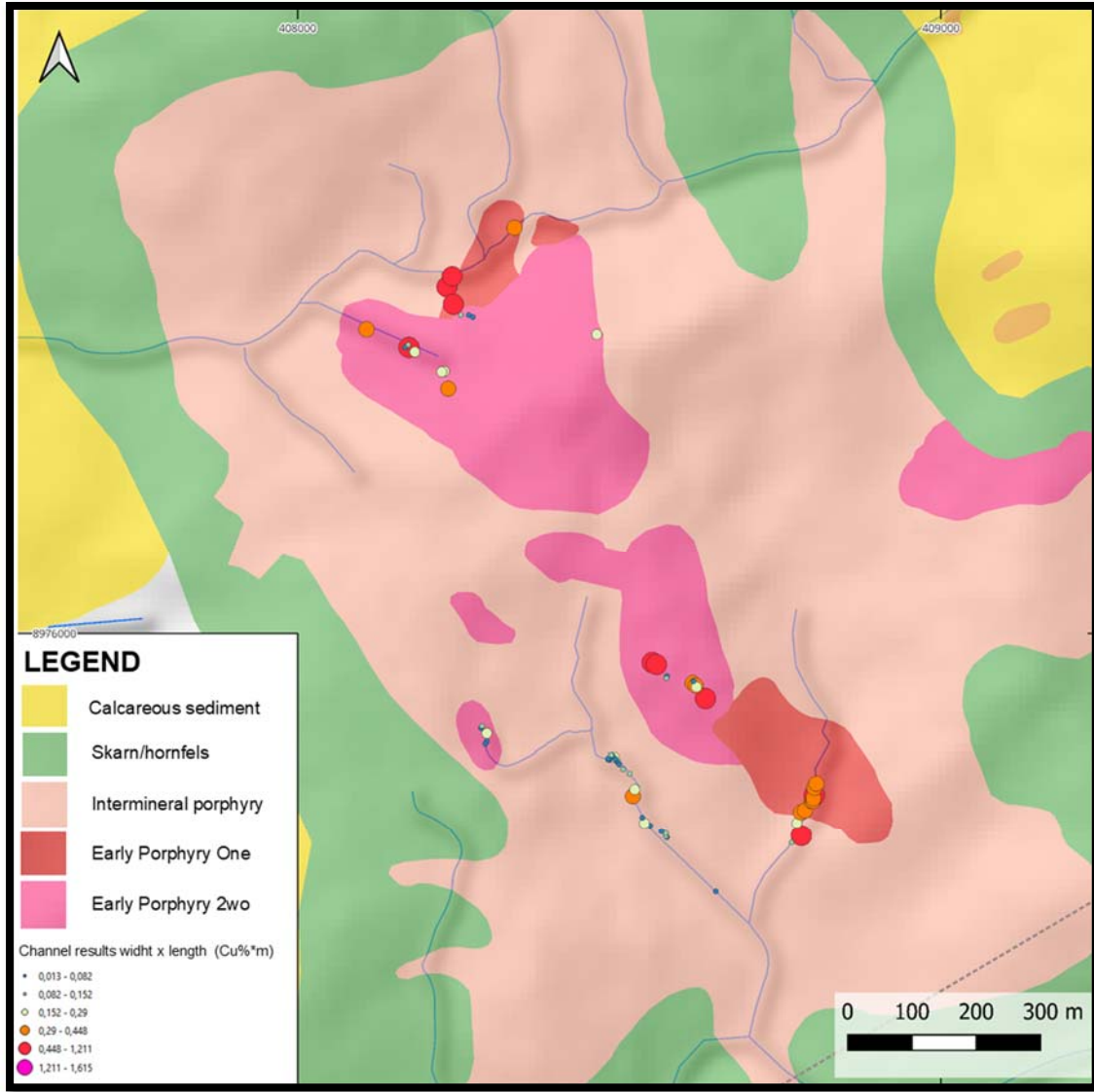


FIGURE 12.
Location of Channel Samples and Results at Ricardo Herrera

TABLE 5.
Channel Results Ricardo Herrera
(Showing Channels with Copper >500ppm)

Channel	From (m)	To (m)	Interval (m)	Cu ppm	Au ppm	Mo ppm
CH14345	2	8	6	565	0.001	34.73
CH16133	0	4	4	725	0.002	1.46
CH16135	0	5.5	5.5	653	0.001	0.84
CH16137	2	8	6	675	0.006	2.37
CH16140	0	2.6	2.6	1,425	0.002	1.12
CH16142	0	2.5	2.5	606	0.002	1.51
CH16143	0	6	6	581	0.016	1.19
CH16148	0	2.7	2.7	1,300	0.001	1.08
CH16149	2	7	5	681	0.003	2.60
CH16153	2	8	6	486	0.012	2.12
CH16178	8	10.3	2.3	500	0	81.00
CH16201	0	8	8	733	0.009	0.95
CH16205	0	2	2	735	0.003	0.58
CH16206	0	4	4	626	0.012	0.53
CH16208	0	4	4	724	0.044	0.63
CH16210	0	6	6	624	0.006	1.36
CH19123	0	3.5	3.5	786	0.034	0.55
CH3995	0	5	5	1,105	0.005	5.22
CH682	0	4	4	801	0	4.35
CH739	0	7.4	7.4	687	0.003	3.01
CH743	0	3.8	3.8	1,308	0.001	0.91
CH749	0	6	6	615	0.036	8.66
CH751	0	2.4	2.4	1,350	0.003	1.71
CH752	0	1.6	1.6	1,155	0.014	2.67

The continuity of the mineralization hosted by the Early Porphyry One and Two have been inferred from mapping, rock sampling and detailed soil sampling over a surface area of 1,000m x 750m. There has not been any drilling on the target to investigate the depth continuity although IP geophysics as described below shows an IP response to 500m depth.

The outer parts of a potential enrichment zone are exposed in creeks topographically below the leached zone. Here, the mineralization is locally associated with chalcocite and covellite.

7.3.1.3 *Geology of the Vista Alegre Gold Target*

Vista Alegre is a multi-signature target with characteristics of epithermal, porphyry and skarn mineralizing system over a 5km trend parallel to the Belen Fault zone ([FIGURE 8](#)). The target is defined by mineralization in large boulders and systematic soil sampling. This area is characterized by relatively flat topography with few outcrops. Hannan has mapped the area in 1:5,000 scale by reviewing creeks and making hand dug pits to view windows of bedrock. Due to the topography, detailed contact relationships are unknown.

Broadly five geological units have been identified during mapping ([FIGURE 8](#)). The oldest rocks are Cretaceous to Paleogene sedimentary rocks such as mudstones, siltstones, and limestone. These are structurally juxtaposed against a Miocene-age (21.5Ma) phaneritic intrusive rock of diorite composition. The northern part of Vista Alegre is dominated by a phaneritic intrusive rock of monzonite composition where K-feldspars dominate over hornblende. Finally, a brown feldspar porphyry, unaltered and interpreted to be “late porphyry” intrudes the sediments and the limestones in the southern part of the Vista Alegre.

Structurally the sediments and the phaneritic intrusive are separated by an NNW-SSE trending Andean thrust fault named the Belen Fault Zone. This fault has been mapped over tens of kilometres and is interpreted to be of regional significance. Young undeformed massive to semi-massive magnetite bodies intrude the thrust fault and they have been mapped in two locations.

Propylitic alteration has been mapped in the diorite intrusive and marbleization has been recorded in the limestone. Other styles of alteration may be overprinted by intense supergene weathering which dominates the area.

7.3.1.4 *Significant Mineralized Zones at Vista Alegre*

Mineralization at Vista Alegre has a multi-signature character of both epithermal, skarn and porphyry style of mineralization. Examples of mineralized rocks are shown in [FIGURE 13](#). Outcrops are rare in the area and mineralization is known from large resistant siliceous boulders and gold anomalous soil samples, suggesting that mineralization extends over 3km of strike. Porphyry and skarn mineralization is inferred from an IP orientation survey and is discussed further under the section “Exploration”.

The siliceous boulders are up to 1m³ in size and show a strong correlation between milky quartz, pyrite and chalcopyrite. Chalcopyrite rich samples are commonly gold bearing. Gold mineralization has also been recognized in strongly weathered diorite outcrops exposed in a creek. The gold is hosted by sporadic and discontinuous sulphide veins dominated by iron oxides and with partly preserved pyrite. Grid soil sampling on 100m x 100m and 25m x 25m spacing has identified two gold trends, one that overlaps with the mineralized boulders and the regional Andean thrust fault. The other is located on top of a hill in an area mapped as sandstone and mudstones. The combined strike of both gold trends is 3km.

The mineralization at Vista Alegre has never been drilled and there is no information about the depth continuity. An IP geophysical orientation survey has been conducted with positive results and it is discussed further under the section “Exploration”.

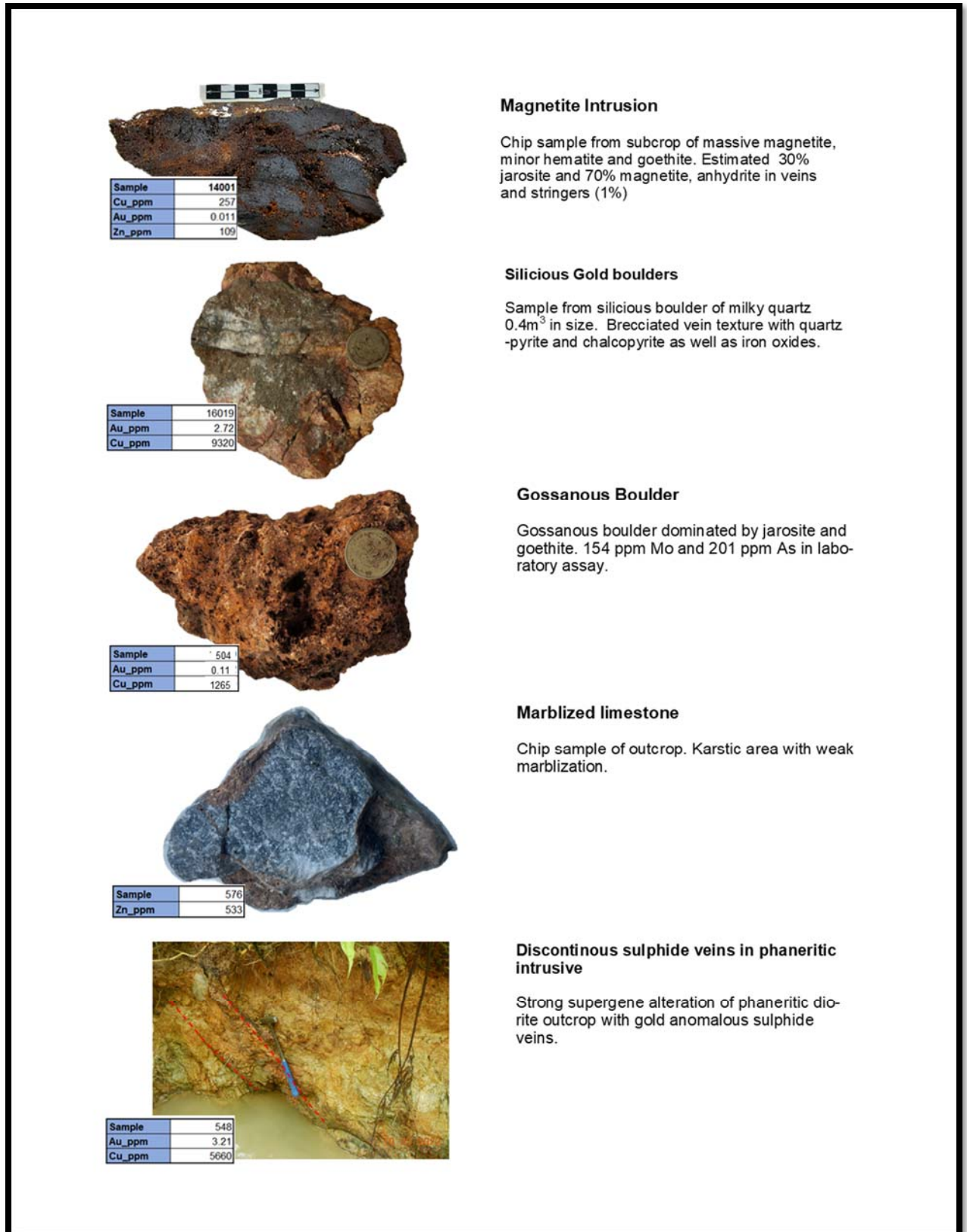


FIGURE 13.
Examples of Mineralized Rocks at Vista Alegre

7.3.1.5 Geology of the Sortilegio Copper Gold Porphyry Target

Sortilegio is a porphyry copper gold target in the same structural trend as the previously mentioned Ricardo Herrera and Vista Alegre prospects. Sortilegio is located 6km north of Ricardo Herrera ([FIGURE 8](#)). It has been mapped by Hannan at 1:2,500m scale.

The bedrock of the Sortilegio area is characterized by a multistage intrusive event with complex cross-cutting relationships. The event was dated (U-Pb) by Hannan to belong to the Miocene epoch (21.8-21.2Ma). The rocks are composed of diorite to monzonite intrusions, gabbro pyroxenite / lamprophyre and a late stage of megacrystic k-feldspar rich monzonite. The intercutting relationships are mostly gradational, and the rocks vary from gabbro, pyroxenite / lamprophyre to monzonite. The monzonite is mostly K-feldspar megacrystic with a pegmatitic texture. The youngest rocks mapped are thin porphyritic dykes and veins and they are inferred to be contemporary with mineralization. Examples of different the different rock types are shown in [FIGURE 14](#).

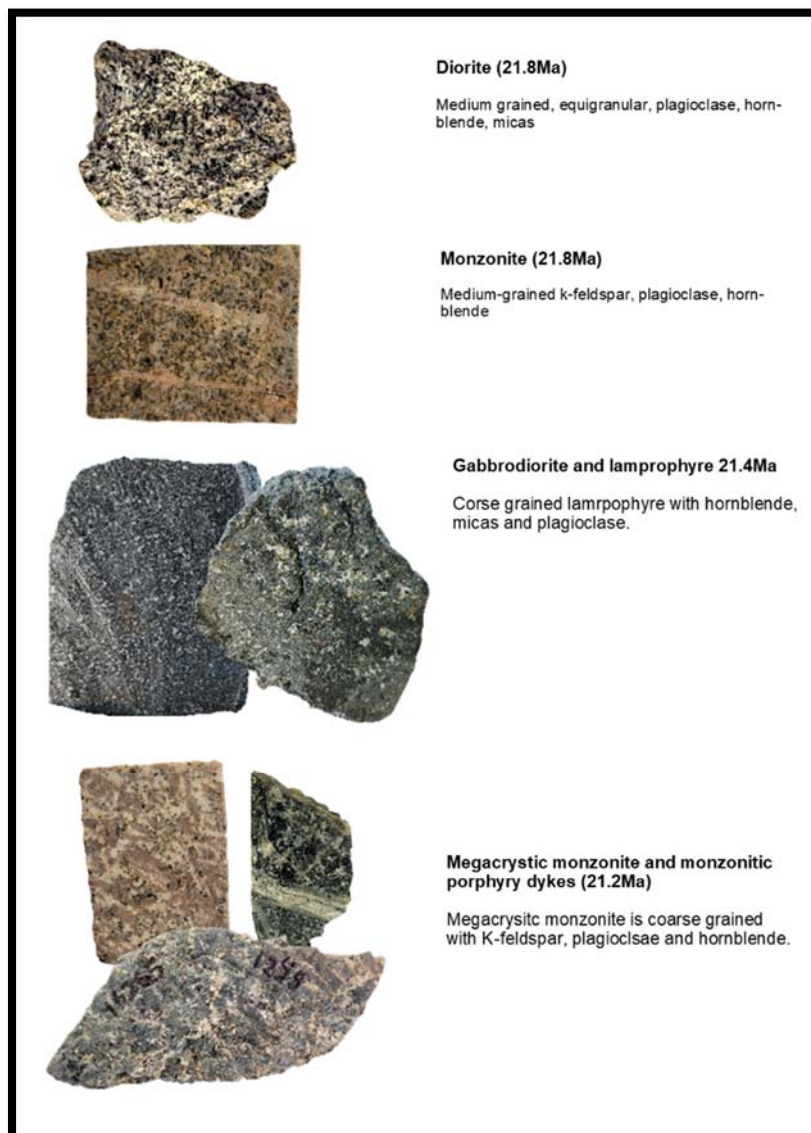


FIGURE 14.
Representative Rock Photos from Sortilegio

Alteration at Sortilegio is subtle and often difficult to distinguish from the regional propylitic alteration that is common in the area. Field mapping suggests that calc-sodic alteration assemblages such as chlorite, actinolite, epidote and albite are more commonly associated with mineralization (FIGURE 15). Potassic alteration, manifested by hydrothermal biotite K-feldspar alteration exists in some zones but is often challenging to map due masking by the composition of the host rocks. Zones of phyllic alteration are rare in the area but when observed, they are pervasive and appear structurally controlled and strongly mineralized.



FIGURE 15.
Representative Photos of Mineralization and Alteration at Sortilegio

7.3.1.6 Significant Mineralized Zones at Sortilegio

The mineralization overprints all rocks in the area. It is characterized by a zoned stockwork / veinlets of goethite-hematite veinlets with relicts of sulfides. In places thin porphyry dykes and “fingers” carry mineralization.

Zoning intensity is mapped by veinlets / m and vein brecciation and is strongest at the contact of the K-feldspar megacrystic monzonite ([FIGURE 16](#)). Two broad groups have been used to outline more strongly mineralized areas. The most prospective reaches >20 veinlets / m over 350m x 350m and is located within a broad halo of lower intensity veining 10 to 20 veinlets / m. The enveloping surface of the target measures 1,500m x 600m in size and within it there are core zones with >20 veinlets / m.

High grade mineralization has also been discovered in boulders. These boulders are gossanous with remnants of secondary biotite with 4 boulders assaying up to 16% Cu and 4.39 g/t Au with a range of 33ppm Cu to 16% Cu and 0.13 g/t Au to 4.39 g/t Au.

All channel results are summarized in [TABLE 6](#) and in [FIGURE 16](#). The highest-grade channel relates to a 4m wide exposure with strong phyllic alteration, secondary copper oxides and specular hematite assaying 3.7m @ 0.44% Cu. Further channel sampling at Sortilegio has been directed by outcrops in creek beds. Forty-two channels from the core zones with >20 veinlets / m were sampled by diamond saw. Of these, 26 channels averaged 3.3m @ 687ppm Cu and with a maximum of 4,365ppm Cu and minimum of 258ppm Cu with individual channel lengths between 0.8m to 10m.

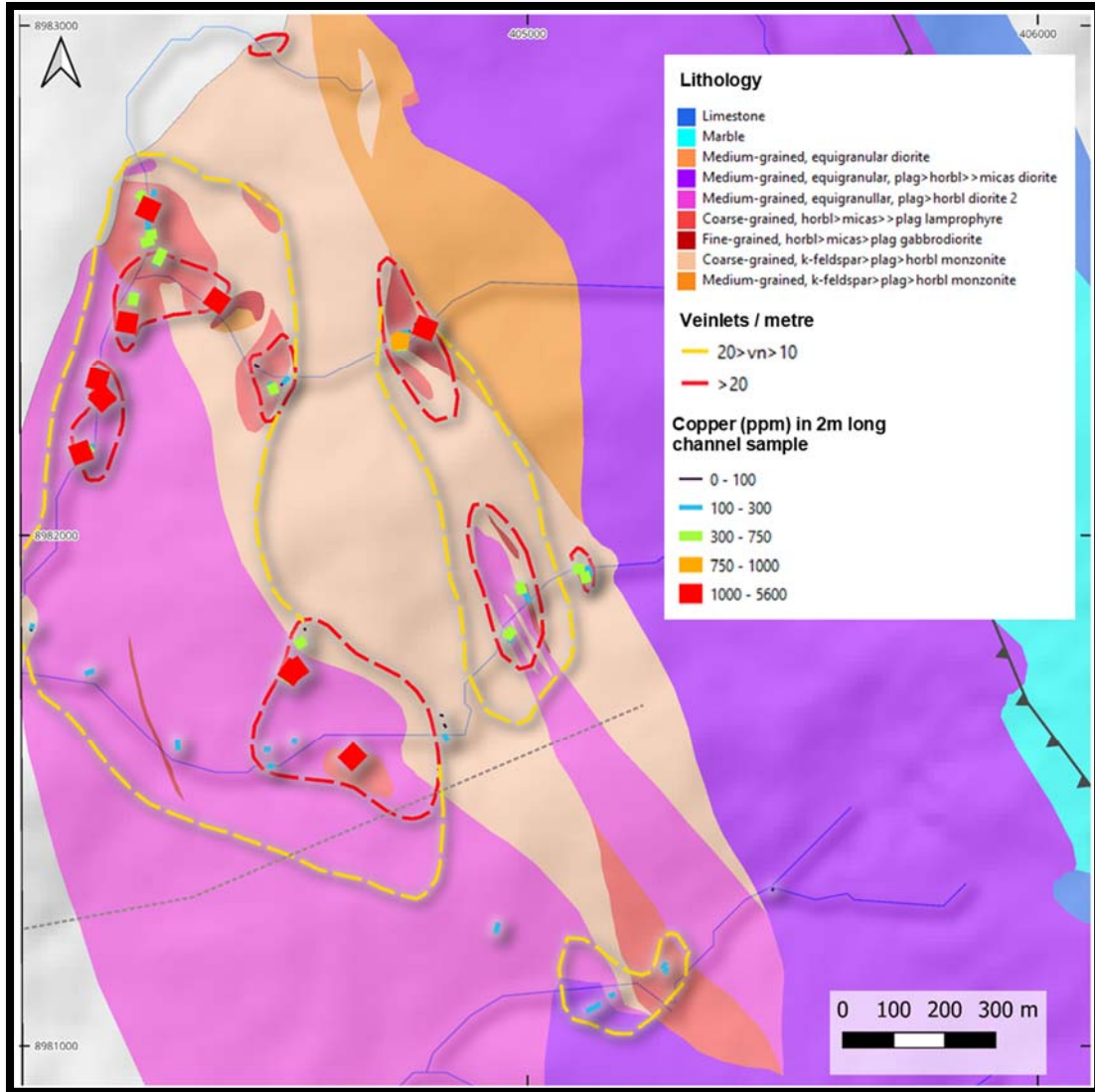


FIGURE 16.
Channel Results at the Sortilegio Target

TABLE 6.
Channel Results from Sortilegio Showing Results >500ppm Cu

Channel	From (m)	To (m)	Interval (m)	Cu ppm	Au ppm	Mo ppm
CH13645	14	16	2	1,085	0.019	0.22
CH13673	0	0.8	0.8	1,690	0.004	0.85
CH13675	3.8	4	0.2	1,675	0.75	1.46
CH13718	0	1.95	1.95	954	0.001	0.47
CH13722	0	1.8	1.8	1,165	0.008	0.50
CH13723	0	1.7	1.7	2,240	0.021	0.39
CH13724	0	1.6	1.6	1,635	0.006	4.11
CH13827	4.2	6.3	2.1	634	0.002	0.49
CH13952	0	3.5	3.5	583	0.001	0.28
CH13967	4	8	4	914	0.014	0.62
CH14017	0	4	4	1,193	0.008	0.21
CH16076	0	1.2	1.2	656	0.003	0.32
CH16077	0	3	3	667	0.01	0.40
CH16090	1	3.5	2.5	876	0.001	0.56
CH16093	0	4.5	4.5	510	0.007	0.49
CH16095	3.5	5	1.5	844	0.01	0.27
CH16098	0	2.2	2.2	807	0.16	0.48

7.3.1.7 *Geology of the Previsto Copper Gold Target*

Previsto is located 20km northeast of the Belen trend which hosts above mentioned targets Ricardo Herrera, Vista Alegre and Sortilegio targets. Previsto occupies an area of 20km x 10km. The bedrock is dominated by Cretaceous shales and limestones overlain by Paleogene mudstones and siltstones (FIGURE 17). An NNE-SSW trending regional thrust fault named Previsto thrust cuts the whole area. Proximal to this thrust, the Company is currently mapping several porphyritic Miocene age intrusions within radiometric ages of 12.2Ma to 13.9Ma in outcrops and boulders. The porphyries intrude calcareous sediments, sandstones and mudstones of the Yahuarango Fm. Whole rock lithogeochemical data suggest a strongly silica undersaturated host rock with alkalic composition. Copper gold mineralisation is associated with the porphyry intrusions and the Company has subdivided the work into two areas named Previsto East and Previsto Central. Hydrothermal alteration is observed in both areas and is characterized by intense phyllic alteration (quartz-pyrite-sericite / illite). Pervasive silica is manifested as grey quartz stockwork veinlets. In addition, roscoelite and locally also fuchsite is selectively replacing matrix phenocryst, in veins and disseminated in matrix. Intermediate argillic alteration has been seen locally as chlorite-magnetite veinlets in shear zones in Previsto Central. In addition, different veins have been identified, such as:

1. TYPE-A

Characterized by quartz – anhydrite-pyrite-chalcopyrite-bornite (molybdenite) with halo of k-feldspar.

2. TYPE B AND D

Quartz pyrite, type D: quartz pyrite-chalcopyrite -carbonate.

3. TYPE M (MAGNETITE) AND EB (EARLY BIOITITE)

4. HYDROTHERMAL BRECCIAS

Both monomict and polymictic with either siliceous or gossanous matrix are common in boulders at Previsto East.

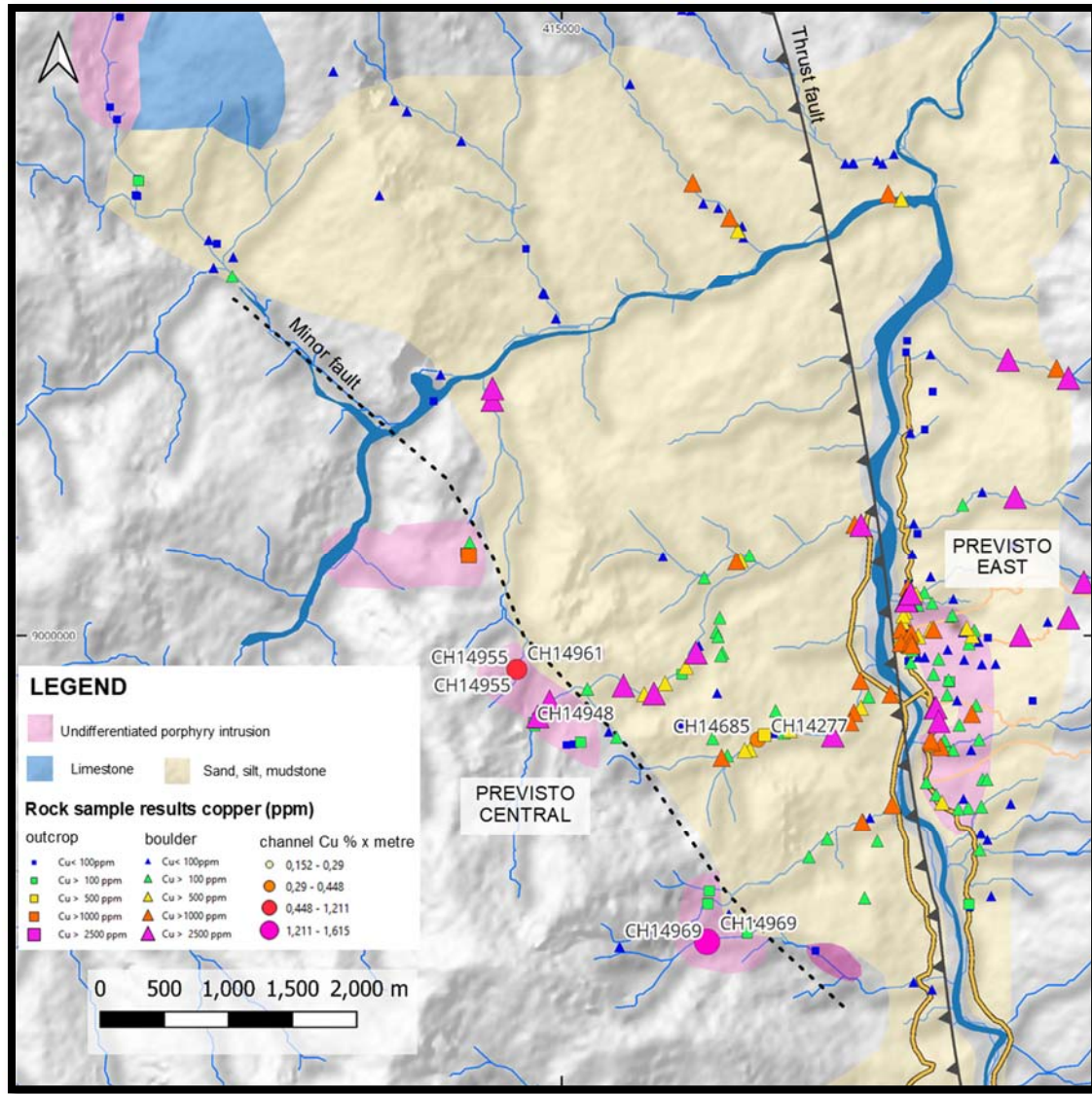


FIGURE 17.
Bedrock Map with Sampling Results at Previsto

Representative rock, vein, and alteration photos from Previsto Central are shown in [FIGURE 18](#) and Previsto East in [FIGURE 19](#).

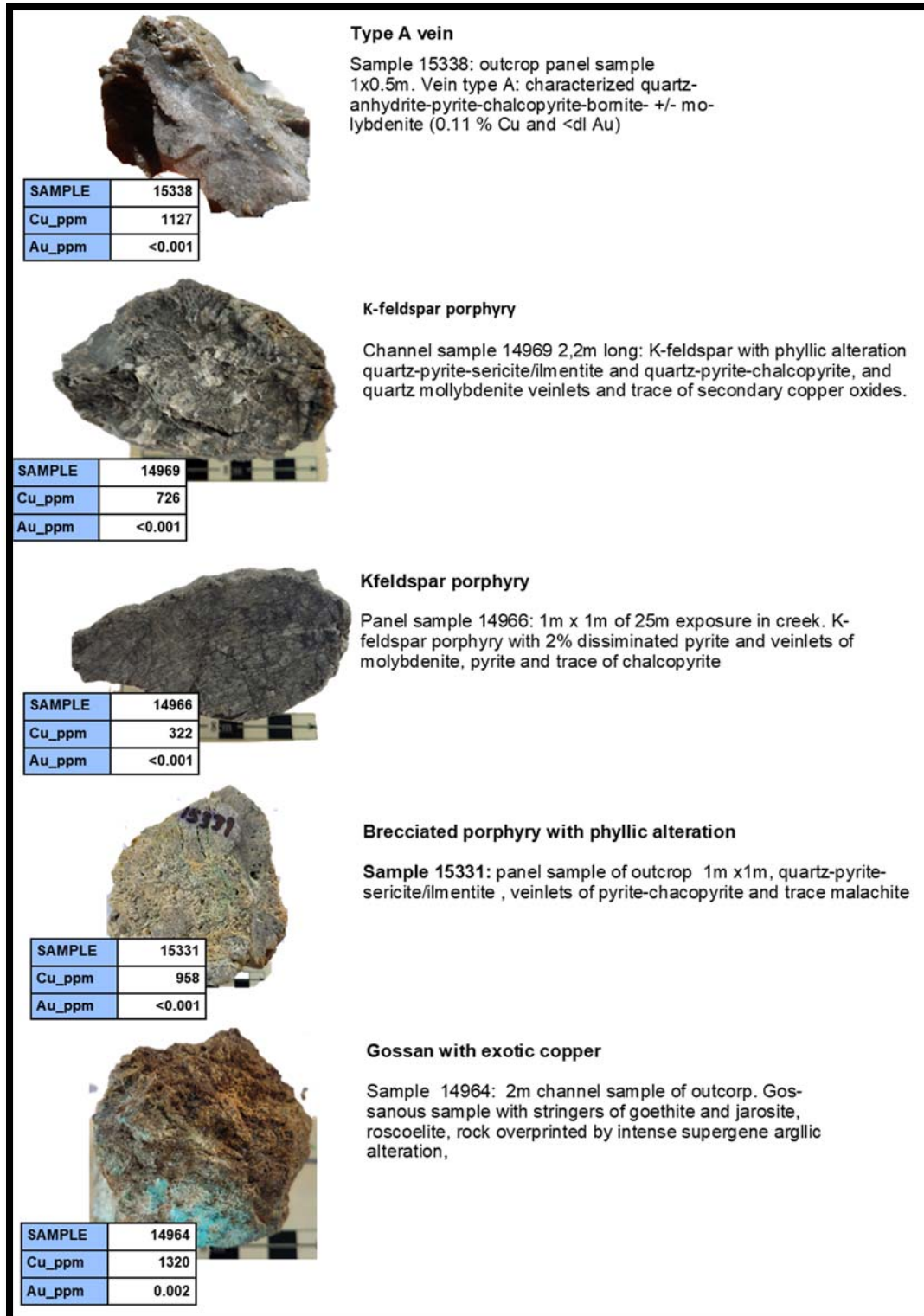


FIGURE 18.
Representative Rock Photos of Alteration and Mineralization of Previsto Central

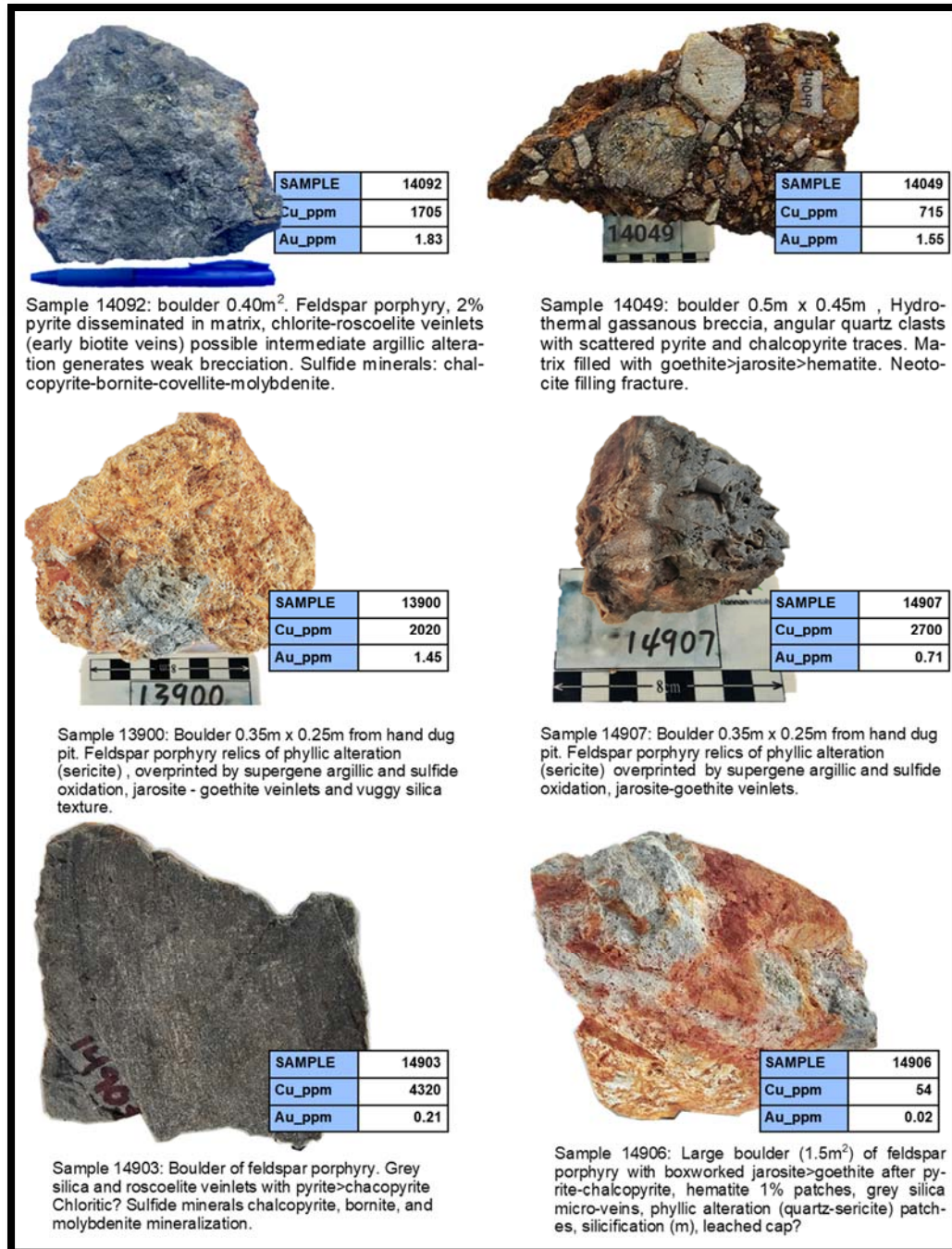


FIGURE 19.
Representative Rock Photos from Previsto East

7.3.1.8 Significant Mineralized Zones at Previsto

At Previsto East rock chip and soil sampling has identified a 1,800m x 400m porphyry-epithermal target defined by strongly gold anomalous soil samples and large local copper and gold mineralized boulder

fields with up to 0.64 g/t gold in soils and 1.85 g/t Au in boulders (for details see section “Results and Interpretation”).

The observed styles of mineralization and alteration in boulders support the presence of significant mineralization of alkalic gold rich porphyry epithermal character.

Outcropping copper mineralization of similar style has been discovered 3.5km west of at the Previsto Central target. This area is currently being mapped by the Company as highlighted by [FIGURE 16](#) and high-grade copper mineralization has been discovered in outcrops and boulders over 3km of strike. The initial channel results from this area are highlighted in [TABLE 7](#).

TABLE 7.
Summary of Channel Results >500ppm Cu from Previsto Central

Channel	From (m)	To (m)	Interval (m)	Cu ppm	Au ppm	Mo ppm
CH14277	4	6	2	508	0	26.60
CH14277	14	18	4	564	0.026	25.20
CH14685	0	4	4	959	0.006	5.71
CH14948	4.2	5.7	1.5	643	0.001	2.70
CH14955	2	6	4	559	0.016	1.68
CH14955	8	12	4	728	0.01	14.04
CH14961	0	8	8	1,240	0.005	7.69
CH14969	0	2.2	2.2	726	0	92.90
CH14969	8.2	14	5.8	2,520	0.001	36.61

TABLE 8.
Summary of Key Channel Results at Divisoria

Channel / Sample ID	Width (m)	Zn %	Pb %	Ag g/t	Sample Type
CH14409	0.5	33.4	0	2.6	Channel
14407	0.8 x 0.8	3.1	0.1	1	Panel
14513	1.5 x 1.5	2.2	0.1	4	Panel
CH14613	8	3.3	0.1	3.6	Channel
CH14615	4.1	0.9	0	3.5	Channel
CH14603	1	4.4	0.3	7.9	Channel
CH14605	0.1	10	1.1	11.5	Channel

7.3.1.9 Geology of the Divisoria Copper Gold Porphyry Target

At Divisoria ([FIGURE 7](#)) the Company has identified a 14.5Ma Miocene-age porphyry stock with hydrothermal base metal breccias and veins. The breccias are hosted by a fine-grained porphyry intrusion of diorite composition with propylitic alteration of moderate to strong intensity. Divisoria is partly

covered by a 50m to 100m thick sequence of Paleogene red beds. It is not clear if the contact is intrusive or structural.

The area with strongest brecciation and veining is exposed for about 300m width before it disappears under sedimentary cover. It hosts frequent N-S trending veins of quartz pyrite and quartz pyrite galena-sphalerite. Locally very high-grade zinc zones have been analyzed with values up to 33.4% Zn. All veins are younger than the porphyritic country rock and appear to overprint the hydrothermal breccias.

7.3.2 The Serrano Property

The property is 12km long and 6km wide. No detailed mapping has been completed. The geology is dominated by Cretaceous limestone sediments ([FIGURE 7](#)). The Company has discovered plutonic boulders with propylitic alteration in the river catchments.

7.3.3 The Serrano Norte Property

The property is 11km long and 5km wide. No detailed mapping has been completed. The geology is dominated by Paleogene sediments which are folded in an open anticline ([FIGURE 8](#)). The Company has discovered plutonic boulders with propylitic alteration within river catchments. Radiometric age determinations of one sample yielded an age of 20.5Ma (Hannan, 2021). This data suggests that Miocene age intrusions are present within the property.

7.3.4 The Pucacunga Property

The property is 17km long and 9km wide. No detailed mapping has been completed. On the 50k scale bedrock map by INGEMMET the geology is dominated by flat lying Cretaceous sediments of the Cushabatay and Chonta Formations. In the eastern part of the property INGEMMET has mapped an intrusion described as a microdiorite with 20% hornblende in ground mass with rare epidote and actinolite and clay suggesting hydrothermal propylitic alteration (INGEMMET, 1997). INGEMMET did not date the rock but in the bedrock map it is mapped as a Cretaceous intrusion. However, during regional sediment sampling the Company discovered porphyritic boulders with propylitic alteration in multiple river catchments. Radiometric age determinations of one sample yielded an age of 14.8Ma (Hannan, 2021). This data suggests that Miocene-age intrusions are present within the property.

7.3.5 The Pozuzo

The property is 6km long and 10km wide. No detailed mapping has been completed. On the 50k scale bedrock map by INGEMMET the geology is dominated by Mitu group red beds and Pucara limestones ([FIGURE 7](#)).

8. Deposit Types

The exploration target at Valiente is a high-K calc-alkalic and alkalic copper gold porphyry mineral system with associated skarn, carbonate replacement and epithermal styles of mineralization. These are intimately linked and often coexist because they represent different expressions of the same mineral system.

Porphyry deposits are an important source of metals and supply most of the world's Cu, Mo and Ag (John, et al., 2010). The style of mineralization is probably the most well studied of all ore deposits and their salient features can be summarize as (Kouzmanov & Pokrovski, 2012):

1. These systems commonly occur in continental and oceanic magmatic arcs or in collisional orogenic belts.
2. They have spatial and genetic relationships to basaltic-to-felsic magmas emplaced in the upper 10km of the crust.
3. Lateral and vertical alteration-mineralization zoning consists of a Cu (\pm Mo \pm Au) ore shell in the shallow portion of a potassic alteration zone, produced by magmatic fluids; this can be overprinted by phyllic alteration, also largely magmatic in signature, that in turn may be overprinted by argillic alteration, with a dominantly meteoric signature.
4. Associated deposits such as skarns, Cordilleran vein, and high and intermediate sulphidation epithermal deposits may occur above or adjacent to porphyry orebodies.
5. Porphyry systems form from S- and metal-rich, single-phase aqueous fluid of moderate salinity (2–10 wt % NaCl equiv.) exsolved from magmas; during its ascent toward the surface this fluid undergoes a variety of processes that can cause metal precipitation, including decompression, phase separation, cooling, interaction with host rocks, and mixing.

[FIGURE 20](#) show a schematic cross section through a typical porphyry copper system and its spatial relations with alteration and associated mineral deposits such as skarn and epithermal.

Porphyry systems also show distinct geochemical and hyperspectral characteristics which can be used during exploration as a vector to mineralization. The geophysical property of a porphyry deposits, such as magnetization, chargeability and resistivity can also be used to map sulfide and magnetic minerals that may relate to mineralization (John, et al., 2010).

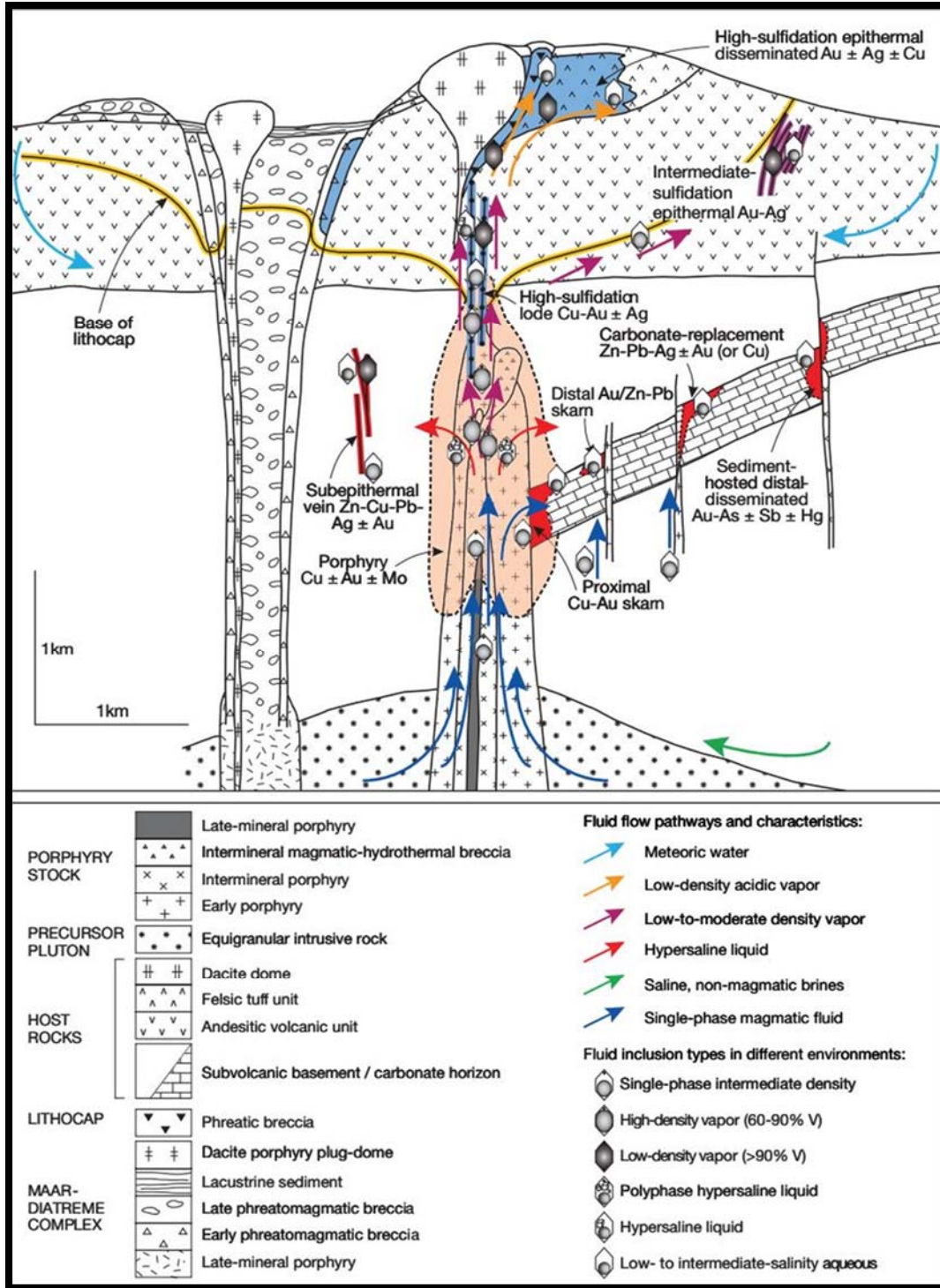


FIGURE 20. Schematic Porphyry Model after Kouzmanov (2012)

8.1 SUBTYPES OF PORPHYRY COPPER DEPOSITS

Different schemes have been proposed to classify porphyry deposit into different classes such as metal content, tectonic setting, and magma chemistry (Cooke, et al., 2014). Here the whole rock composition of the magmatic rocks associated with mineralization is considered. This scheme recognizes three subcategories of calc-alkalic porphyry deposits (low-K, medium-K, and high-K) and two subcategories of alkalic porphyry deposits (silica-saturated and silica-undersaturated). The alkalic porphyries are exclusively of Cu–Au character, whereas calc-alkaline deposits span the entire spectrum of Cu, Au, and Mo mineralization (Cooke, et al., 2014).

Calc-alkalic deposits are the most well studied. In comparison the understanding of alkalic porphyry and epithermal deposits model is less advanced. This is probably the results of apparently small and cryptic alteration footprint, the wide range of related intrusive rocks and the resulting variability in alteration styles and mineralization (Bissing & Cooke, 2014).

From an economic perspective alkalic porphyry epithermal copper gold deposits are highly attractive exploration targets as they form some of the largest gold deposits in the world. According to USGS they are spatially and genetically linked to small stocks or clusters of intrusions containing high alkali-element contents. Deposits occur as disseminations, breccia-fillings, and veins and may be spatially and genetically related to skarns and low-grade porphyry copper (Cu) or molybdenum (Mo) systems. Gold commonly occurs as native gold, precious metal tellurides, and as sub-micron gold in arsenian pyrite. Quartz, carbonate, fluorite, adularia, and vanadium muscovite / roscoelite are the most common gangue minerals. Alkalic-type gold deposits formed in collision zones and back-arc or post-subduction rifts that are invariably characterized by a transition from convergent to extensional or transgressive tectonics (Kelley, et al., 2020).

8.2 MIOCENE AGE PORPHYRY COPPER GOLD MINERALIZATION AND RELATED MINERAL SYSTEMS IN PERU

In Peru porphyry copper-gold deposits are subdivided into three porphyry copper belts as Paleocene, Eocene-Oligocene and Miocene. The metallogenic belts in Peru are strongly linked with different tectonic cycles (Benavides, 1999). The Miocene magmatic belts in Peru are the most important metallogenic period and host major copper and gold deposits such as La Granja, Yanacocha and Antamina.

The porphyry epithermal mineralization at the Valiente project is located approximately 200km east of the well-documented Miocene magmatic arc. The recently discovered Valiente Miocene belt is parallel to the sub-Andean zone and extends at least for 150km of strike. The regional controls to the emplacements of near surface magmatic intrusions within the Valiente belt are thought to be controlled by the interaction of deep Andean NNW-SSE structures and arc-oblique structures. In the Andes similar controls to magmatic porphyry deposits has been proposed and documented in Chile and Argentina. (Tosdal & Richards, 2001)

8.3 BASIS FOR PLANNING EXPLORATION PROGRAMS

The Valiente project is an early-stage pre-discovery exploration project where the focus is to discover new outcropping and sub-cropping porphyry epithermal mineralization across a Miocene age porphyry belt that is at least 150km long. The belt has not seen any previous mineral exploration and has only basic geological coverage. As such the Company has applied first principles to its exploration programs, analyzed remote spectral and topographic data, collected ultra-sensitive regional stream sediment geochemistry, and conducted remote geological interpretation using stereoscopic geological and geomorphological mapping. These regional methods have aimed to quickly and cost effectively identify outcropping and sub-cropping porphyry and epithermal targets to follow-up with more detailed field work.

The remote studies have been followed up with field work from geological crews by prospecting rivers and conducting ridge-top soil sampling using portable XRF units. Successful results have been followed-up with more systematic soil sampling in grids of 400m x 400m to 100m x 100m and mapping at the scale down to 1:2,500. This work is coupled with rock sampling using both hammer and rock saws for more systematic sampling. All rock samples are submitted to the laboratory for element and spectral analysis.

During each stage of exploratory data gathering the porphyry epithermal deposits genetic models are considered and results are evaluated based on metal association, alteration assemblages, lithogeochemistry and structural setting to the exploration targets prior to planning more advanced work.

Geophysical data is used routinely in the exploration work to plan exploration programs. Examples of such data are high resolution airborne magnetics and radiometrics, as well as chargeability and resistivity from ground-based pole-dipole induced polarization (“IP”) geophysical surveys.

Finally, Hannan is also conducting systematic geochronology using U-Pb isotopes from zircon minerals to map the order of the magmatic intrusions. This data has proven to be highly useful and provides resolution down to +/-0.2Ma years, which is adequate to confirm contact relationships of different porphyry stocks.

9. Exploration

As a new discovery by Hannan, the Valiente project has not seen any historic exploration and all work described below has been generated by Hannan.

9.1 SURFACE MAPPING PROCEDURES

Hannan has conducted mapping at different scales across the project areas. Initially reconnaissance mapping of outcrops and boulders in creeks and on topographic ridges. More detailed mapping of target areas has been completed at a scale of 1:2,500 to 1:10,000. The mapping follows an internal protocol describing rocks, textures, alteration, and mineralogy on hand drawn maps that are subsequently digitized in GIS. Planar structural data is recorded using the right-hand rule. All data is also recorded as point data and stored in a central database. Currently there are 3,872-point observations in the database.

9.2 SPECTRAL DATA

Spectral data is systematically collected from surface rock samples. During mapping and rock sampling Hannan geologists select hand samples to submit to a third-party consultant for analysis. The consultant is based in Lima and uses an ASD TerraSpec 4 spectrometer (short wave infrared light (SWIR)) to identify minerals in the hand sample. The hand sample is analyzed at multiple points and the data is delivered in an excel sheet indicating the presence of minerals and their interpreted abundance in the sample at a scale of 1-3. A total of 1,614 hand samples has spectral data collected in the Company database.

9.3 SOIL SAMPLING PROCEDURES

Hannan has collected 4,620 soil samples at the Valiente project. The number includes approximately 10% quality control samples such as field duplicate and routine laboratory re-assays. The sample spacing varies between 400m x 400m to 100m x 100m, minor detailed grids of 25m x 25m spacing has also been undertaken. Reconnaissance soil sampling has been completed along topographic ridge lines at 200m to 400m spacing. The total area surveyed is approximately 50km². The location of the soil surveys is shown in [FIGURE 21](#).

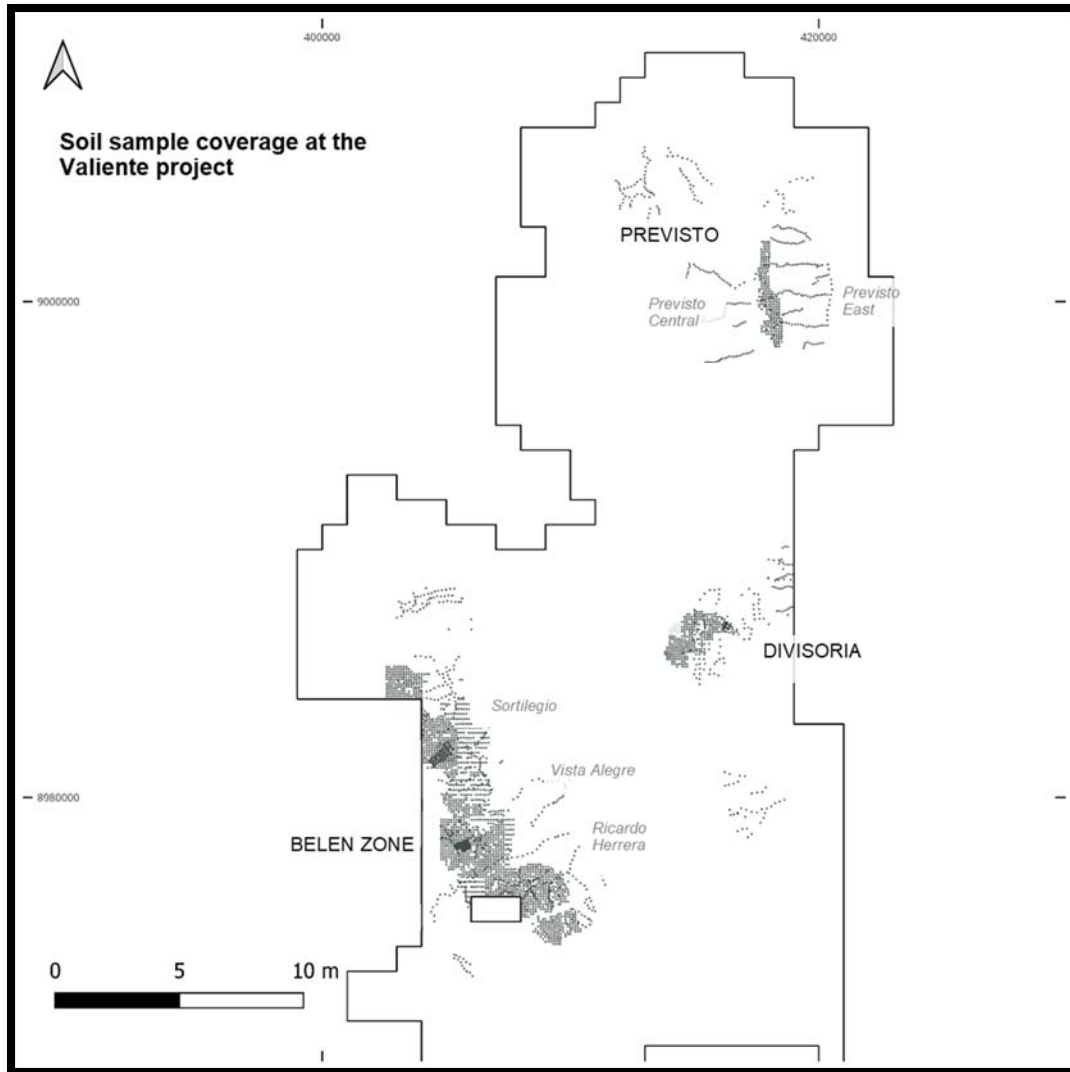


FIGURE 21.
Location and Coverage of Soil Samples at the Valiente Project

9.4 ROCK SAMPLING PROCEDURES

There are 1,420 rock samples in the Company database. The following types of samples have been collected by Hannan:

1. Channel samples are considered representative of the in-situ mineralization samples. These samples are taken by a hammer and chisel or a diamond rock saw to cut a channel on the surface of the rock.
2. Panel samples: these are chip samples that extend over an area, usually 1m x 1m or more. These are thought to be representative of that panel.
3. Grab samples of boulders or outcrops. These samples are selective by nature and are unlikely to represent average grades of in-situ mineralization.

9.5 STREAM SEDIMENT SAMPLING

Two types of stream sediments have been taken at the property. Spatially the sampling covers the full 150km trend marked by Valiente in the north and Pozuzo in the south:

1. STREAM SEDIMENT SAMPLES (143 SAMPLES)

Samples taken by Hannan geologists in creeks with active sedimentation draining the project area. Each sample is taken with a plastic scoop from 5 to 10 different sediment traps in the creek. Targeted catchment sizes vary from a few square kms to over 100 square kms. The sample is bagged and labelled before submitting to ALS laboratory in Lima or Cajamarca. At the laboratory the sample is screened to -180um before analyzed with method AuME-ST43. This method determines gold by aqua regia extraction and with an ICP-MS finish. The data is reported for gold and 48 elements. This data does not include any standards or field duplicates.

2. BLEG SAMPLES (245 SAMPLES)

- a. The Company is applying an in-house protocol for sampling and analyzing the fine clay fractions in creeks. The sample type is generally referred to as BLEG which is an acronym for Bulk Leach Extractable Gold. Both gold and multielement data is reported from each sample
- b. The sample is taken by Hannan geologists in the creeks with active sedimentation. Each sample is taken with a plastic scoop from approximately 25 different sediment traps in the creek and on average, 200m to 400m distance along any one creek is sampled.

9.6 GEOCHRONOLOGY

Hannan has submitted 20 samples for age determinations using uranium–lead (“U–Pb”) radiometric dating. These data are used to correlate magnetic events, support geological interpretations where rock relationships are missing and to map the timing of the mineralization in different areas. The results of the data are shown [FIGURE 6](#).

Uranium–lead (“U–Pb”) dating is a well-established and accurate radiometric dating method used to determine the age of rock formation. The method is usually applied to zircon which incorporates uranium and thorium atoms into its crystal structure. Radiogenic decay through to radiogenic lead at a rate that is well established can then be determined. As zircon strongly rejects lead when forming during magmatic processes, measurement of the ratio of lead to uranium in a rock sample can be used to determine its accurately and precisely determine its age.

Hannan contracted Zirchron LLC, Tucson AZ, USA to perform the dating work at Valiente. Zircons were separated from the rock matrix using an Electro Pulse Disaggregator, sieving and Wilfley table, Frantz paramagnetic separator and heavy liquid MEI separation, before being mounted in epoxy resin discs and polished. Zircon U-Pb ages were measured at the Radiogenic Isotope and Geochronology Lab (RIGL) at WSU using an Analyte G2 193 excimer laser ablation system coupled with a Thermo-Finnigan Element 2 single-collector, inductively coupled, plasma mass spectrometer.

9.7 AIRBORNE MAGNETIC SURVEY

Hannan conducted a high sensitivity helicopter-borne Magnetic and Gamma-ray Spectrometric geophysical survey in 2022. The survey was carried out by New-Sense Geophysics (NSG) and covered

a total of 5,218.3-line km (884.68 km²) over all mining licences except Pozuzo (FIGURE 21). The nominal survey height was 60m and line spacing was 200m and 100m infill in one area (Belen).

Sample rates for acquisition were:

Magnetometer (Scintrex CS-3):	0.2/0.1 sec (50/10Hz)
Radiometric (RS-500):	1.0 sec (1Hz)
Base-Magnetometer (Scintrex CS-3):	0.02 / 0.1 sec (50/10Hz)
Radar Altimeter:	1.0 (1Hz)
Laser Altimeter:	0.1 sec (10Hz)
GPS:	0.1 sec for GPS

Hannan used a third-party consultant to validate the preliminary data during acquisition and the survey was completed without any data quality issues. Final deliverables of the survey:

1. Total Magnetic Intensity
2. Calculated Vertical Derivative
3. Potassium counts
4. Thorium counts
5. Uranium counts
6. Total counts
7. Dose rate
8. Ternary map of Th, Y, K
9. Levelled magnetic survey database in Geosoft Oasis Montaj.gdb formats.
10. Radiometric data database in Geosoft gdb format.

Hannan has subsequently used a third-party consultant to re-grid and calculate derivatives of the radiometric and magnetic data that includes standard outputs and various derivatives used in mineral exploration.

9.8 POLE-DIPOLE SURVEY

Hannan carried out a Pole-Dipole Induced Polarization (“IP”) geophysical orientation survey in 2022 at the Ricardo Herrera porphyry copper gold and Vista Alegre epithermal gold target. The survey was conducted by consultant GeoMad E.I.R.L.

The survey covered 18.7-line km over eight survey lines. The spacing between lines varied between 200m and 600m. The array type used offset pole-dipole and conventional dipole pole set-up. The survey depth was approximately 400m to 500m using an Iris Elrec Pro 10ch receiver and Untec 5,000w transmitter.

Magnetism also was measured along the survey IP survey line as well, using a back-pack magnetometer.

The survey area is shown in [FIGURE 22](#).

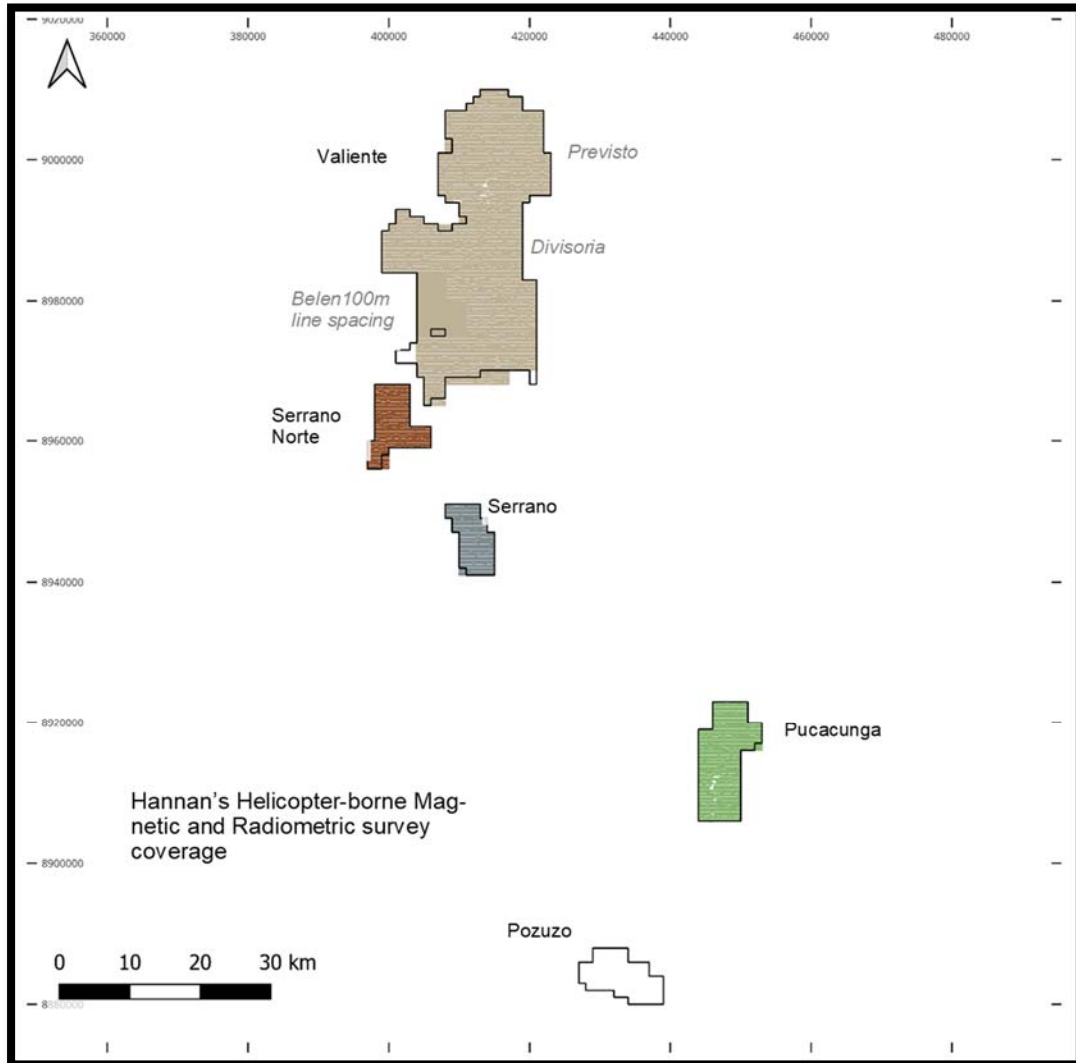


FIGURE 22.
Helicopter-Borne Magnetic and Spectrometric Survey Coverage

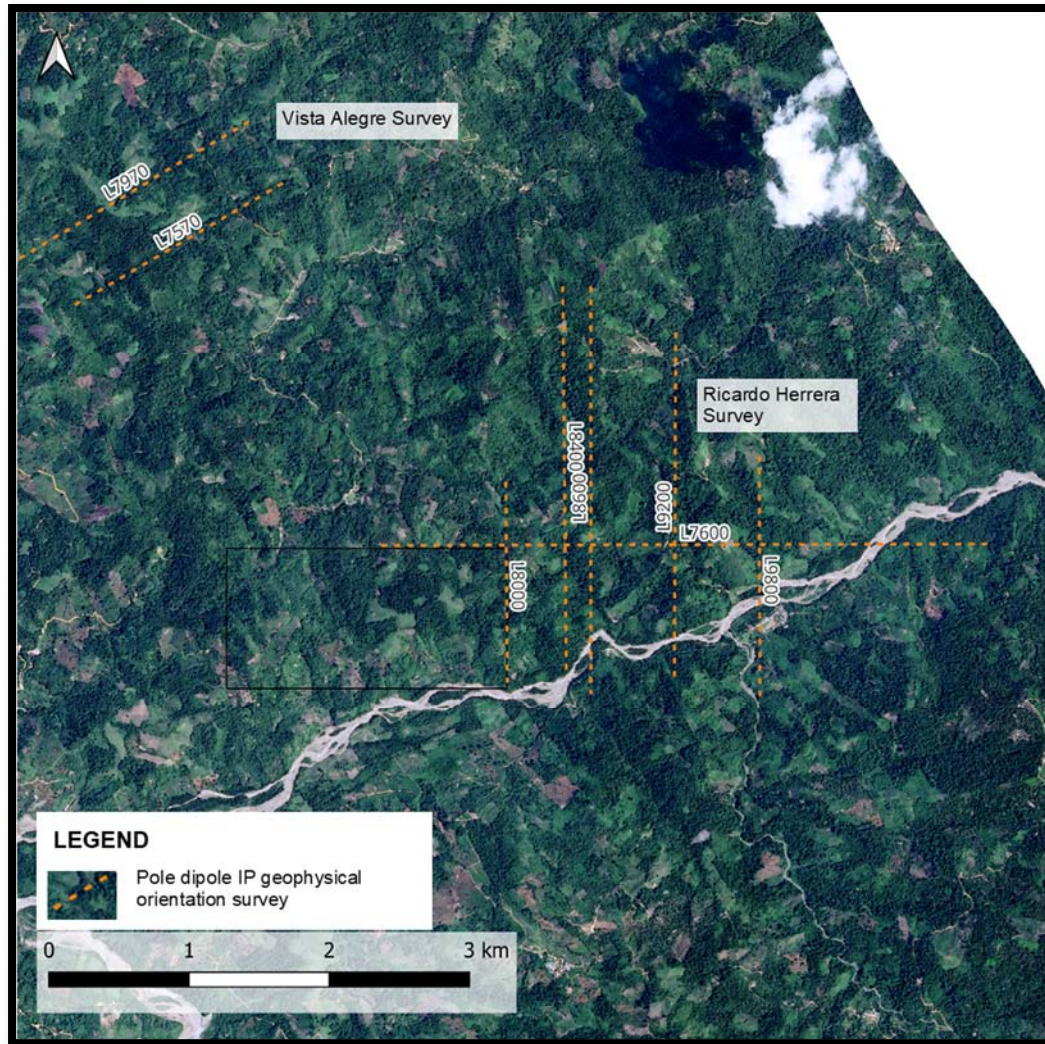


FIGURE 23.
Location of Pole-Dipole Orientation Survey and Survey Lines

9.9 RESULTS AND INTERPRETATIONS

9.9.1 Helicopter-Borne Magnetic and Gamma-Ray Spectrometric

The results from the helicopter-borne survey are shown in [FIGURE 24](#). All areas were flown except Pozuzo in the south due to the higher altitude and cloud cover at this project. The magnetic data was most successful in mapping intrusions across the project. Even though the magnetic susceptibility of the porphyries is low, the contrast to the non-magnetic sedimentary country rock makes them easy to identify. Likewise, the radiometric data has proven to be very useful to map potassic alteration and the combination of magnetic anomalies and positive potassium anomalies show strong correlation with mineralized areas.

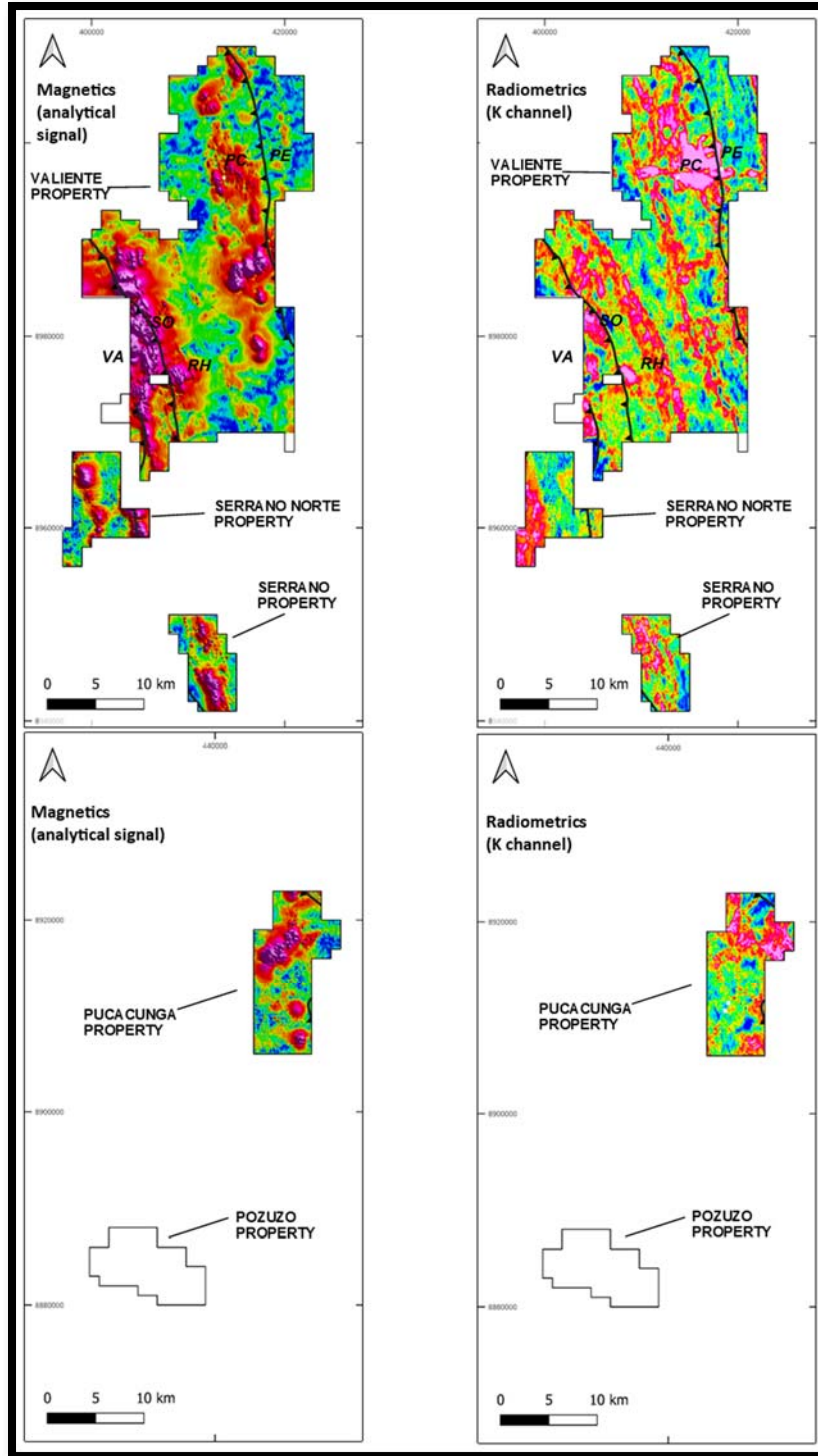


FIGURE 24.
Results from Helicopter-Borne Survey
 (VA = Vista Alegre, RH = Ricardo Herrera, SO = Sortilegio, PC = Previsto Central, PE = Previsto East)

9.9.2 Ricardo Herrera

Ricardo Herrera represents a multistage porphyry stock with earliest magmatism recorded at 15.8Ma and the final stage at 15.2Ma. The stock intrudes Paleogene sediments, mostly mudstones and calcareous sediments of the Yahuarango Formation. The intrusive stock covers an area of 1,700m x 950m where the strongest hydrothermal alteration and mineralization on surface is mapped over 1,000m x 275m ([FIGURE 12](#)). Based on alteration mineral assembly mapping and whole rock lithogeochemistry it is interpreted to represent the upper part of a copper-gold mineralized high-K calc-alkaline porphyry stock.

The sampled catchments draining are only 2.5km² in size and show strong anomalism for Cu-Au-Ag-Mo-Zn-V. The small catchments feed a larger river catchment system >300km². In the preliminary survey the large catchment showed a subtle 11ppb gold anomaly, which lead to the follow-up sampling of the smaller catchments and the subsequent discovery of outcropping mineralization.

The area has been covered with soil sampling grid of 100m x 100m. The soil data shows a clear “bullseye” anomaly of copper with values between >500ppm to 1,461ppm Cu matching the mapped alteration and mineralization on surface. Other elements associated with the mapped mineralization is Mo-K-V. Gold is locally anomalous within but also occur peripheral to the main copper anomaly <0.001 ppm to 0.185 ppm, average 0.0162 g/t and nine samples have values > 0.1ppm (100ppb) in soil. Zn and Pb are zoned in a “halo” manner to the main copper anomaly ([FIGURE 25](#)). This behavior correlates well with element zonation in the porphyry copper model.

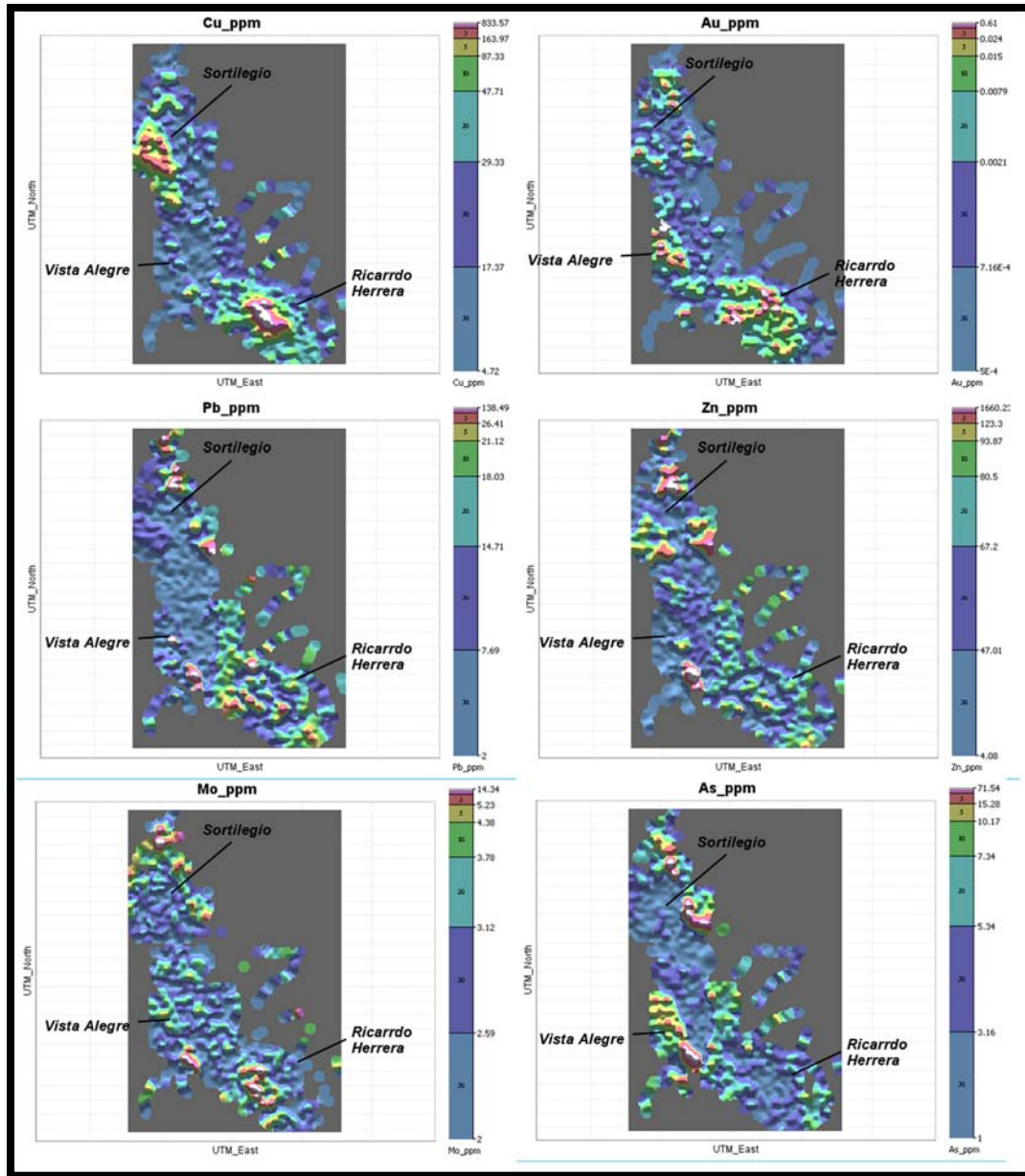


FIGURE 25.
*Gridded Soil Results (pXRF) from the Belen Zone
 (Au Results from 30g Fire Assay)*

Field cutting rock relationships and radiometric age dating suggest that the mineralization at Ricardo Herrera has seen two main events of mineralization.

The first stage of mineralization is called “Early Porphyry One” and is characterized by:

1. EARLY PORPHYRY ONE

A feldspar porphyry with subordinate occasional hornblende phenocrysts. Characterized by intermediate argillic (chlorite from secondary biotite-white micas), relicts of potassic alteration (secondary biotite-magnetite) with “EB” type veinlets (early biotite), “M” type veinlets and few type “A” veinlets. The average veining per m is estimated to be 3 to 6/m. Radiometric age 15.8Ma.

“Early Porphyry One” is followed by an intermineral felspar-hornblende porphyry with a radiometric age of 15.6Ma. Supergene argillic alteration (montmorillonite) and propylitic alteration (chlorite, epidote, pyrite calcite). Xenoliths with A-type veinlets have been observed in this unit and magmatic magnetite. Trace sulphide-iron oxide minerals are dominated by pyrite-jarosite.

The second stage of mineralization is called “Early Porphyry Two” and represents a reactivation of the system and a re-entry of magma / fluids carrying a second stage of copper-gold mineralization. This unit has a radiometric age of 15.4Ma and is characterized by:

1. EARLY PORPHYRY TWO

A quartz-feldspar porphyry with phyllic alteration where sericite dominates over silica in the grey ground mass. Cut by type A quartz veinlets with pyrite-chalcocopyrite. The sulphide mineralization is leached and copper anomalous iron oxides are dominated by goethite and jarosite in frequent veinlets (3 to 5/m) as well as copper oxides such as neotocite.

Following these magmatic events the mineralizing system cools down and the final stages are marked by intermineral and late porphyry stocks with the youngest radiometric age at 15.2Ma.

An important implication of the two mineralization events at Ricardo Herrera were highlighted by the Pole-Dipole IP orientation survey Hannan conducted in 2022. As seen in [FIGURE 26](#) and [FIGURE 27](#), both Early Porphyry One and Early Porphyry Two show high chargeability / high resistivity anomalies, a typical porphyry mineralization signature. However, the depth continuity of the two anomalies is vastly different. Early Porphyry One appears to terminate at 200m vertical depth whereas Early Porphyry Two extends to at least to 500m vertical depth which was the maximum capacity of the survey. Albeit this interpretation is based on data from an orientation survey it highlights that Early Porphyry Two have a greater depth extent compared to Early Porphyry One.

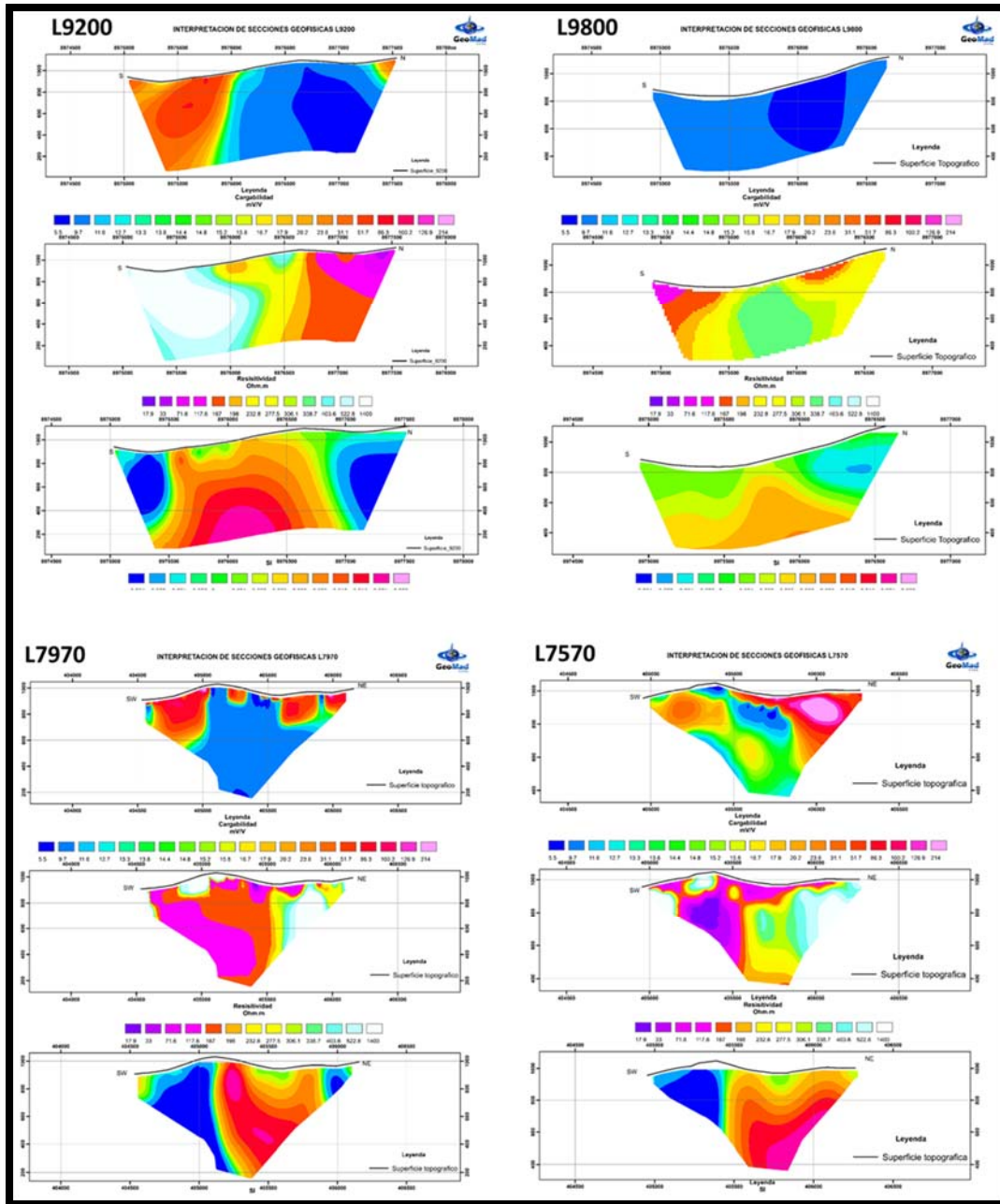


FIGURE 26.
Results from Pole-Dipole IP Geophysical Orientation Survey. L9200 and L9800 Ricardo Herrera, L7970 and L7570 from Vista Alegre.

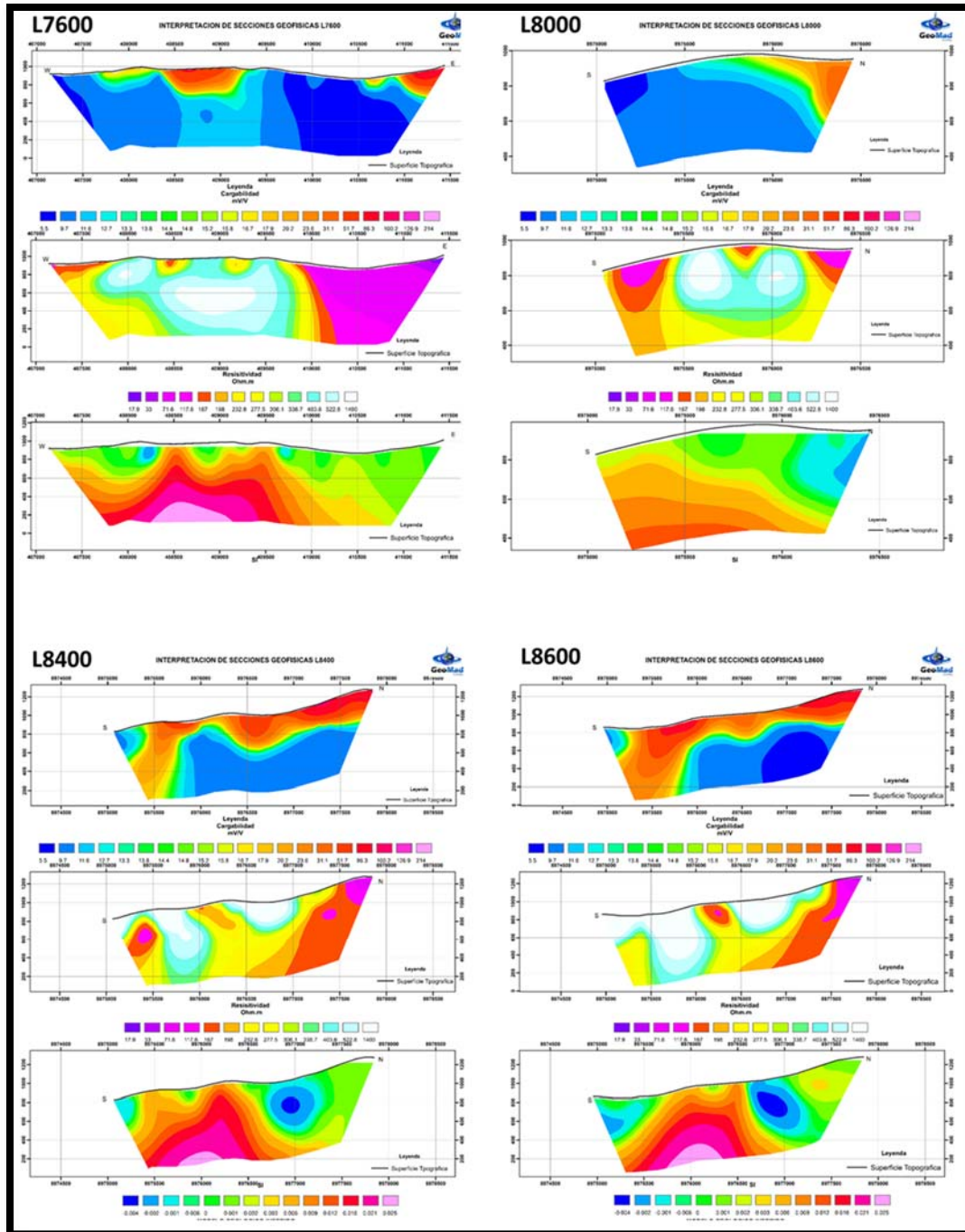


FIGURE 27.

Results from Pole-Dipole IP Geophysical Orientation Survey. L7600, L800, L8400 and L8600 from Ricardo Herrera.

In addition to the ground geophysical pole-dipole IP data the mapped porphyry stock at Ricardo Herrera shows a positive magnetic anomaly as well as a clear correlation with potassium (FIGURE 25).

Alteration mineral assembly mapping and whole rock lithogeochemical data suggest that the surface exposure at Ricardo Herrera represents the upper part of high K calc-alkalic porphyry mineralization.

Alteration Mineral Assembly ([FIGURE 11](#))

1. PROPYLITIC ALTERATION

Common alteration in Ricardo Herrera and the rocks are characterized by their green hue. The mineralogical assemblage is chlorite epidote+calcite+pyrite and is found both in the wall rock to the intrusion and in the intrusive stock itself.

2. ARGILLIC ALTERATION

This alteration develops in the central zone and in high elevations at Ricardo Herrera. It is present in Early Porphyry Two. Locally it is found making an overprint to the grey aggregates of phyllic alteration. Near topographic highs it is replaced by supergene argillic alteration dominated by montmorillonite.

3. POTASSIUM ALTERATION

It is found in the topographically lowest areas of the of the intrusion, mainly in the San Pablo creek. Characteristic minerals are secondary biotite and magnetite +/- potassium feldspar. It is associated with the presence of type E-B (early biotite) veinlets and type "M" veinlets.

4. INTERMEDIATE ARGILLIC ALTERATION

This alteration is associated with early porphyry (1) that outcrops in the lower levels of the boundary between Ricardo and San Pablo. Locally it is found replacing aggregates and veinlets of biotite secondary to chlorite.

5. PHYLIC ALTERATION

This is associated with early porphyry (2) in Ricardo and San Pablo. It is composed of grey masses of silica-sericite that replace the matrix of the early porphyries. Type A quartz veinlets are found with a halo of white sericite.

Supergene enrichment has been observed in the lowest topographic levels in creeks where chalcocite is seen to replace chalcopyrite within samples separated by 1km. Ricardo Herrera is a topographic high, therefore this data supports that a supergene target has developed above the water table, less than <100m below the leached mineralization exposed on surface.

Systematic channel sampling with a rock saw has been conducted in dry creeks and topographic highest where the cover is thin. Only a few percent of the porphyry is outcropping. In the Early Porphyry One and 2, the copper mineralization exposed at surface is strongly affected by supergene weathering and leaching of the sulphide minerals. The channel results are summarized in [TABLE 5](#) and [FIGURE 12](#). Significant mineralization is recorded in both Early Porphyry One and Early Porphyry Two where the highest grades are associated with zones of quartz veining (a-type), phyllic alteration and veinlets with goethite in the southern part of the intrusion.

9.9.3 Vista Alegre

Vista Alegre is a multi-signature target with characteristics of skarn, epithermal and porphyry style mineralization and alteration. It is situated on an NNW trending Andean thrust faults. It is defined by gold mineralization in large siliceous boulders, gossanous sedimentary boulders, and discontinuous pyrite chalcopyrite veins in phaneritic intrusive of diorite composition. The combined strike of the target area is 3km, and it remains open to the north. Soil sampling in grid of 100m x 100m and locally 25m x 25m are strongly anomalous in Au-As. Two Pole-Dipole orientation lines cover two separate styles of anomalies that may correlate that may relate to disseminated sulfides and massive sulfides respectively.

This area is characterized by relatively flat topography with few outcrops. Hannan has mapped the area in 1:5,000 scale by reviewing creeks and making hand dug pits to see bedrock. Due to the topography, detailed contact relationships are unknown.

Five geological units have been broadly identified during mapping ([FIGURE 9](#)). The oldest rocks are Cretaceous and or Paleogene sedimentary rocks such as mudstones, siltstones, and limestone. These are structurally juxtaposed against Miocene age (21.5 Ma) phaneritic intrusive rocks of diorite composition. Whereas the northern part of Vista Alegre is dominated by a phaneritic intrusive rock of monzonite composition where K-feldspars dominate over hornblende. Finally, a brown feldspar porphyry, unaltered and interpreted to be “late porphyry” intrudes the sediments and the limestones in the southern part of the Vista Alegre.

The gold target conforms to an NNW-SSE Andean orientation that correlates with a major Andean thrust fault that separates the sediments and the phaneritic intrusive. This relationship is highlighted by the bedrock map in [FIGURE 8](#).

Soil anomalies of Au-As highlights two parallel trends. The easterly trend is situated in a valley and hosts numerous large siliceous boulders pyrite-chalcopyrite boulders and outcrops with discontinuous pyrite chalcopyrite veins in a phaneritic intrusive. In total Hannan has sampled 48 boulders that average 0.44 g/t Au with a maximum of 2.72 g/t Au and a minimum of <0.001 g/t Au.

Strongly gold anomalous samples also occur west of the above-mentioned zone in an area with mapped mudstone and sandstone sediments. They follow a topographic ridge that is 1.7km long. Within this strike gold is strongly anomalous over 1.2km. High values of gold have been recorded with the highest of 1.21 g/t Au.

Two pole-dipole IP orientation lines for a combined length of 5.7km have been trialed at the target (FIGURE 26, Line L7570 and L7970). The lines crosscut the structural and geological trend of the area and successfully map the major discontinuity marked by the Andean thrust faults that separates the sediments from the phaneritic intrusive (FIGURE 9). Two types of anomalies were mapped on the lines (FIGURE 27). The fault zone is characterized by low chargeability and intermediate resistivity values. The eastern part of the line which corresponds to areas mapped phaneritic intrusive and gold bearing discontinuous gold bearing chalcopyrite pyrite veins show very high chargeability (>200 mV/v) and very high resistivity (1400 ohm) in Line 7570 at E406000. Directly above this anomaly on the surface there are outcrop observations over a 200m x 80m area of phaneritic rocks with secondary biotite, relics of secondary biotite and magnetite alteration overprinted by argillic intermedia alteration. There are also calcite veinlets with iron oxides and halo of epidote. Strong supergene argillic alteration overprints the hydrothermal alteration. This pole-dipole anomaly is unexplained, but with context to hydrothermal alteration in rocks on surface and distal auriferous pyrite-chalcopyrite veins it is interpreted that relate to porphyry sulfide mineralization. The anomaly is present 400m north on the adjacent line (L7970) but the chargeability is not as strong.

The western part of both lines at Vista Alegre (L7570 and L7970), on the surface is dominated by limestones and locally shales, and correlate to moderate to high chargeability (>50mV/v) and low resistivities. Surface values are extremely anomalous in gold (>1.21 g/t) and arsenic and chromium. The anomaly is interpreted to represent a gold rich skarn target. Strong Pb and Zn soil anomalies occurs along the same fault trend 1.8km south. The Zn-Pb anomaly is 1 km long, there are no outcrops but in holes during soil sampling mineralized rock fragments were found.

9.9.4 Sortilegio

Sortilegio represents an atypical copper gold porphyry analogous to alkalic porphyries in the BC, Canada. The mineralization is hosted by a multistage magmatic event active between 21.8Ma and 21.1Ma and overprints a wide range of intrusive rocks with acidic to ultrabasic composition. The area was originally highlighted as prospective by BLEG samples taken during regional sampling.

Detailed mapping of the area in the scale of 1:2,500 has revealed a magmatically complex area. The oldest rock type in the area is a phaneritic intrusive of diorite composition. It stretches in a 1-2km wide and 10km long belt parallel to the Andean thrusting. A cretaceous limestone of the Chonta Fm occurs directly to the east of the diorite. In the eastern part of the project area the limestone shows evidence of contact metamorphism and is altered to marble and hornfels. The contact between the limestone and the diorite is not exposed but is thought to be structural, where the limestone has been juxtaposed on the diorite during the Andean orogeny. The first records of Miocene magmatism are marked by a second phaneritic diorite intrusion (21.8Ma). This is positioned in the western part of the project area. In between the two diorites, a two km long and up to 1km wide area of 21.5-21.2 Ma of phaneritic gabbro-diorites, lamprophyres, pyroxenites, monzonites and megacrystic k-feldspar monzonites are found. These rock suits show a complex intercutting relationship and the contact between different rock types are often gradational.

Alteration at Sortilegio is subtle and often difficult to distinguish from the regional propylitic alteration that is common in the area. Field mapping suggests that calc-sodic alteration assemblages such as chlorite, actinolite, epidote and albite are more commonly associated with mineralization. Potassic alteration, manifested by hydrothermal biotite K-feldspar alteration exists in some zones but is often challenging to map due masking by the composition of the host rocks. Zones of phyllic alteration are rare in the area but when found, are pervasive and appear structurally controlled and strongly mineralized.

The mineralization at Sortilegio is zoned and marked by detailed mapping of veinlets / m, veining and brecciation. It is the is strongest at the contact of the k-feldspar megacrystic monzonite and its country rocks ([FIGURE 16](#)). Two broad groups have been used to outline more strongly mineralized areas. The most prospective reaches > 20 veinlets / m over 350m x 350m and is located within a broad halo of lower intensity veining, <20 veinlets / m. The enveloping surface of the target measures 1,500m x 600m in size and within it there are size core zones with >20 veinlets / m.

High grade boulder mineralization has also been located. These boulders are gossanous with remnants of secondary biotite. Four boulders have been sampled with values up to 16% Cu and 4.39 g/t Au with a range of 33ppm Cu to 16% Cu and 0.13 g/t Au to 4.39 g/t Au.

All channel results are summarized in [TABLE 6](#). The highest-grade channel relates to a 4m wide exposure with strong phyllic alteration, secondary copper oxides and specular hematite. It assayed 3.7m @ 0.44% Cu. Further channel sampling at Sortilegio has been directed by outcrop in creek beds. Forty-two channels from the core zones with >20 veinlets / m were cut. Of these, 26 channels averaged 3.3m @ 687ppm Cu and with a maximum of 4,365ppm Cu and minimum of 258ppm Cu with individual channel lengths between 0.8m to 10m.

Supergene mineralization at Sortilegio is best highlighted by tiny specs of native copper and locally cuprite in the matrix. Locally this contributes significantly to some samples assays ranging from 0.1% to 0.5% copper.

Soil results from Sortilegio support the mineralization that has been outlined by geological mapping. In soils copper is partly associated with Zn and Au. Base metal anomalies of Zn-Pb-As are associated with the marbleized limestone in the eastern part of the Sortilegio project area. Locally values are up to 900ppm Zn with geochemical anomalism extending over 3km of strike.

Both country rocks, style of mineralization and alteration show striking similarities between alkalic porphyry mineralization at Galore Creek, BC Canada, (Bissing & Cooke, 2014). And as such is it interpreted to represent an alkalic porphyry target.

9.9.5 Previsto

Previsto represents a cluster of young Miocene age intrusions in the northern part of the Valiente property ([FIGURE 7](#)). The area is not yet fully mapped, as social access was only granted in late 2023, but current data strongly suggests the presence of a large copper and gold-rich mineralizing system in the area within an alkalic host rock composition. Mineralization has so far been discovered in two areas: Previsto East and Previsto Central ([FIGURE 17](#)). Combined they define a zone that is 3km x 5km, however significant areas remain unexplored and the results from the airborne magnetic data suggests the initial results are from the peripheral parts of a much larger 7km x 4km magnetically anomalous area ([FIGURE 28](#)).

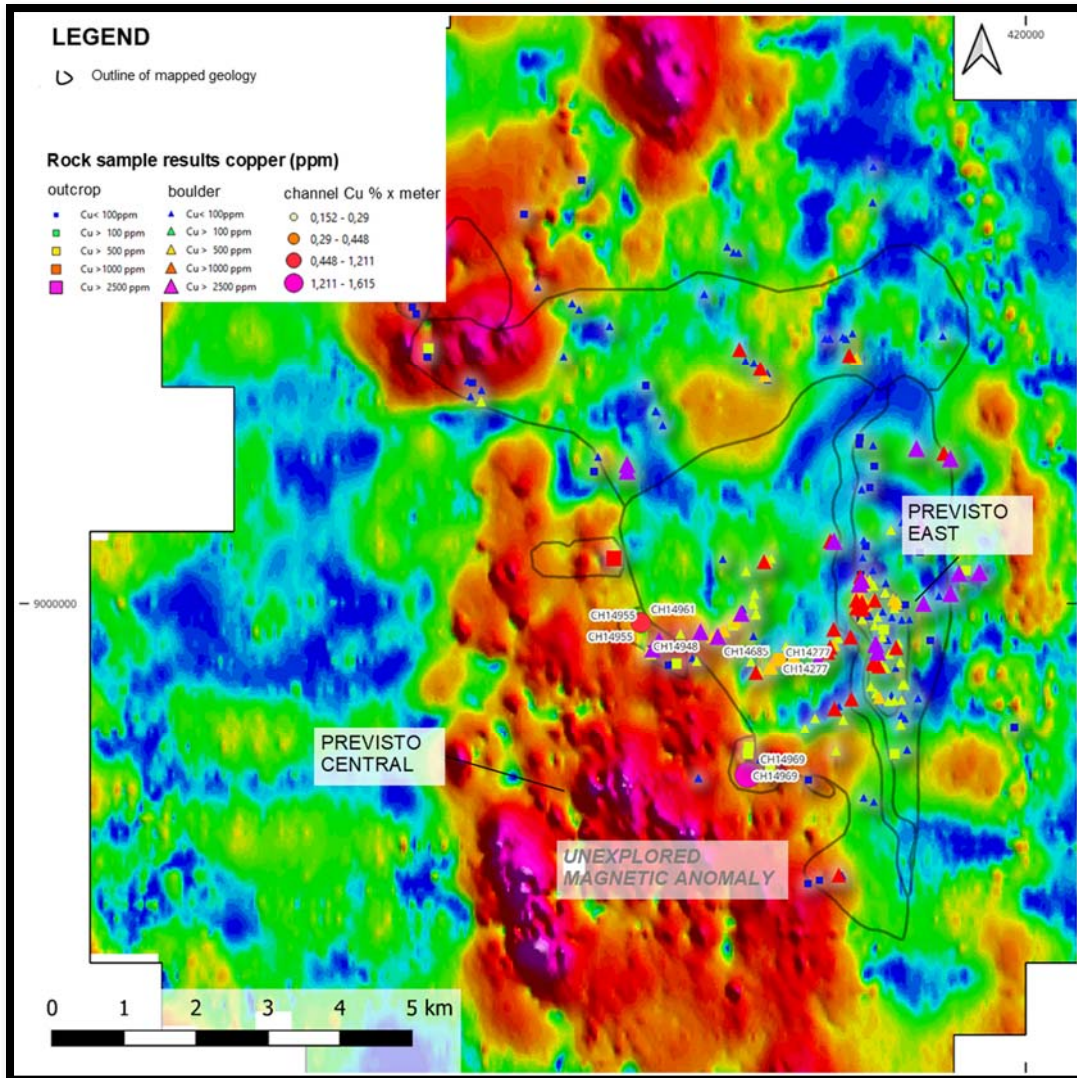


FIGURE 28.
Magnetic Map (Analytical Signal) Highlighting the Magnetic Anomalies at Previsto in Context with Mapping and Rock Sample Results

At Previsto East rock chip and soil sampling has identified a 1,800m by 400m porphyry-epithermal target defined by strongly gold anomalous soil samples and large local copper and gold mineralized boulder fields with up to 0.64 g/t gold in soils and 1.85 g/t Au in boulders.

A total of 362 soil samples in a 100m x 100m grid and ridge top sampling assayed max: 0.63 g/t Au Min: <detection limit with an average of 0.02 g/t Au. Of these 29 samples returned soil values between 0.10-0.63 g/t Au in a coherent area coinciding with mineralized boulders ([FIGURE 29](#) and [FIGURE 30](#)).

A total of 84 rock samples from large local boulder fields and boulders in m deep hand dug pits were assayed for gold: assayed max: 1.85 g/t Au Min: <detection limit, average 0.15 g/t and for copper Max 0.73% Cu, Min:0.01 % Cu, Average: 0.08 % Cu ([FIGURE 17](#)).

Alteration assemblages and mineralization styles from boulders in the 1.8km large area includes ([FIGURE 18](#)) hydrothermal breccias, intense phyllic alteration and relics of potassic alteration, roscoelite veining / dissemination and replacement of feldspars, vuggy silica textures and lattice bladed quartz. Observed sulfide minerals include chalcopyrite, bornite, covellite, molybdenite, pyrite. Veining is rare and generally only thin quartz -gypsum-pyrite and iron oxide veinlets. Lithogeochemically the trace element association of gold and copper mineralized boulders are Cu-Au-Te-V-Pb-Mo.

In Previsto Central mineralization and hydrothermal alteration is observed is similar to Previsto East and characterized by intense phyllic alteration (quartz-pyrite-sericite / illite). Pervasive silica alteration is manifested as grey quartz stockwork veinlets. Roscoelite and locally fuchsite selectively replaces the matrix phenocrysts, and can also be found within veins and disseminated in matrix. Intermediate argillic alteration has been seen locally as chlorite-magnetite veinlets in sheared zones in Previsto Central. In addition, different veins have been identified, such as:

1. TYPE A

Characterized by quartz – anhydrite- pyrite-chalcopyrite -bornite (molybdenite) with halo of k-feldspar.

2. TYPE B AND D

Quartz pyrite, type D: quartz pyrite-chalcopyrite -carbonate.

3. TYPE M AND EB

4. HYDROTHERMAL BRECCIAS

Both monomict and polymictic with either siliceous or gossanous matrix are common in boulders at Previsto East.

Soil sample results from for copper and gold are shown in [FIGURE 29](#) and [FIGURE 30](#). So far only two lines of ridge top sampling have reached Previsto Central. Both show strong gold and copper anomalous sections that corresponds to mineralized outcrops in the field.

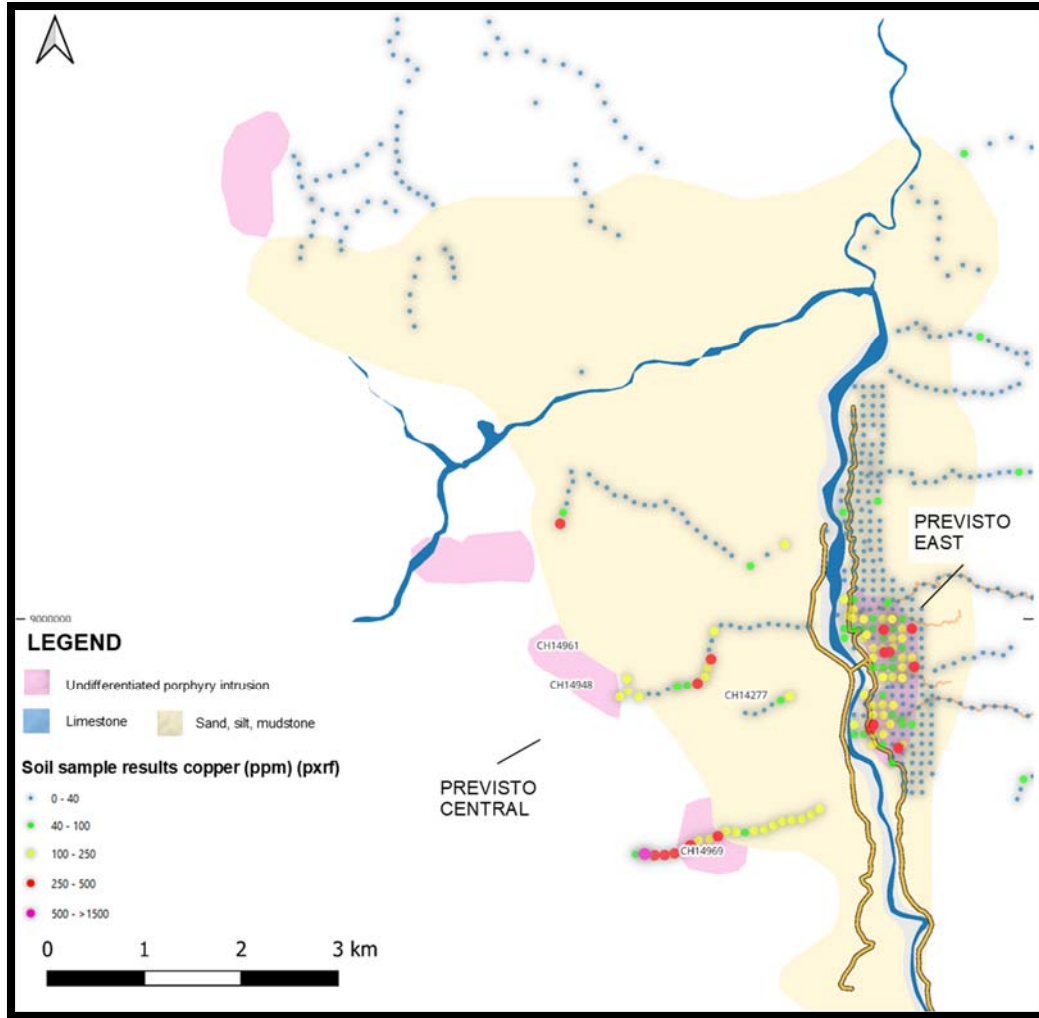


FIGURE 29.
Copper Results from pXRF Soil Sampling Surveys at Previsto

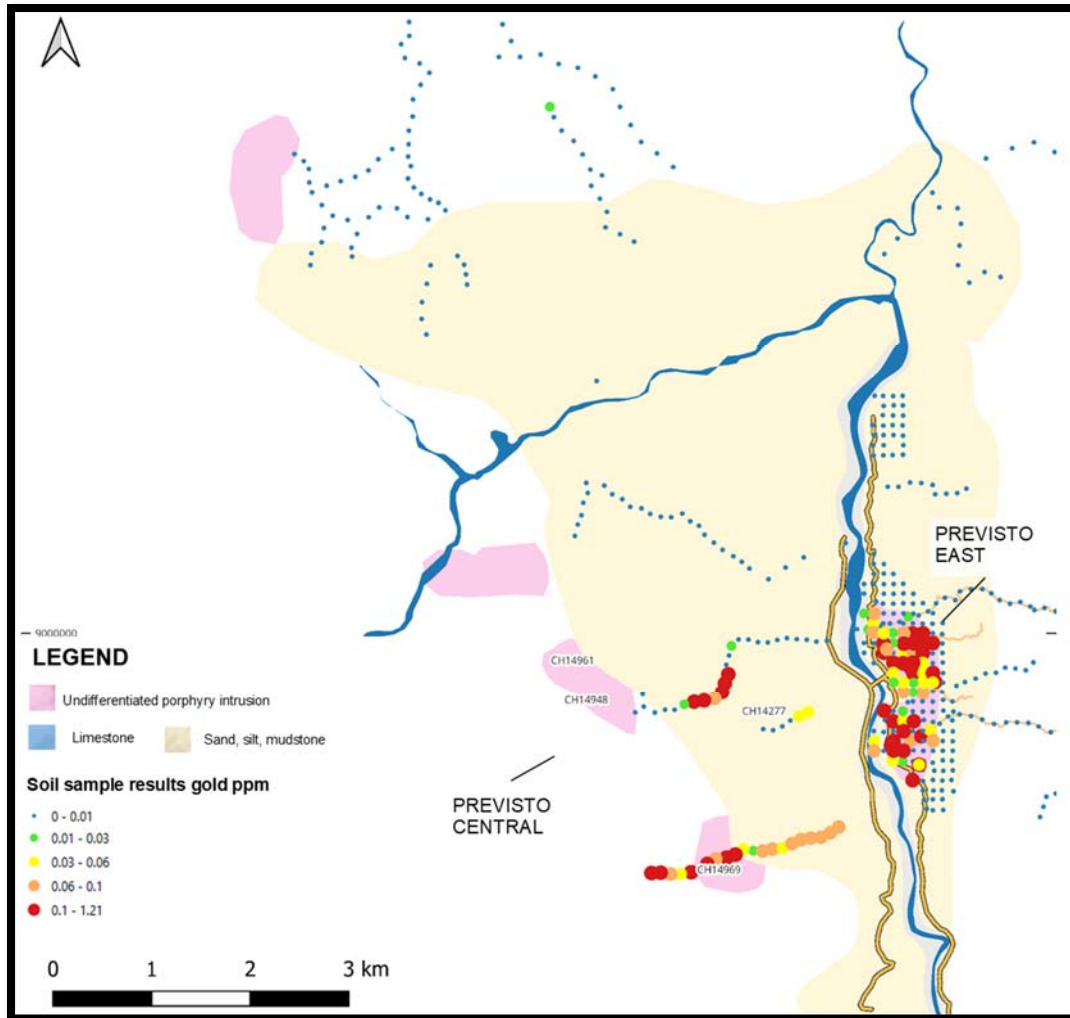


FIGURE 30.
Gold (30g Fire Assay) from Previsto Soil Survey

9.10 SERRANO NORTE

Serrano Norte is an early-stage exploration target that has not seen any detailed field work to date at the project. The Company has identified a circular topographic feature that correlates with a magnetic anomaly ([FIGURE 7](#) and [FIGURE 24](#)). BLEG samples from catchments draining the area are weakly anomalous with copper and long-transported rounded porphyry boulders with propylitic alteration have also been found in the same catchments. The country rock is mapped as limestone. The coinciding data is interpreted to reflect a skarn target.

9.11 SERRANO

Serrano Norte is an early-stage exploration target that has not seen any detailed field work to date at the project. BLEG sampling has not yet been undertaken but the Company dated one boulder in a creek which the radiometric age of 20.5Ma. The airborne magnetic data shows unexplained magnetic anomalies within a sedimentary rock package with Paleocene age ([FIGURE 7](#)).

9.12 PUCACUNGA

The Pucacunga property has been sampled with BLEG and has had airborne magnetic and radiometric data acquisition. The magnetic data show a 4km long magnetic anomaly and two smaller magnetic anomalies in the southern part of the property ([FIGURE 24](#)). BLEG samples from catchments draining the area are anomalous in Cu-Au-Mo-S-Bi-Te-As-Sb-Zn-Pb. The country rock consists of Cretaceous sandstone and limestone. INGEMMET has mapped and described an intrusion in the area and Hannan has dated boulders from creeks. Based on this a radiometric age of 14.8Ma is confirmed from the area. The results are interpreted to represent a porphyry skarn mineralizing system.

10. Drilling

No drilling has been conducted at the property.

11. Sample Preparation, Analyses and Security

The Company has taken soil, rock, and stream sediment samples. All samples have been analyzed at ALS laboratories in Lima or Vancouver. ALS laboratories is independent to the Company and an accredited laboratory.

11.1 SOIL SAMPLES

Soil samples are bagged and labeled in the field by Company staff. Soil samples are taken at a depth of approximately 40cm. First organic material is cleared from a 1m x 1m area and subsequently a spade is used to dig a square hole. The sample is taken from the bottom of the hole. Approximately 50g are taken for analysis with portable XRF (pXRF) and 1.5kg sample is taken for fire assay gold analysis at ALS laboratory in Lima. Transport to the laboratory is via Company staff or via traceable parcel services.

The pXRF soil sample is taken with a spoon to avoid rock clasts, labeled, and bagged in a small plastic zip bag. The soil is analyzed using VANTA VMR mounted in a desktop workstation. An in-house protocol is applied where a small proportion of the sample is taken from the plastic bag and put in plastic screw top. This is dried in a microwave and subsequently analyzed with a pXRF for a total time of two minutes. A quartz blank is analyzed at the start and end of each batch. Every 10th sample analyzed as a field duplicate and 10% of all samples are submitted to the laboratory for ICP MS multielement analysis using a four-acid digest. Hannan also inserts pXRF certified reference material from OREAS at a rate of 1/25 samples.

All soil samples are submitted to the laboratory for gold fire assay where standard sample preparation procedures were applied, involving, drying and screening to -180um and before a rifle split is used to separate a sub sample for 48 element ICP-MS and a 30g fire assay with ICP-AES finish. All samples have been analyzed at ALS laboratory in Lima.

11.2 ROCK SAMPLES

Rock samples are bagged and labeled in the field by Company staff. Then transported to ALS in Lima via third party services using trackable parcels or by Company staff. At the laboratory, rock samples are prepared and analyzed by standard methods. The sample preparation involved crushing 70% to less than 2mm, riffle split off 250g, pulverized split to greater than 85% passing 75 microns. Samples are analyzed by method ME-MS61; a four-acid digest performed on 0.25g of the sample to quantitatively dissolve most geological materials. All samples are also analyzed with 30g fire assay with ICP-AES finish. The Company does not insert any certified reference material.

11.3 STREAM SEDIMENT SAMPLES

1. STREAM SEDIMENT SAMPLES

Samples are bagged and labeled before submitting to ALS laboratory in Lima or Cajamarca. At the laboratory the sample is screened to -180um before being analyzed with method AuME-ST43. This method is analyzing gold by aqua regia extraction with an ICP-MS finish. The data is reported for gold and 48 elements. This data does not include any standards of field duplicates.

2. BLEG SAMPLES

- a. The Company is applying an in-house protocol for sampling and analyzing clay fractions in creeks. The sample type is generally referred to as BLEG which is an acronym for Bulk leach extractable gold, regardless of the name, both gold and multielement data is being reported from each sample.
- b. Samples are taken by Hannan geologists in the creeks with active sedimentation. Each sample is taken with a plastic scoop from approximately 25 different sediment traps in the creek and on average 100m to 300m distance of the creek is sampled. The sample is placed in a plastic bucket where the clay fraction is being separated from the coarse material using gravitation and flocculent. The clay fraction is bagged in a micropore bag, hung, dried and submitted to ALS in Lima and Vancouver for further sample preparation and analysis.
- c. At the laboratory the sample is disintegrated up and sieved to -106 μ m. To remove residual clasts in the sample, 50g is separated to be analyzed with method Au-CN44 and a 200g subsample is split and centrifuged to -2 μ m to extract the clay fraction. From the clay fraction a 0.5g split is taken and analyzed with ultra-low detection limit method ME-MS41L using an aqua regia digest.

11.4 QUALITY CONTROL PROCEDURES

The quality control procedure for soil sampling using a portable XRF for sample analysis are considered adequate. The protocol involves both certified reference material (CRM) and laboratory re-assays. The results for pathfinder elements such as copper, lead, zinc are satisfactory. Field duplicates of gold data comparisons also show adequate repeatability ([FIGURE 31](#)).

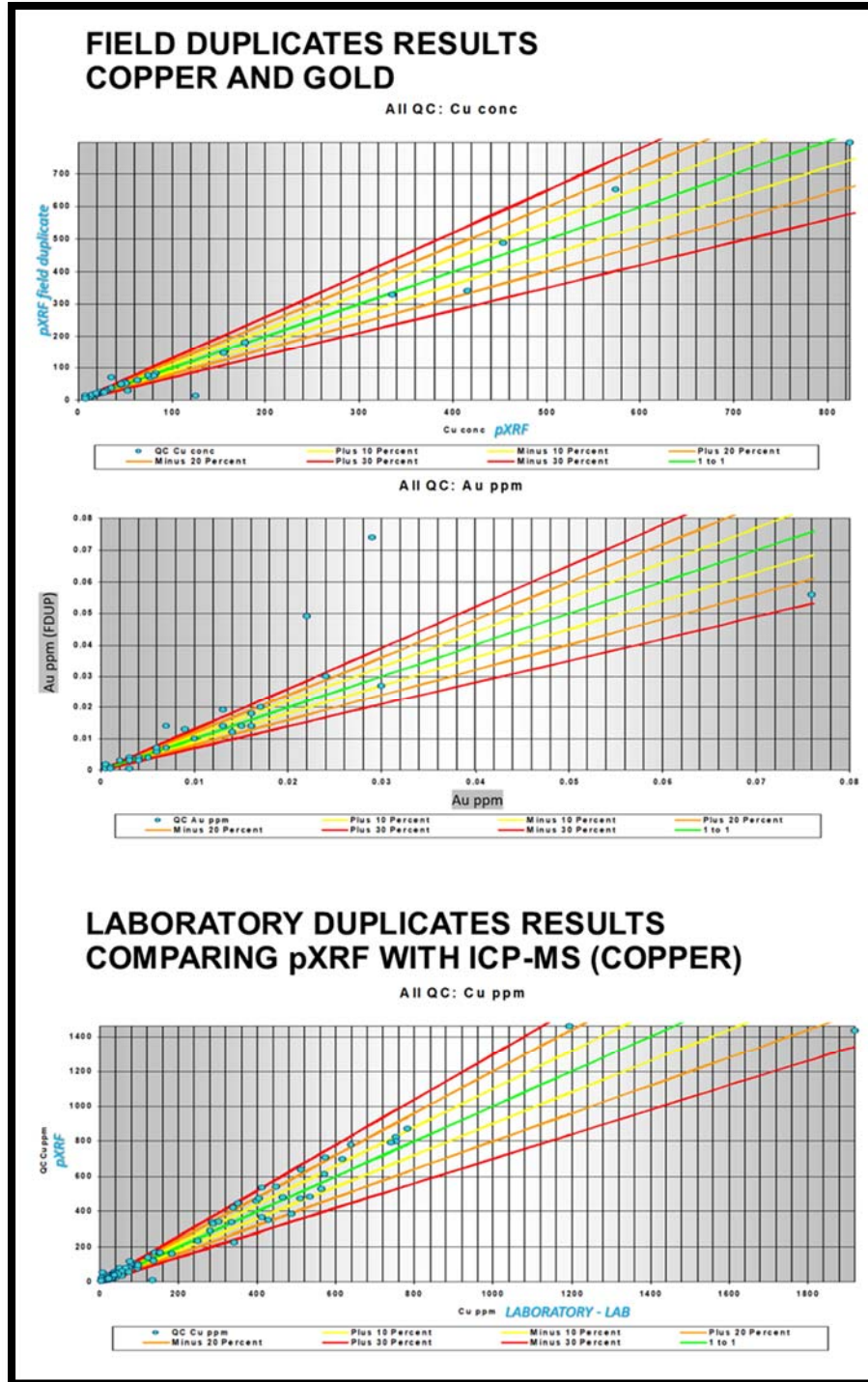


FIGURE 31.
*Results from Field Duplicate of Soil Samples for Copper and Gold
(bottom results from laboratory check samples of pXRF soil data for copper)*

The quality control program of BLEG samples has involved 10% field duplicates to evaluate the field variability of the sampled creeks. No certified reference material (CRM) has been inserted by the Company. Results as highlighted in [FIGURE 32](#) are considered satisfactory.

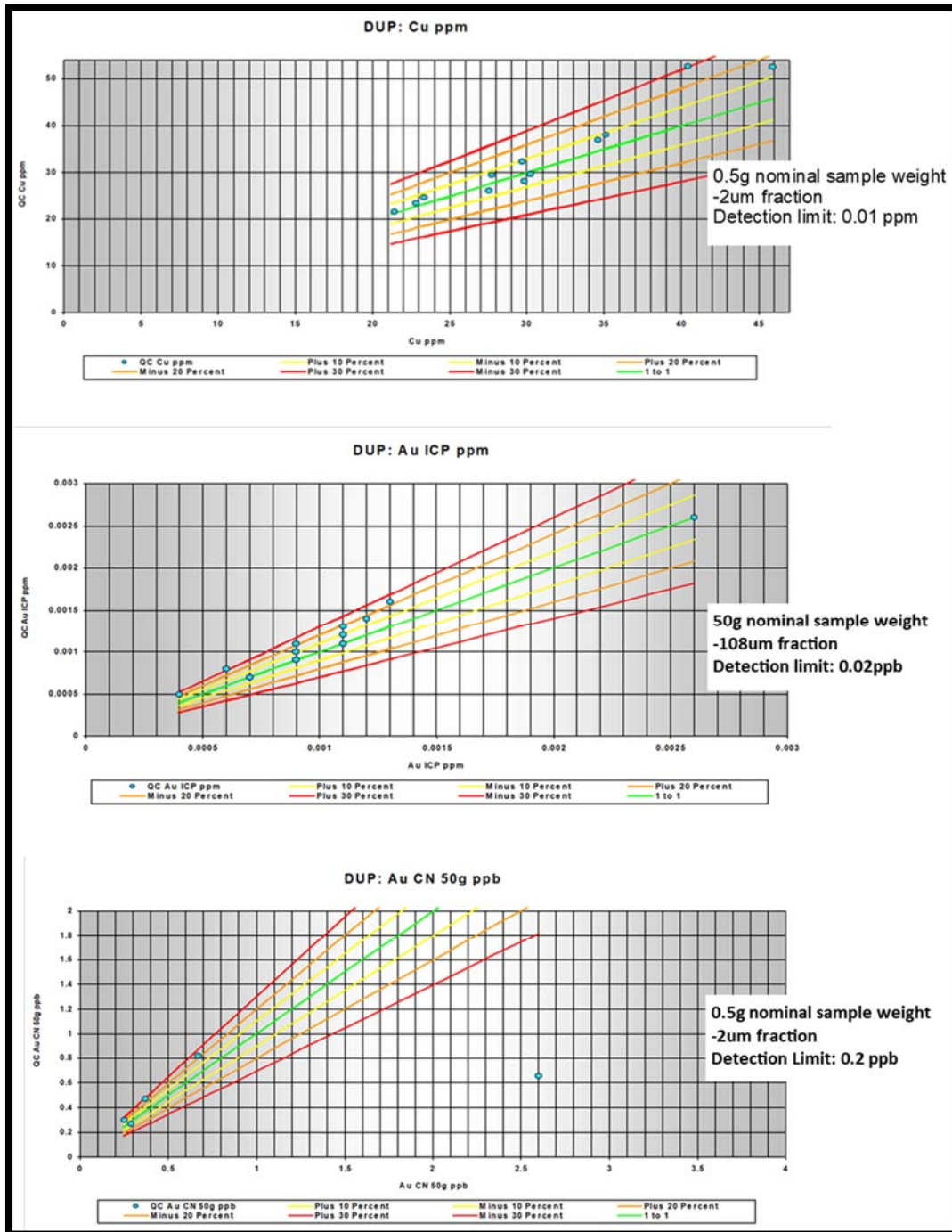


FIGURE 32.
Results of Field Duplicates for BLEG Samples Showing Copper and Gold (note gold was analyzed both with 50g cyanide and 0.5 ICP-MS)

Stream sediment samples do not have a specific quality control program. Instead, the Company has relied on the laboratory internal quality controls to validate the analytical results. The results show very high repeatability of field duplicates, for copper most samples are within 10% of the parent sample.

Rock samples do not have a specific quality control program. Instead, the Company has relied on laboratory internal quality controls to validate the analytical results.

The author considers that the sample preparation, security, and analytical procedure of the program is adequate. Insertions of CRM for channel rock samples would improve the robustness of the data, but the lack of them does not change the authors opinion. Care has been taken to validate the analytical results of the pXRF soil data at an external laboratory. Field duplicates have been inserted to evaluate repeatability of sampled sites.

12. Data Verification

It is the author's opinion that the database is adequate to support the current the project evaluation in this report. The database has been validated by review of cross comparison between results in the database and original laboratory files.

13. Mineral Processing and Metallurgical Testing

No mineral processing or metallurgical testing has been done at the project.

14. Mineral Resource Estimates

There are no mineral resources estimates from the property.

15. Adjacent Properties

There are no adjacent properties to be included in this report.

16. Other Relevant Data and Information

There is no other relevant data.

17. Interpretations and Conclusions

The project is a new early-stage discovery mineral exploration project made by Hannan. It does not have any historic mineral exploration of note. The discoveries by Hannan are characterized by outcropping mineralization in creeks and ridges. The mineralization on the property is multi-signature with characteristics porphyry, skarn and epithermal style caused by 21.8-12.2Ma intrusions into Cretaceous and Paleogene age sandstone, mudstone, limestones, and shales.

This report describes mineralization at seven porphyry-epithermal targets with a high-K calc alkalic to alkalic composition of the intrusive porphyry stocks. The most de-risked targets are Ricardo Herrera and Previsto East.

Ricardo Herrera represents at the upper parts of a multistage high-K calc alkalic porphyry stock with a mineralized footprint on surface that extends for 1,000m in length by 275m in width. The surface expression of the mineralization is strongly leached, but an orientation IP geophysical pole-dipole survey has mapped a coinciding high resistivity high chargeability anomaly to at least 500m depth. Indicating a target with significant exploration potential.

Previsto East represents a 1,800m long x 400m wide porphyry-epithermal target defined by strongly gold anomalous soil samples and large local copper and gold mineralized boulder assaying up 0.64 g/t gold in soils and 1.85 g/t Au in boulders.

The Previsto Central area represents a cluster of young Miocene-age intrusions (13-12Ma). It is not fully mapped but it is emerging as a significant exploration target at the property that borders an unexplained magnetic anomaly of 7km x 3km in size. Soil results from Previsto Central are strongly anomalous in gold and copper and initial data shows anomalies over 1km width of high-grade gold and copper.

It is the author's conclusion that the Valiente project has significant potential for copper and gold-rich porphyry style mineralization in multiple target areas. The surface work also suggests that the multiple mineralizing systems found to date have a significant footprint, which are likely to grow as many areas remains unexplored. Furthermore, the project also holds potential for skarn and epithermal mineralization as seen in rock and soil samples.

18. Recommendations

It recommended that the Company continue with the strategy of geological de-risking using exploration techniques with proved high success rate at the project such as detailed surface mapping and soil sampling. The magnetic and radiometric data should also be used to identify magnetic and radiometric targets in new target areas.

It recommended that the Company continue with the strategy of geological de-risking using exploration techniques with proved high success rate such as detailed surface mapping and soil sampling. Further geophysical surveys such as pole-dipole IP geophysics needs to be completed at all target areas prior to drilling. Once drill permits are obtained the author recommends an estimate of 5,000m of drilling. The proposed work and budget is broken down into two stages:

18.1 STAGE 1

Geological de-risking using conventional exploration techniques such as detailed surface mapping, grid-based soil sampling (200m x 200m), channel sampling and large-scale IP pole-dipole geophysical surveys. If the combination of these results is positive the target should be permitted for drilling. The estimated budget for Stage One is CAD1.497M:

TABLE 9.
Valiente Budget Summary (Stage 1)

	CAD
Staffing, Travel, Logistics, Office, Vehicles, Lima Office	700,000
Tenure Fees	372,000
Geology, Geochemistry, Geophysics, Permitting	425,000
TOTAL	1,497,000

18.2 STAGE 2

Diamond drilling is recommended to test the targets developed during Stage One. Due to the variety of targets presented within the property it is difficult to predict the number of metres needed to evaluate each area. In the Belen Zone the drill application that is currently being permitted cover three targets. It is estimated that that this will require a minimum of 5,000m of drilling with a maximum depth of 800m and an average depth of 300m in the initial evaluation using hand portable drill rigs with a maximum capacity of 1,000m depth, low environmental impact and minimizing the need to create access roads. The estimated budget for Stage Two is CAD2,772,000 per drill target.

TABLE 10.
Valiente Budget Summary (Stage 2)

	CAD
Staffing, Travel, Logistics, Office, Vehicles, Lima Office	700,000
Tenure Fees	372,000
Diamond Drilling (5,000m)	1,700,000
TOTAL	2,772,000

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20. Appendix 1

TIT_CONCES	D_ESTADO	CONCESION	TIT_CONCES	D_ESTADO	CARTA	DEPA	PROVI	DISTRI
10199820	11/2/2020	PREVISTO NR 1006	HANNAN METALS PERU SAC	D.M. Titulado D.L. 708	19-L	UCAYALI	PADRE ABAD	BOQUERON
10200020	11/2/2020	PREVISTO NR 1004	HANNAN METALS PERU SAC	D.M. Titulado D.L. 708	19-L	UCAYALI	PADRE ABAD	BOQUERON
10200220	11/2/2020	PREVISTO NR 1002	HANNAN METALS PERU SAC	D.M. Titulado D.L. 708	18-L	UCAYALI	PADRE ABAD	BOQUERON
10283022	11/2/2022	PREVISTO NR 1086	HANNAN METALS PERU SAC	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	DANIEL ALOMIA ROBLES / LUYANDO / MARIANO DAMASO BERAUN
10199720	11/2/2020	PREVISTO NR 1007	HANNAN METALS PERU SAC	D.M. Titulado D.L. 708	19-L	UCAYALI	PADRE ABAD	BOQUERON
10199920	11/2/2020	PREVISTO NR 1005	HANNAN METALS PERU SAC	D.M. Titulado D.L. 708	19-L	UCAYALI	PADRE ABAD	BOQUERON
10302020	12/7/2020	PREVISTO NR 1025	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. en TrÁfÄjmite D.L. 708	19-L	HUANUCO	LEONCIO PRADO	HERMILIO VALDIZAN
10199620	11/2/2020	PREVISTO NR 1008	HANNAN METALS PERU SAC	D.M. Titulado D.L. 708	19-L	UCAYALI	PADRE ABAD	BOQUERON
10211222	8/1/2022	PUCACUNGA 1004 NEW	HANNAN METALS PERU SAC	D.M. Titulado D.L. 708	20-M	HUANUCO	PUERTO INCA	CODO DEL POZUZO
10008021	1/19/2021	POZUZO 1001	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	21-L	PASCO	OXAPAMPA	POZUZO
10301920	12/7/2020	PREVISTO NR 1024	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. en TrÁfÄjmite D.L. 708	19-L	HUANUCO	LEONCIO PRADO	HERMILIO VALDIZAN / PUEBLO NUEVO
10110920	8/14/2020	PUCACUNGA 1001	HANNAN METALS PERU SAC	D.M. Titulado D.L. 708	20-M	HUANUCO	PUERTO INCA	CODO DEL POZUZO
10200120	11/2/2020	PREVISTO NR 1003	HANNAN METALS PERU SAC	D.M. Titulado D.L. 708	18-L	UCAYALI	PADRE ABAD	BOQUERON
10305720	12/7/2020	PREVISTO NR 1061	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. en TrÁfÄjmite D.L. 708	19-L	HUANUCO	LEONCIO PRADO	DANIEL ALOMIA ROBLES / HERMILIO VALDIZAN
10200320	11/2/2020	PREVISTO NR 1001	HANNAN METALS PERU SAC	D.M. Titulado D.L. 708	18-L	UCAYALI	PADRE ABAD	BOQUERON
10307720	12/7/2020	SERRANO NR 1004	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	20-L	HUANUCO	PACHITEA	CHAGLLA

TIT_CONCES	D_ESTADO	CONCESION	TIT_CONCES	D_ESTADO	CARTA	DEPA	PROVI	DISTR
10300920	12/7/2020	PREVISTO NR 1013	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	UCAYALI	PADRE ABAD	BOQUERON
10301120	12/7/2020	PREVISTO NR 1015	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	UCAYALI	PADRE ABAD	BOQUERON
10301320	12/7/2020	PREVISTO NR 1017	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. Titulado D.L. 708	19-L	UCAYALI	PADRE ABAD	PADRE ABAD / BOQUERON
10301820	12/7/2020	PREVISTO NR 1022	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. Titulado D.L. 708	19-L	UCAYALI / HUANUCO	PADRE ABAD / LEONCIO PRADO	HERMILIO VALDIZAN / BOQUERON / PUEBLO NUEVO
10302220	12/7/2020	PREVISTO NR 1027	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. en TrÁfÁmite D.L. 708	19-L	UCAYALI / HUANUCO	PADRE ABAD / LEONCIO PRADO	HERMILIO VALDIZAN / BOQUERON
10302520	12/7/2020	PREVISTO NR 1029	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. Titulado D.L. 708	19-L	UCAYALI	PADRE ABAD	BOQUERON
10302620	12/7/2020	PREVISTO NR 1030	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. Titulado D.L. 708	19-L	UCAYALI	PADRE ABAD	BOQUERON
10302820	12/7/2020	PREVISTO NR 1032	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	HERMILIO VALDIZAN
10303020	12/7/2020	PREVISTO NR 1034	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. en TrÁfÁmite D.L. 708	19-L	HUANUCO	LEONCIO PRADO	HERMILIO VALDIZAN
10303220	12/7/2020	PREVISTO NR 1036	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. Titulado D.L. 708	19-L	UCAYALI / HUANUCO	PADRE ABAD / LEONCIO PRADO	HERMILIO VALDIZAN / BOQUERON
10303320	12/7/2020	PREVISTO NR 1037	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	HERMILIO VALDIZAN
10303520	12/7/2020	PREVISTO NR 1039	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. Titulado D.L. 708	19-L	UCAYALI	PADRE ABAD	BOQUERON
10303720	12/7/2020	PREVISTO NR 1042	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	HERMILIO VALDIZAN
10303920	12/7/2020	PREVISTO NR 1043	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	HERMILIO VALDIZAN
10304120	12/7/2020	PREVISTO NR 1045	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	UCAYALI / HUANUCO	PADRE ABAD / LEONCIO PRADO	HERMILIO VALDIZAN / BOQUERON

TIT_CONCES	D_ESTADO	CONCESION	TIT_CONCES	D_ESTADO	CARTA	DEPA	PROVI	DISTRI
10304220	12/7/2020	PREVISTO NR 1046	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. Titulado D.L. 708	19-L	UCAYALI / HUANUCO	PADRE ABAD / LEONCIO PRADO	HERMILIO VALDIZAN / PADRE ABAD / BOQUERON
10304420	12/7/2020	PREVISTO NR 1048	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	UCAYALI	PADRE ABAD	PADRE ABAD / BOQUERON
10305120	12/7/2020	PREVISTO NR 1056	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	UCAYALI / HUANUCO	PADRE ABAD / LEONCIO PRADO	HERMILIO VALDIZAN / PADRE ABAD
10305320	12/7/2020	PREVISTO NR 1057	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. Titulado D.L. 708	19-L	UCAYALI / HUANUCO	PADRE ABAD / LEONCIO PRADO	HERMILIO VALDIZAN / PADRE ABAD
10305520	12/7/2020	PREVISTO NR 1059	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	DANIEL ALOMIA ROBLES / LUYANDO / MARIANO DAMASO BERAUN
10306620	12/7/2020	PREVISTO NR 1070	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	DANIEL ALOMIA ROBLES / HERMILIO VALDIZAN
10306820	12/7/2020	PUCACUNGA 1003	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	20-M	HUANUCO	PUERTO INCA	CODO DEL POZUZO
10307020	12/7/2020	PUCACUNGA 1005	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	20-M	HUANUCO	PUERTO INCA	CODO DEL POZUZO
10307220	12/7/2020	PUCACUNGA 1007	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	20-L	HUANUCO	PUERTO INCA	CODO DEL POZUZO
10307620	12/7/2020	SERRANO NR 1003	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. Titulado D.L. 708	20-L	HUANUCO	PACHITEA	CHAGLLA
10307820	12/7/2020	SERRANO NR 1006	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	20-L	HUANUCO	PACHITEA	CHAGLLA
10308020	12/7/2020	SERRANO NR 1005	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	20-L	HUANUCO	PACHITEA / LEONCIO PRADO	CHAGLLA / DANIEL ALOMIA ROBLES
10300820	12/7/2020	PREVISTO NR 1012	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	UCAYALI	PADRE ABAD	BOQUERON
10301020	12/7/2020	PREVISTO NR 1014	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	UCAYALI	PADRE ABAD	BOQUERON
10302120	12/7/2020	PREVISTO NR 1023	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. en Tránsito D.L. 708	19-L	UCAYALI / HUANUCO	PADRE ABAD / LEONCIO PRADO	HERMILIO VALDIZAN / BOQUERON

TIT_CONCES	D_ESTADO	CONCESION	TIT_CONCES	D_ESTADO	CARTA	DEPA	PROVI	DISTRI
10302420	12/7/2020	PREVISTO NR 1028	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. Titulado D.L. 708	19-L	UCAYALI	PADRE ABAD	BOQUERON
10302720	12/7/2020	PREVISTO NR 1031	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. Titulado D.L. 708	19-L	UCAYALI	PADRE ABAD	PADRE ABAD / BOQUERON
10302920	12/7/2020	PREVISTO NR 1033	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	HERMILIO VALDIZAN
10303120	12/7/2020	PREVISTO NR 1035	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. Titulado D.L. 708	19-L	UCAYALI / HUANUCO	PADRE ABAD / LEONCIO PRADO	HERMILIO VALDIZAN / BOQUERON
10303420	12/7/2020	PREVISTO NR 1038	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. Titulado D.L. 708	19-L	UCAYALI / HUANUCO	PADRE ABAD / LEONCIO PRADO	HERMILIO VALDIZAN / BOQUERON
10303620	12/7/2020	PREVISTO NR 1040	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. Titulado D.L. 708	19-L	UCAYALI	PADRE ABAD	BOQUERON
10303820	12/7/2020	PREVISTO NR 1041	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	UCAYALI	PADRE ABAD	PADRE ABAD / BOQUERON
10304020	12/7/2020	PREVISTO NR 1044	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. Titulado D.L. 708	19-L	UCAYALI / HUANUCO	PADRE ABAD / LEONCIO PRADO	HERMILIO VALDIZAN / BOQUERON
10304320	12/7/2020	PREVISTO NR 1047	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. Titulado D.L. 708	19-L	UCAYALI / HUANUCO	PADRE ABAD / LEONCIO PRADO	HERMILIO VALDIZAN / PADRE ABAD / BOQUERON
10304520	12/7/2020	PREVISTO NR 1049	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	DANIEL ALOMIA ROBLES / HERMILIO VALDIZAN
10304720	12/7/2020	PREVISTO NR 1051	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	DANIEL ALOMIA ROBLES / HERMILIO VALDIZAN
10304920	12/7/2020	PREVISTO NR 1054	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	HERMILIO VALDIZAN
10305220	12/7/2020	PREVISTO NR 1055	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	HERMILIO VALDIZAN
10305420	12/7/2020	PREVISTO NR 1058	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	DANIEL ALOMIA ROBLES / HERMILIO VALDIZAN

TIT_CONCES	D_ESTADO	CONCESION	TIT_CONCES	D_ESTADO	CARTA	DEPA	PROVI	DISTR
10305620	12/7/2020	PREVISTO NR 1060	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	DANIEL ALOMIA ROBLES / LUYANDO
10305820	12/7/2020	PREVISTO NR 1062	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. en Tránsito D.L. 708	19-L	HUANUCO	LEONCIO PRADO	DANIEL ALOMIA ROBLES / HERMILIO VALDIZAN
10307120	12/7/2020	PUCACUNGA 1006	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. Titulado D.L. 708	20-L	HUANUCO	PUERTO INCA	CODO DEL POZUZO
10307320	12/7/2020	PUCACUNGA 1008	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	20-M	HUANUCO	PUERTO INCA	CODO DEL POZUZO
10211322	8/1/2022	PREVISTO NR 1016 NEW	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	UCAYALI	PADRE ABAD	BOQUERON
10112521	5/20/2021	PREVISTO NR 1071	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	UCAYALI	PADRE ABAD	BOQUERON
10112621	5/20/2021	PREVISTO NR 1072	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	UCAYALI	PADRE ABAD	BOQUERON
10179821	8/13/2021	POZUZO 1003	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	21-L	PASCO	OXAPAMPA	POZUZO
10179921	8/13/2021	POZUZO NR 1004	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	21-L	PASCO	OXAPAMPA	POZUZO
10180121	8/13/2021	POZUZO NR 1006	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	21-L	PASCO	OXAPAMPA	POZUZO
10180321	8/13/2021	PUCACUNGA 1009	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	20-M	HUANUCO	PUERTO INCA	CODO DEL POZUZO
10180421	8/13/2021	PUCACUNGA 1010	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	20-M	HUANUCO	PUERTO INCA	CODO DEL POZUZO
10180021	8/13/2021	POZUZO NR 1005	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	21-L	PASCO	OXAPAMPA	POZUZO
10180221	8/13/2021	POZUZO NR 1007	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	21-L	PASCO	OXAPAMPA	POZUZO
10180521	8/13/2021	PUCACUNGA 1011	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	20-L	HUANUCO	PUERTO INCA	CODO DEL POZUZO
10258421	11/8/2021	PREVISTO NR 1073	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	18-L	UCAYALI	PADRE ABAD	BOQUERON
10258721	11/8/2021	PREVISTO NR 1076	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	UCAYALI	PADRE ABAD	PADRE ABAD / BOQUERON
10258821	11/8/2021	PREVISTO NR 1077	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	UCAYALI	PADRE ABAD	PADRE ABAD / BOQUERON

TIT_CONCES	D_ESTADO	CONCESION	TIT_CONCES	D_ESTADO	CARTA	DEPA	PROVI	DISTRI
10258521	11/8/2021	PREVISTO NR 1074	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	18-L	UCAYALI	PADRE ABAD	BOQUERON
10258621	11/8/2021	PREVISTO NR 1075	HANNAN RESOURCES PERU SAC	D.M. en TrÁfÁjmite D.L. 708	19-L	UCAYALI	PADRE ABAD	BOQUERON
10033922	2/10/2022	SERRANO NR 1011	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	MARIANO DAMASO BERAUN
10034022	2/10/2022	SERRANO NR 1012	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	MARIANO DAMASO BERAUN
10034122	2/10/2022	SERRANO NR 1013	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	MARIANO DAMASO BERAUN
10034322	2/10/2022	PREVISTO NR 1078	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	DANIEL ALOMIA ROBLES
10034422	2/10/2022	PREVISTO NR 1079	HANNAN RESOURCES PERU SAC	D.M. en TrÁfÁjmite D.L. 708	19-L	HUANUCO	LEONCIO PRADO	DANIEL ALOMIA ROBLES
10034822	2/10/2022	SERRANO NR 1014	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	MARIANO DAMASO BERAUN
10307920	12/7/2020	SERRANO NR 1007	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	20-L	HUANUCO	PACHITEA	CHAGLLA
10034222	2/10/2022	SERRANO NR 1015	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	MARIANO DAMASO BERAUN
10034622	2/10/2022	PREVISTO NR 1081	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	DANIEL ALOMIA ROBLES / HERMILIO VALDIZAN
10117122	5/3/2022	PREVISTO NR 1084	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	DANIEL ALOMIA ROBLES / HERMILIO VALDIZAN
10148222	5/19/2022	SERRANO NR 1016	HANNAN METALS PERU SAC	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	MARIANO DAMASO BERAUN
10148422	5/19/2022	SERRANO NR 2022	CAVATO MANAGEMENT CONSULTING SERVICES E.I.R.L.	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	MARIANO DAMASO BERAUN
10148322	5/19/2022	PREVISTO NR 1085	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	DANIEL ALOMIA ROBLES / LUYANDO / MARIANO DAMASO BERAUN
10034522	2/10/2022	PREVISTO NR 1080	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	DANIEL ALOMIA ROBLES / HERMILIO VALDIZAN

TIT_CONCES	D_ESTADO	CONCESION	TIT_CONCES	D_ESTADO	CARTA	DEPA	PROVI	DISTR
10008121	1/19/2021	POZUZO 1002	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	21-L	PASCO	OXAPAMPA	POZUZO
10304620	12/7/2020	PREVISTO NR 1050	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	DANIEL ALOMIA ROBLES / HERMILIO VALDIZAN
10304820	12/7/2020	PREVISTO NR 1053	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	DANIEL ALOMIA ROBLES / HERMILIO VALDIZAN
10305020	12/7/2020	PREVISTO NR 1052	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	DANIEL ALOMIA ROBLES / HERMILIO VALDIZAN
10117222	5/3/2022	PREVISTO NR 1083	HANNAN RESOURCES PERU SAC	D.M. Titulado D.L. 708	19-L	HUANUCO	LEONCIO PRADO	DANIEL ALOMIA ROBLES / HERMILIO VALDIZAN

CERTIFICATE OF QUALIFIED PERSON

I, Lars Dahlenborg, do hereby certify that:

1. I am the President of Hannan Metals Ltd. (the “**Company**”) located at 1090 West Georgia Street, Suite 1305, Vancouver, British Columbia V6E 3V7.
2. This certificate applies to the technical report titled “Valiente Copper-Gold Project, Peru, NI 43-101 Technical Report” dated May 14, 2024 (the “**Technical Report**”) with respect to the Company’s Valiente Copper-Gold Project (the “**Property**”).
3. I have continuously worked in exploration, assessment, development and operation of mineral projects since my graduation from Lund University in 2007 with a Master of Science, Geology Major. I am a Member of the Australian Institute of Geoscientists (MAIG # 6698).
4. I have read the definition of “qualified person” set out in National Instrument 43-101 (“**NI 43-101**”) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.
5. I most recently personally inspected the Property over a period of four days from May 8 to May 12, 2024.
6. I am a co-author and responsible for the preparation of the entire Technical Report.
7. I am not independent of the Company as described in section 1.5 of NI 43-101.
8. I have had prior involvement with the Property, namely, I am the President of the Company and a “qualified person” responsible for providing geological services to the Company through my company Dahlenborg & Dahlenborg AB.
9. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

10. At the effective date of the Technical Report, 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.

Dated this 14th day of May, 2024.

(Signed) "*Lars Dahlenborg*"

Lars Dahlenborg

CERTIFICATE OF QUALIFIED PERSON

I, Michael Hudson, do hereby certify that:

1. I am the Executive Chairman and Chief Executive Officer and a director of Hannan Metals Ltd. (the “**Company**”) located at 1090 West Georgia Street, Suite 1305, Vancouver, British Columbia V6E 3V7.
2. This certificate applies to the technical report titled “Valiente Copper-Gold Project, Peru, NI 43-101 Technical Report” dated May 14, 2024 (the “**Technical Report**”) with respect to the Company’s Valiente Copper-Gold Project (the “**Property**”).
3. I have continuously worked in exploration, assessment, development and operation of mineral projects since my graduation from the University of Melbourne in 1991 with a B.Sc. (Hons) in Geology. I am a registered Fellow of the Australasian Institute of Mining and Metallurgy (FAusIMM # 110302) and a Member of the Australian Institute of Geoscientists (MAIG # 3054).
4. I have read the definition of “qualified person” set out in National Instrument 43-101 (“**NI 43-101**”) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.
5. I most recently personally inspected the Property over a period of five days from October 13 to October 18, 2023.
6. I am a co-author and responsible for the preparation of the entire Technical Report.
7. I am not independent of the Company as described in section 1.5 of NI 43-101.
8. I have had prior involvement with the Property, namely, I am the Executive Chairman and Chief Executive Officer of the Company and a “qualified person” responsible for providing geological and management services to the Company through my company Oro Plata Pty Ltd.
9. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

10. At the effective date of the Technical Report, 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.

Dated this 14th day of May, 2024.

(Signed) "*Michael Hudson*"

Michael Hudson